Full wwPDB EM Validation Report ⓘ

Nov 27, 2022 – 04:04 PM EST

PDB ID	:	6X6J
EMDB ID	:	EMD-20021
Title	:	Cryo-EM Structure of CagX and CagY within the Helicobacter pylori PR
Authors	:	Sheedlo, M.J.; Chung, J.M.; Sawhney, N.; Durie, C.L.; Cover, T.L.; Ohi, M.D.; Lacy, D.B.
Deposited on	:	2020-05-28
Resolution	:	3.50 Å(reported)

The following versions of software and data (see references ⓘ) were used in the production of this report:

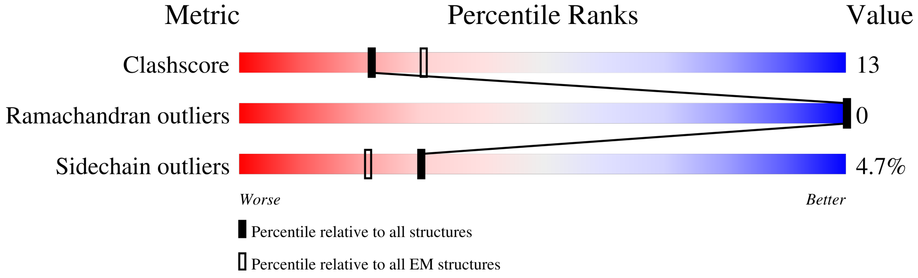
EMDB validation analysis	:	0.0.1.dev43
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.9
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.31.2

1 Overall quality at a glance

The following experimental techniques were used to determine the structure: *ELECTRON MICROSCOPY*

The reported resolution of this entry is 3.50 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



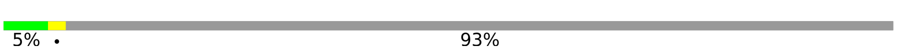
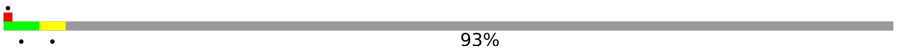
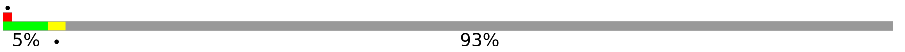
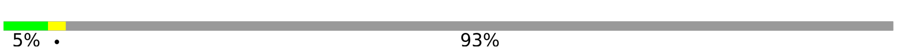
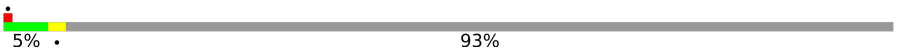
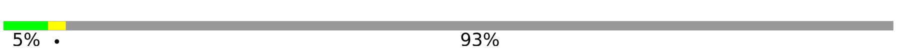
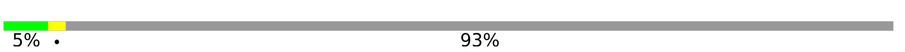
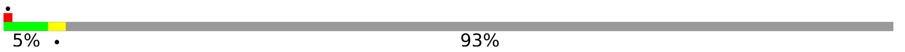
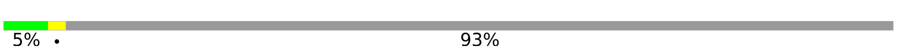
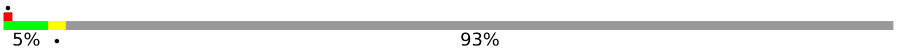
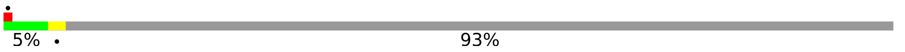
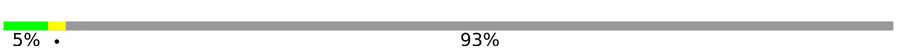
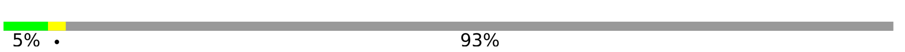
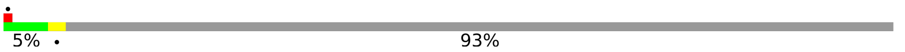
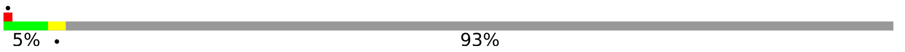
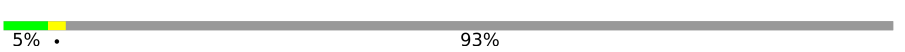
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	158937	4297
Ramachandran outliers	154571	4023
Sidechain outliers	154315	3826

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	AX	521	
1	BX	521	
1	CX	521	
1	DX	521	
1	EX	521	
1	FX	521	
1	GX	521	
1	HX	521	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	IX	521	
1	JX	521	
1	KX	521	
1	LX	521	
1	MX	521	
1	NX	521	
1	OX	521	
1	PX	521	
1	QX	521	
2	AY	1927	
2	BY	1927	
2	CY	1927	
2	DY	1927	
2	EY	1927	
2	FY	1927	
2	GY	1927	
2	HY	1927	
2	IY	1927	
2	JY	1927	
2	KY	1927	
2	LY	1927	
2	MY	1927	
2	NY	1927	
2	OY	1927	
2	PY	1927	

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
2	QY	1927	

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 40613 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Cag pathogenicity island protein (Cag8).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	AX	164	1339	858	227	252	2	0	0
1	BX	164	1339	858	227	252	2	0	0
1	CX	164	1339	858	227	252	2	0	0
1	DX	164	1339	858	227	252	2	0	0
1	EX	164	1339	858	227	252	2	0	0
1	FX	164	1339	858	227	252	2	0	0
1	GX	164	1339	858	227	252	2	0	0
1	HX	164	1339	858	227	252	2	0	0
1	IX	164	1339	858	227	252	2	0	0
1	JX	164	1339	858	227	252	2	0	0
1	KX	164	1339	858	227	252	2	0	0
1	LX	164	1339	858	227	252	2	0	0
1	MX	164	1339	858	227	252	2	0	0
1	NX	164	1339	858	227	252	2	0	0
1	OX	164	1339	858	227	252	2	0	0
1	PX	164	1339	858	227	252	2	0	0
1	QX	164	1339	858	227	252	2	0	0

There are 34 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
AX	?	-	GLU	deletion	UNP O25263
AX	516	GLU	LEU	conflict	UNP O25263
BX	?	-	GLU	deletion	UNP O25263
BX	516	GLU	LEU	conflict	UNP O25263
CX	?	-	GLU	deletion	UNP O25263
CX	516	GLU	LEU	conflict	UNP O25263
DX	?	-	GLU	deletion	UNP O25263
DX	516	GLU	LEU	conflict	UNP O25263
EX	?	-	GLU	deletion	UNP O25263
EX	516	GLU	LEU	conflict	UNP O25263
FX	?	-	GLU	deletion	UNP O25263
FX	516	GLU	LEU	conflict	UNP O25263
GX	?	-	GLU	deletion	UNP O25263
GX	516	GLU	LEU	conflict	UNP O25263
HX	?	-	GLU	deletion	UNP O25263
HX	516	GLU	LEU	conflict	UNP O25263
IX	?	-	GLU	deletion	UNP O25263
IX	516	GLU	LEU	conflict	UNP O25263
JX	?	-	GLU	deletion	UNP O25263
JX	516	GLU	LEU	conflict	UNP O25263
KX	?	-	GLU	deletion	UNP O25263
KX	516	GLU	LEU	conflict	UNP O25263
LX	?	-	GLU	deletion	UNP O25263
LX	516	GLU	LEU	conflict	UNP O25263
MX	?	-	GLU	deletion	UNP O25263
MX	516	GLU	LEU	conflict	UNP O25263
NX	?	-	GLU	deletion	UNP O25263
NX	516	GLU	LEU	conflict	UNP O25263
OX	?	-	GLU	deletion	UNP O25263
OX	516	GLU	LEU	conflict	UNP O25263
PX	?	-	GLU	deletion	UNP O25263
PX	516	GLU	LEU	conflict	UNP O25263
QX	?	-	GLU	deletion	UNP O25263
QX	516	GLU	LEU	conflict	UNP O25263

- Molecule 2 is a protein called Cag pathogenicity island protein (Cag7).

Mol	Chain	Residues	Atoms					AltConf	Trace
2	AY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	BY	135	Total 1050	C 649	N 177	O 220	S 4	0	0

Continued on next page...

Continued from previous page...

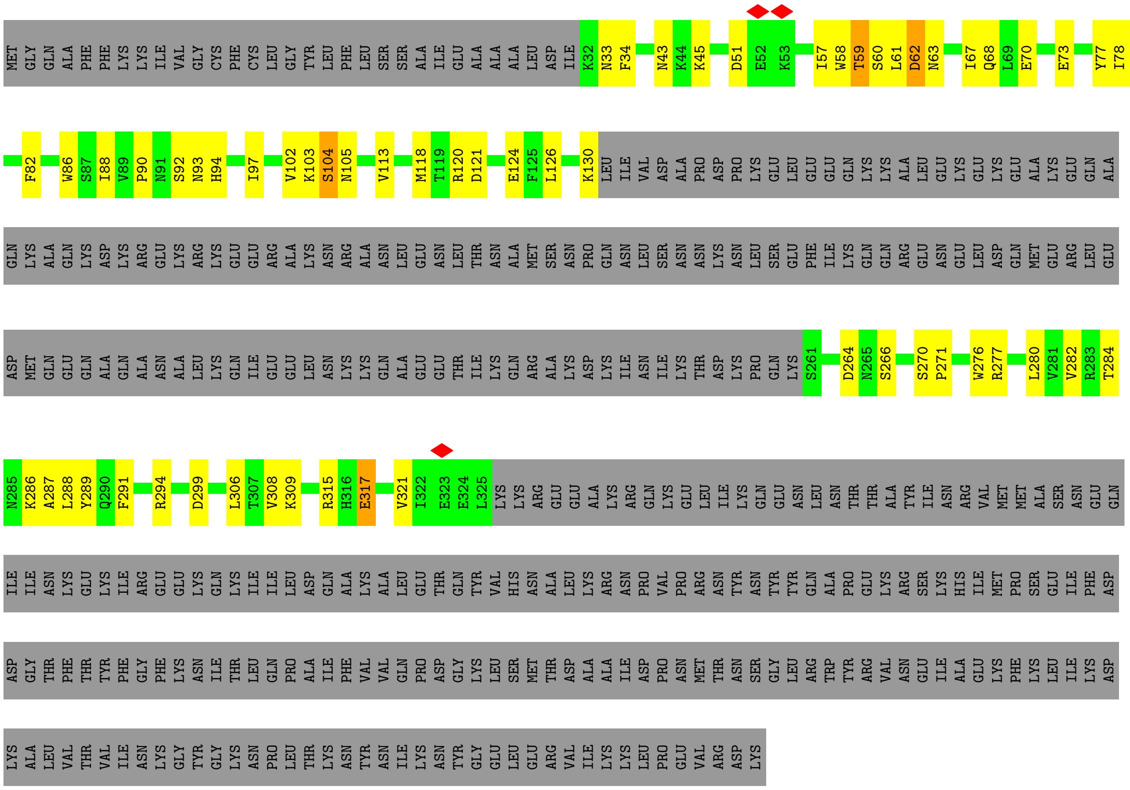
Mol	Chain	Residues	Atoms					AltConf	Trace
2	CY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	DY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	EY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	FY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	GY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	HY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	IY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	JY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	KY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	LY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	MY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	NY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	OY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	PY	135	Total 1050	C 649	N 177	O 220	S 4	0	0
2	QY	135	Total 1050	C 649	N 177	O 220	S 4	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

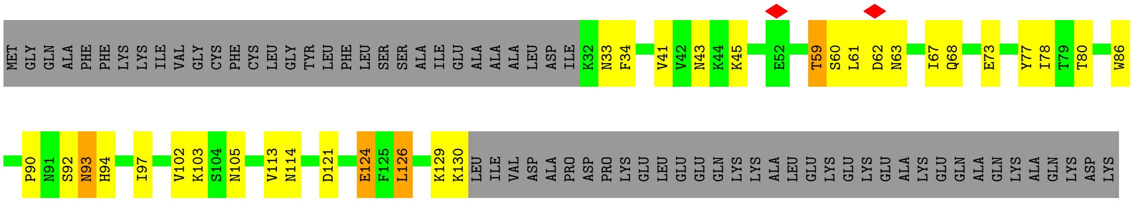
- Molecule 1: Cag pathogenicity island protein (Cag8)

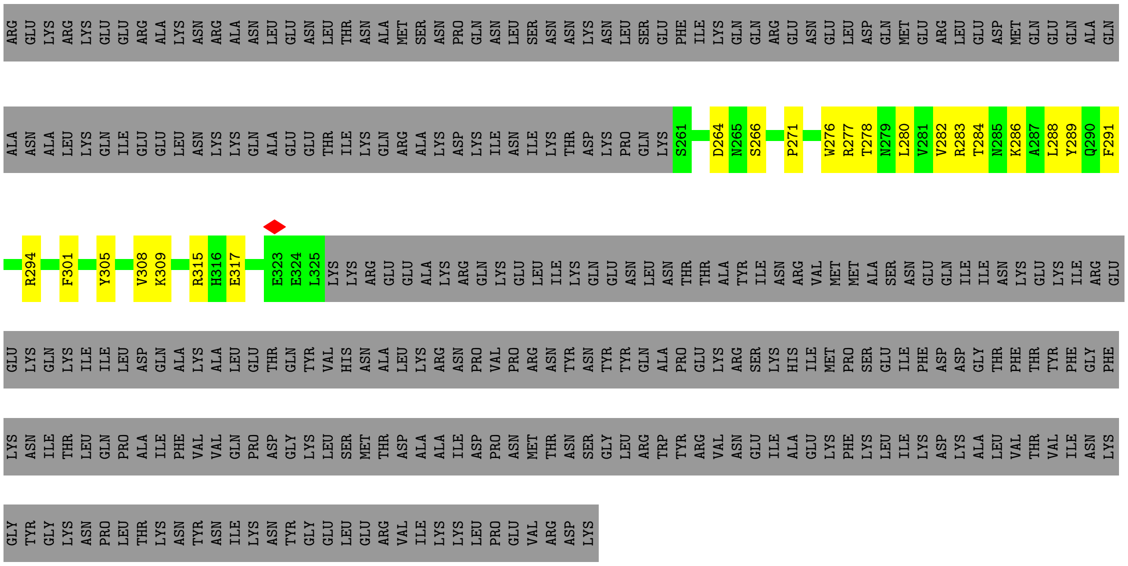
Chain AX:



- Molecule 1: Cag pathogenicity island protein (Cag8)

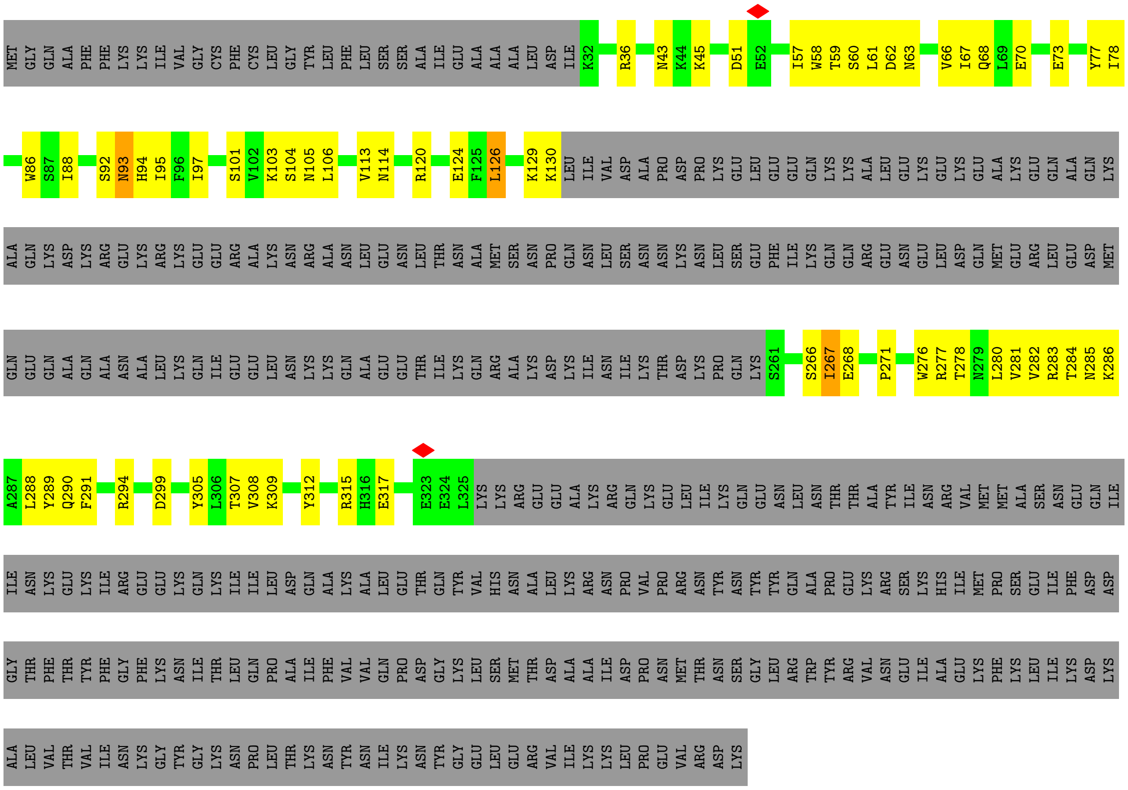
Chain BX:





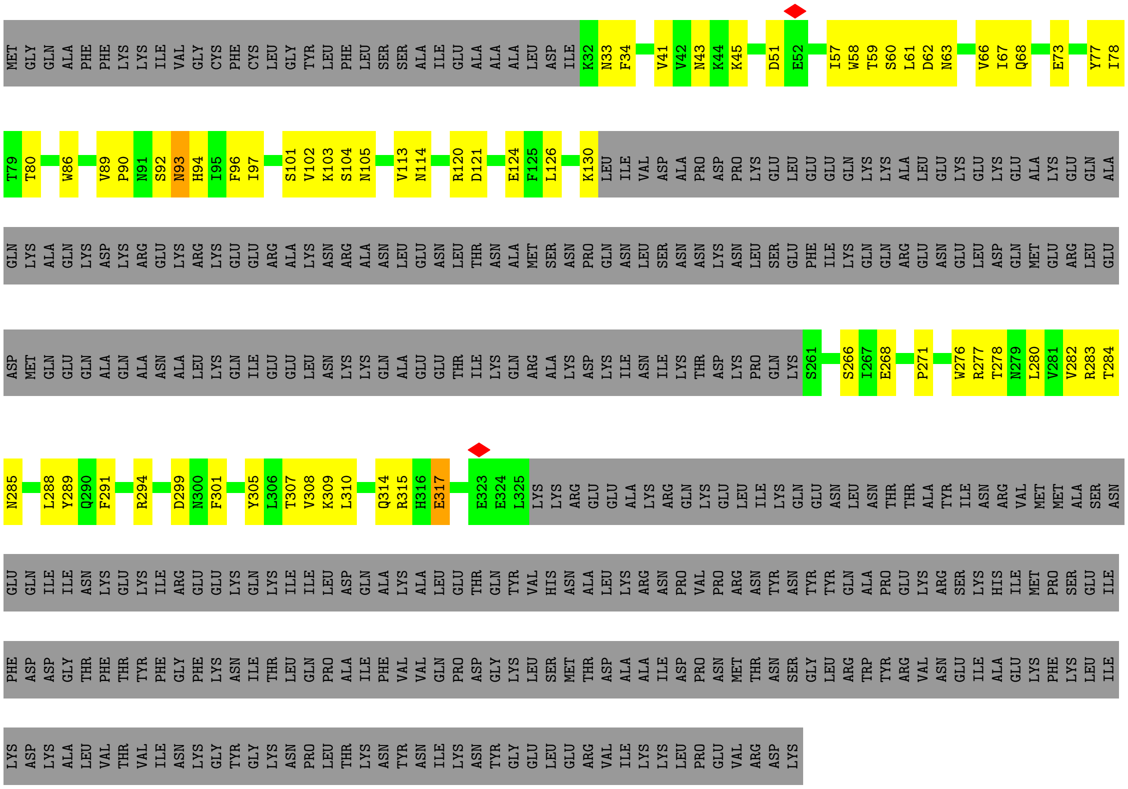
- Molecule 1: Cag pathogenicity island protein (Cag8)

Chain CX:



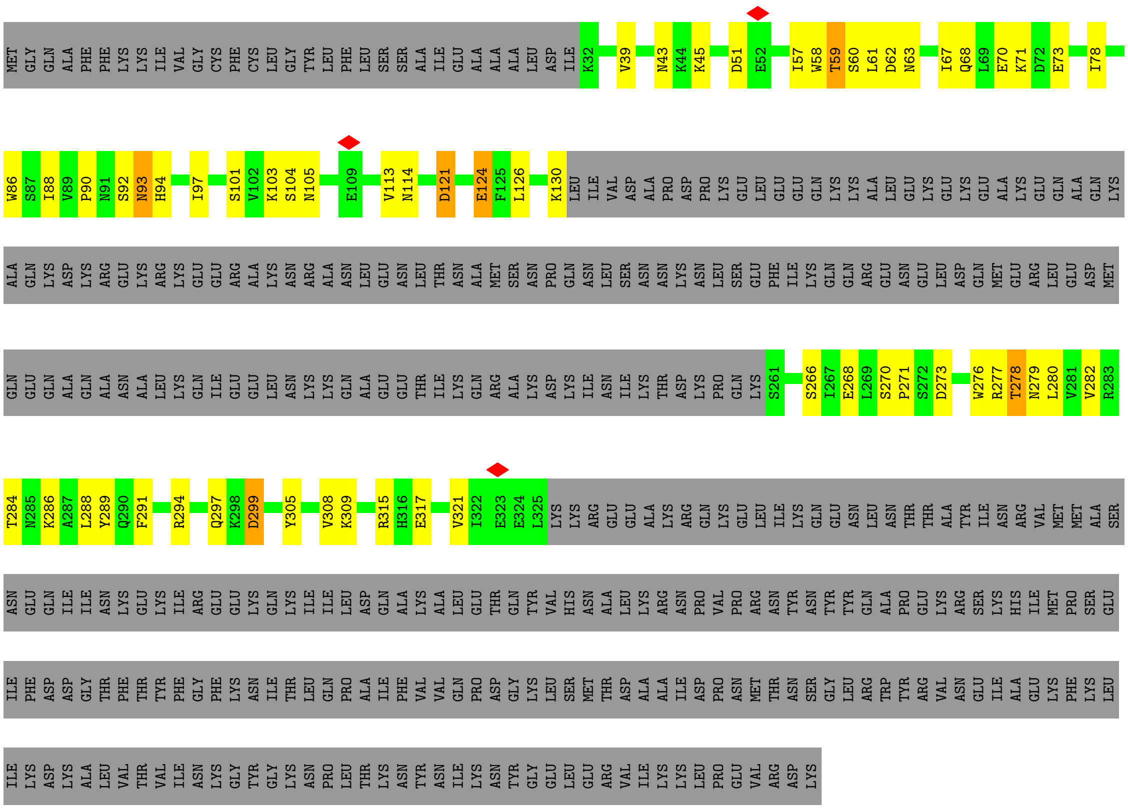
- Molecule 1: Cag pathogenicity island protein (Cag8)

Chain DX:

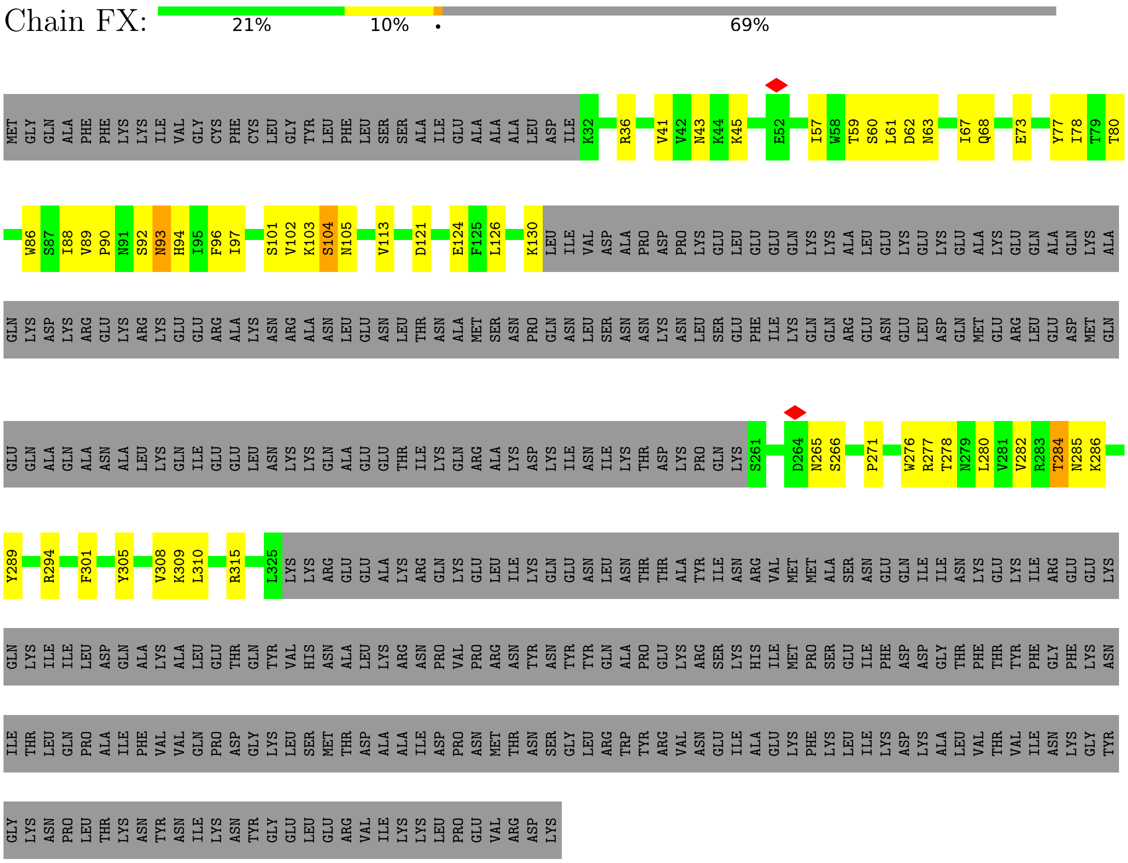


- Molecule 1: Cag pathogenicity island protein (Cag8)

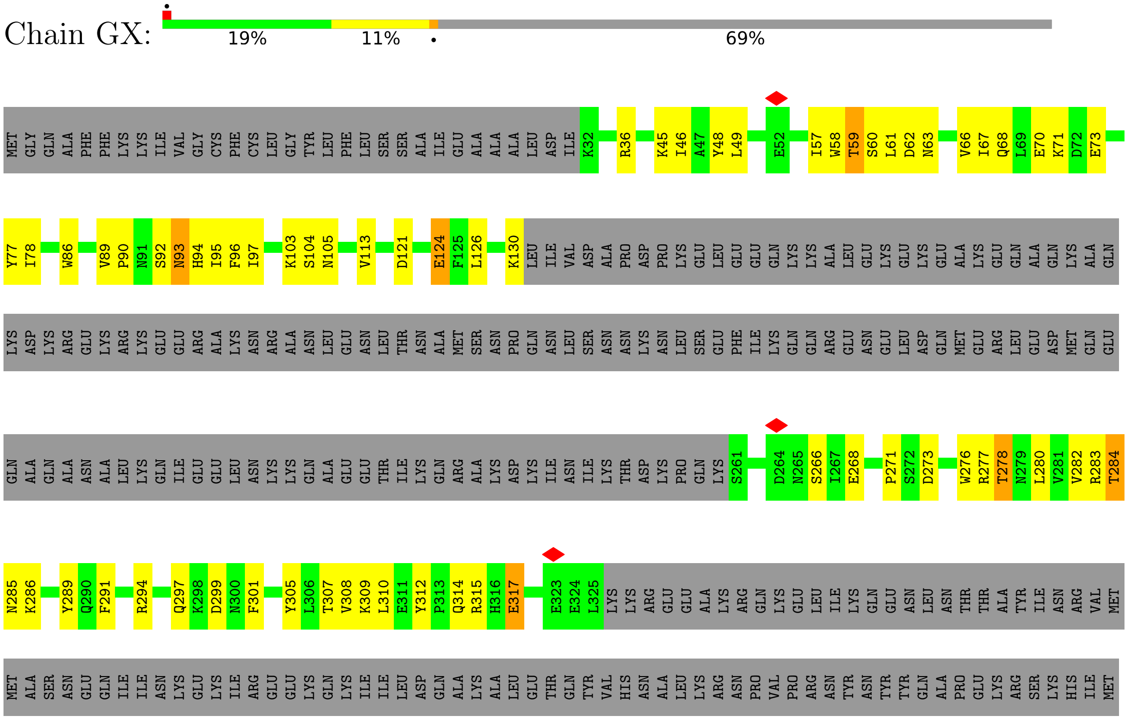
Chain EX:

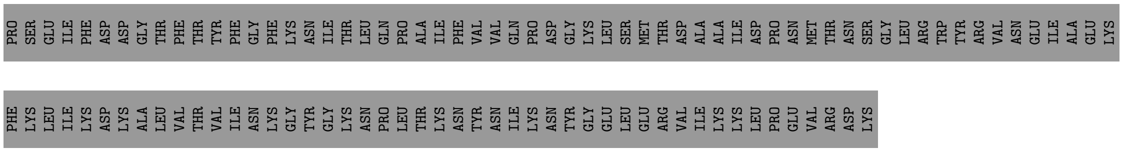


- Molecule 1: Cag pathogenicity island protein (Cag8)

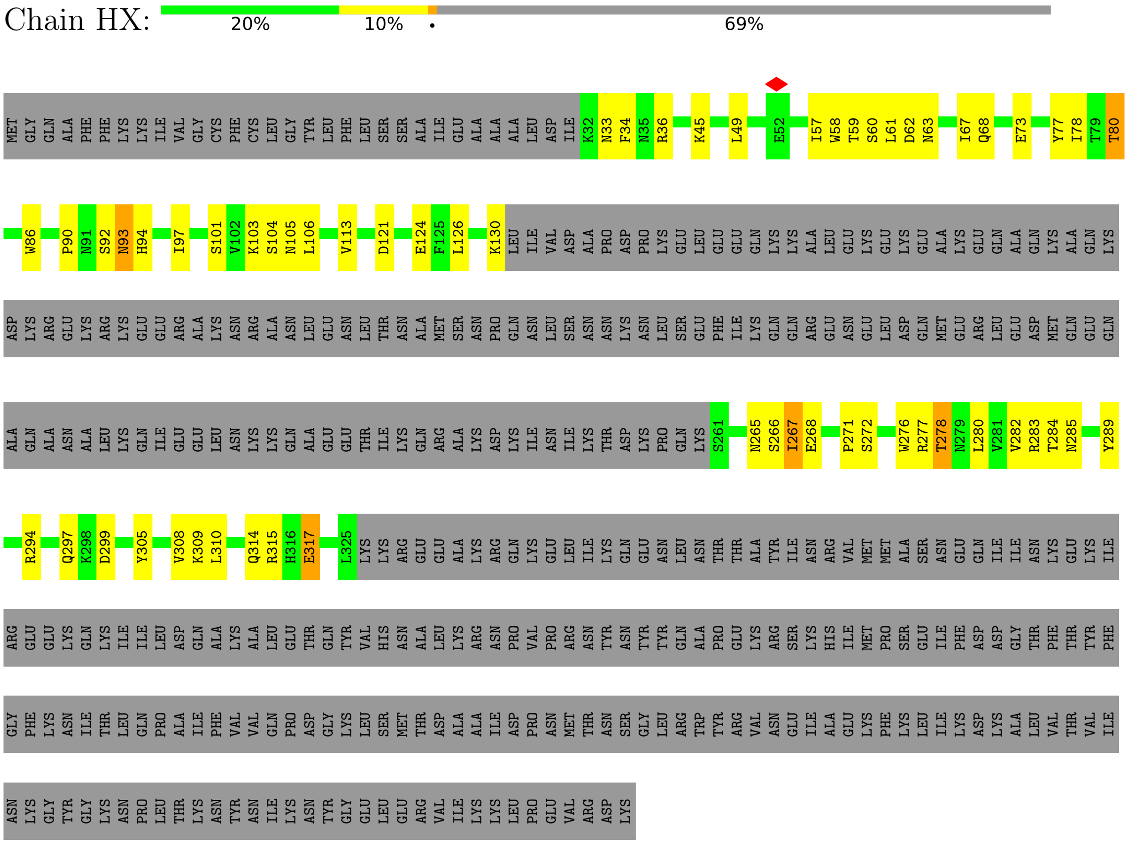


- Molecule 1: Cag pathogenicity island protein (Cag8)

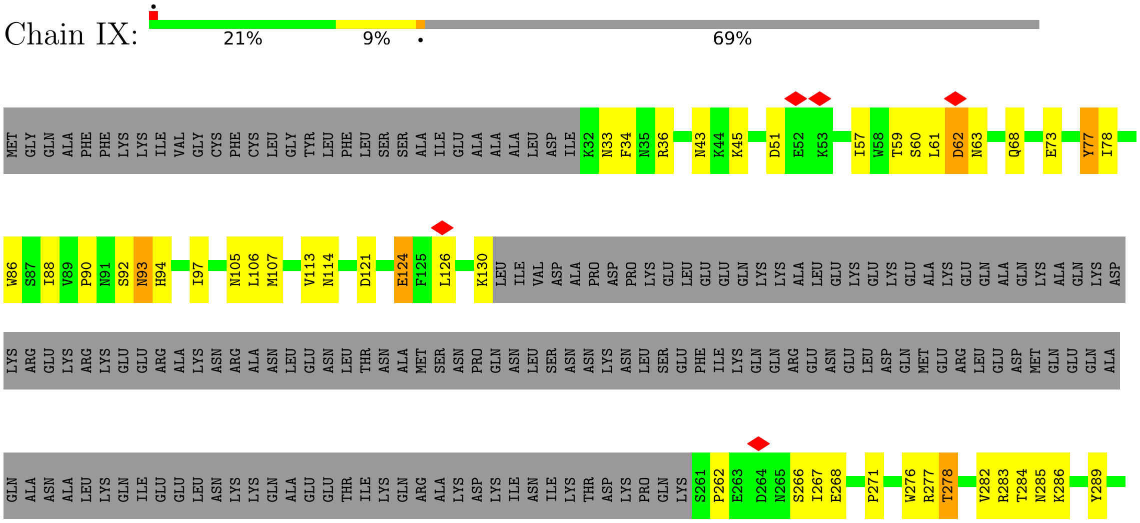


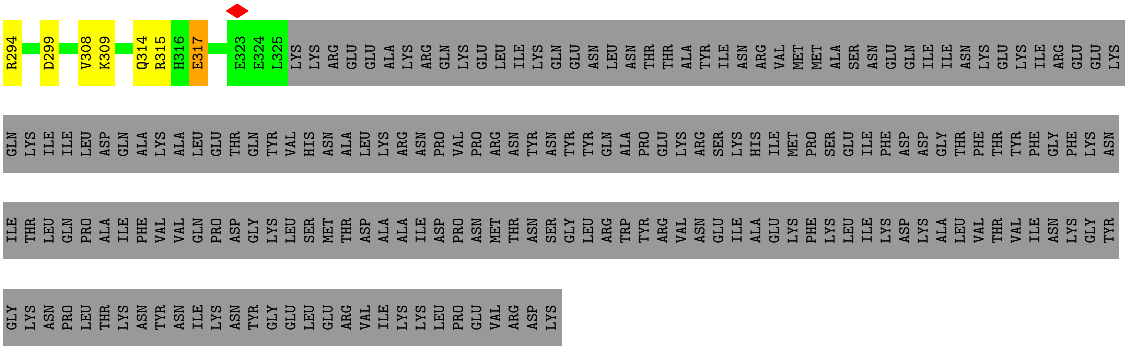


- Molecule 1: Cag pathogenicity island protein (Cag8)



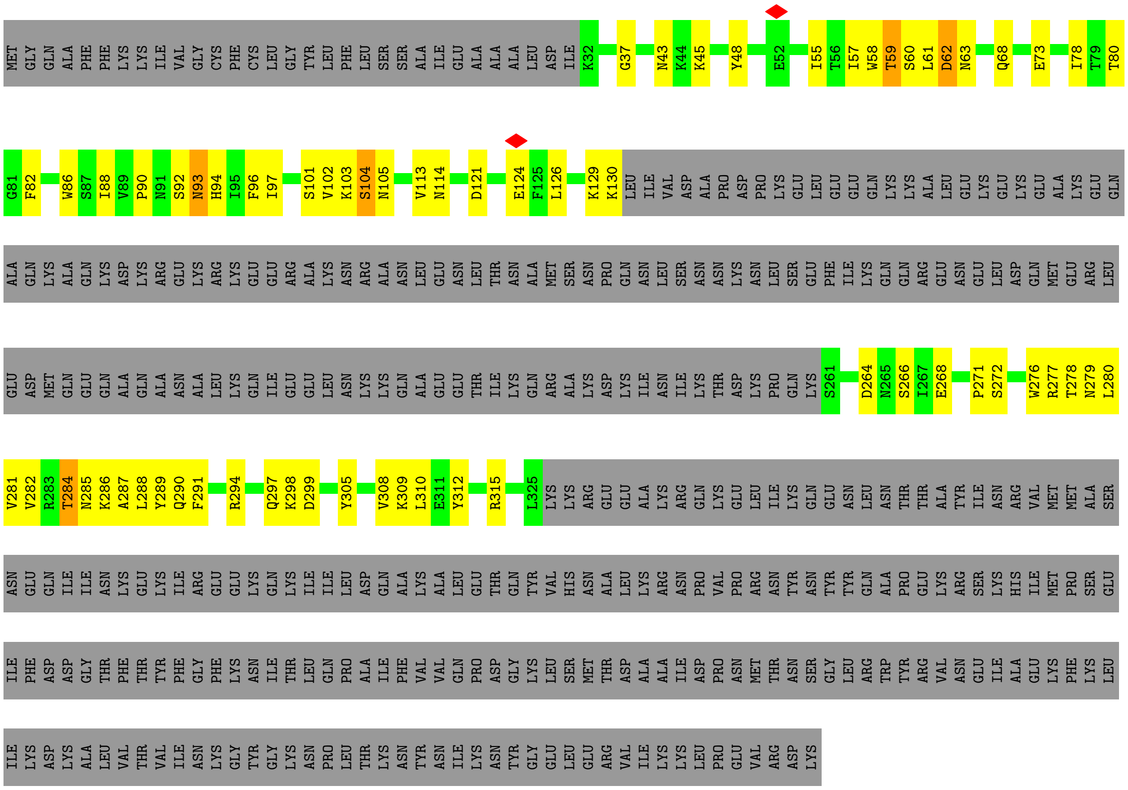
- Molecule 1: Cag pathogenicity island protein (Cag8)





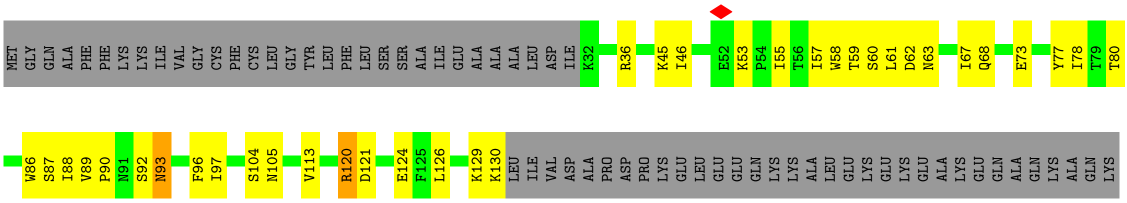
- Molecule 1: Cag pathogenicity island protein (Cag8)

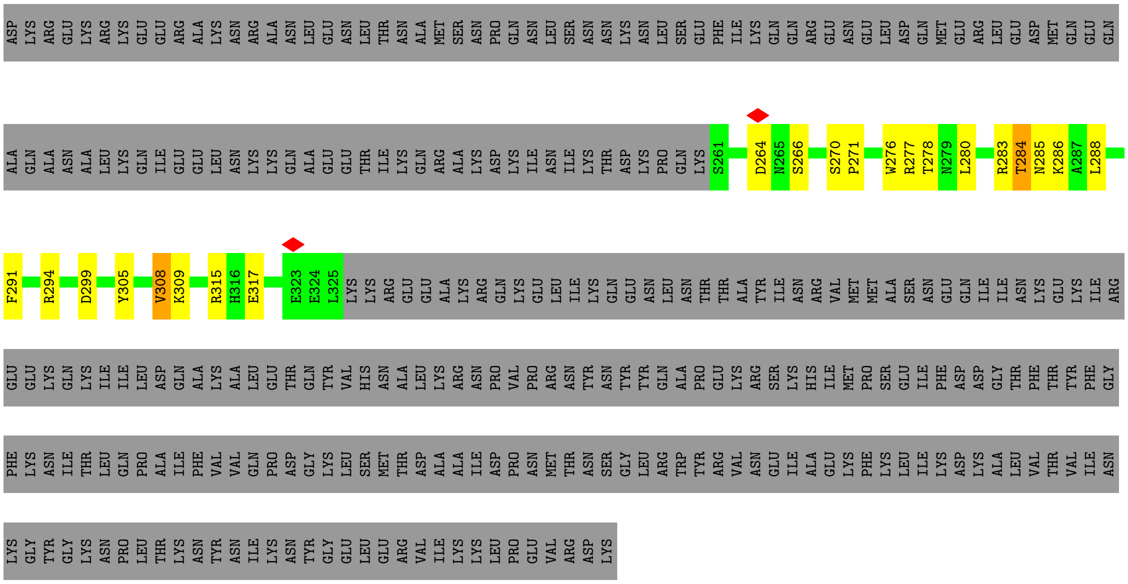
Chain JX:



- Molecule 1: Cag pathogenicity island protein (Cag8)

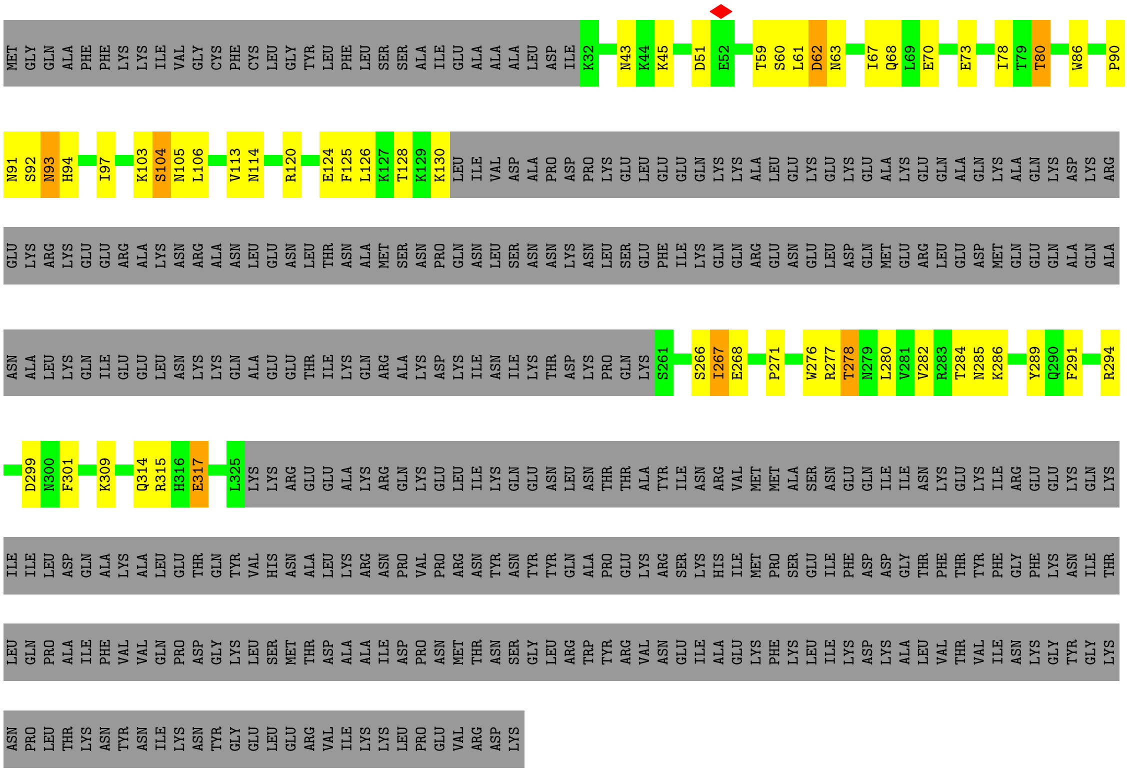
Chain KX:





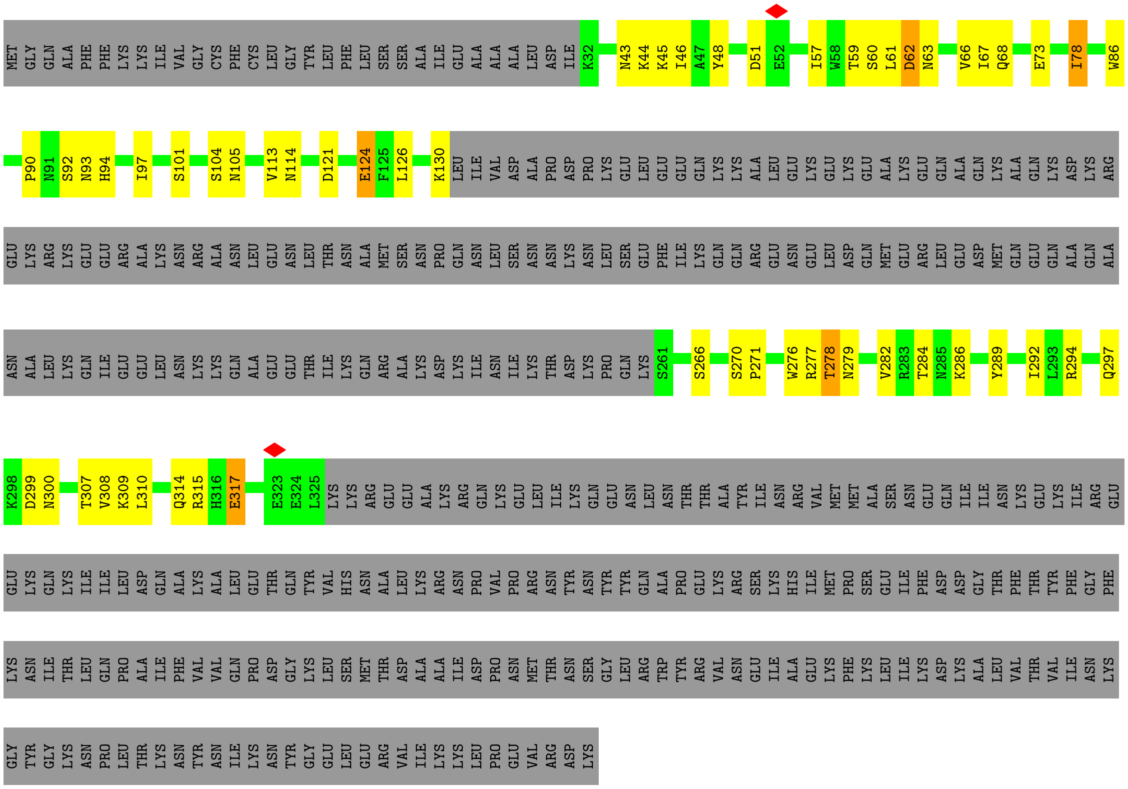
- Molecule 1: Cag pathogenicity island protein (Cag8)

Chain LX:



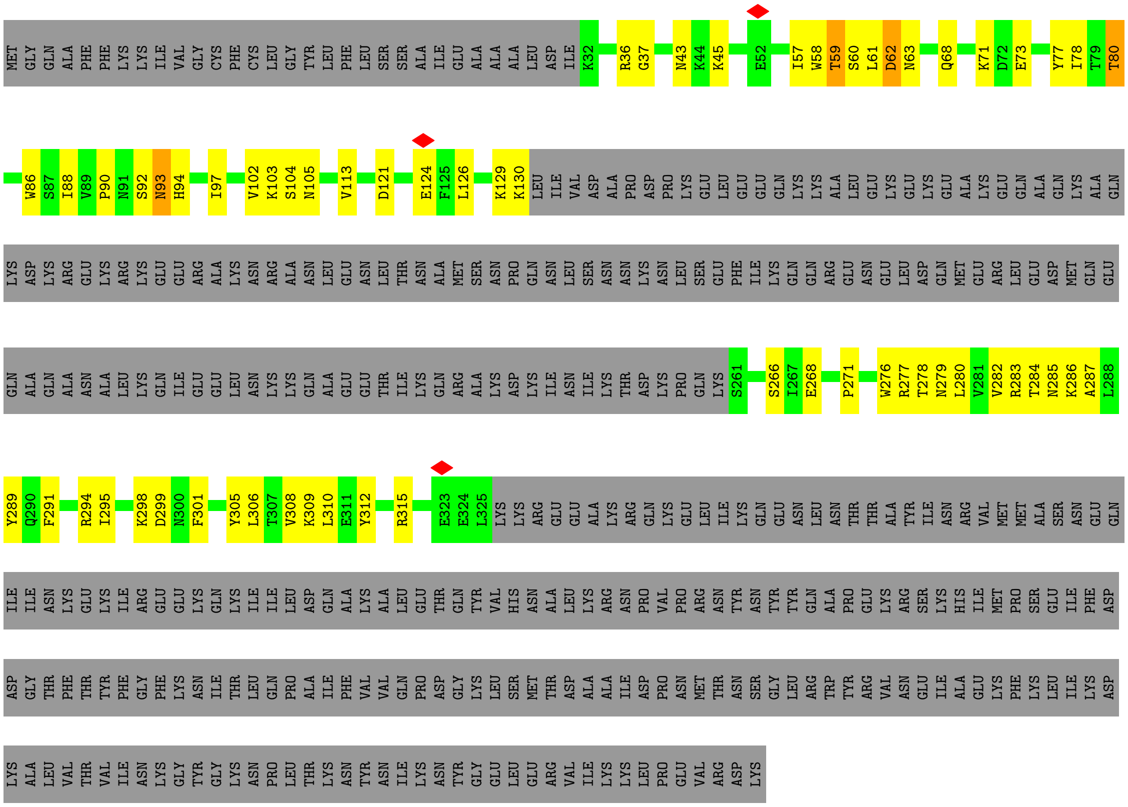
- Molecule 1: Cag pathogenicity island protein (Cag8)

Chain MX:

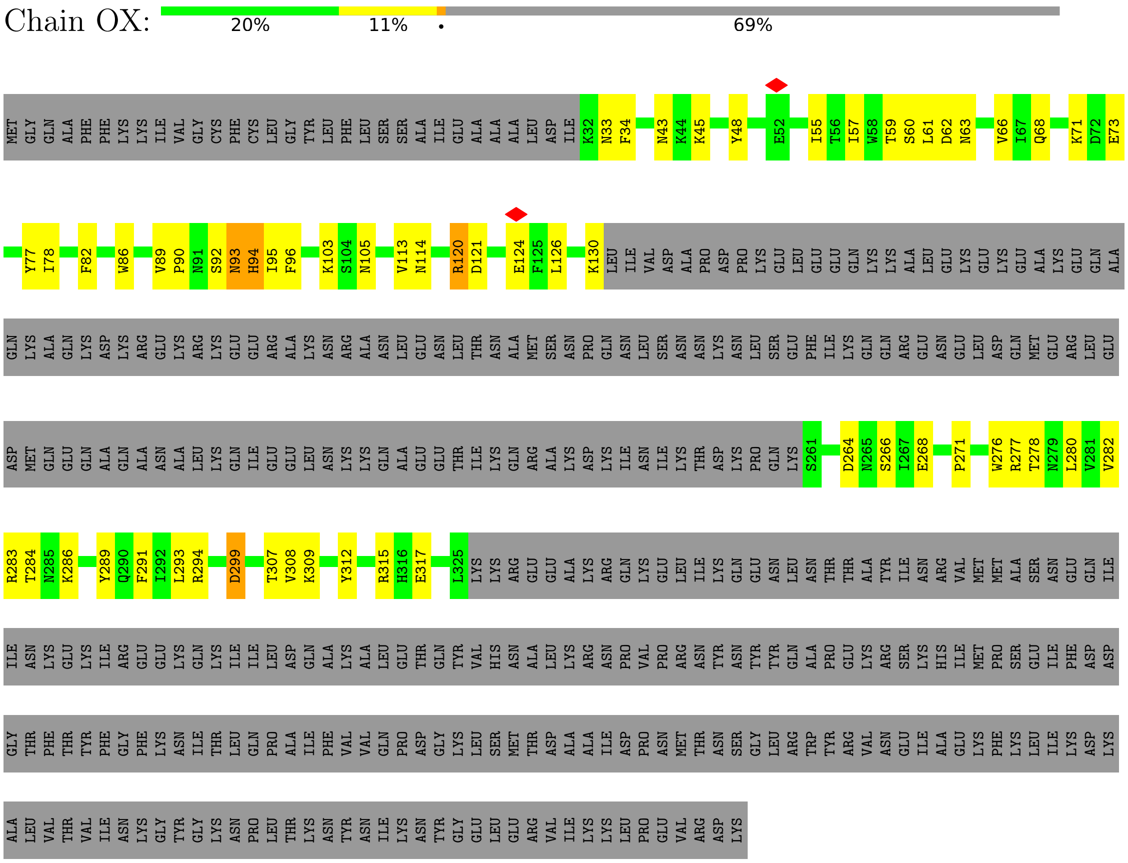


- Molecule 1: Cag pathogenicity island protein (Cag8)

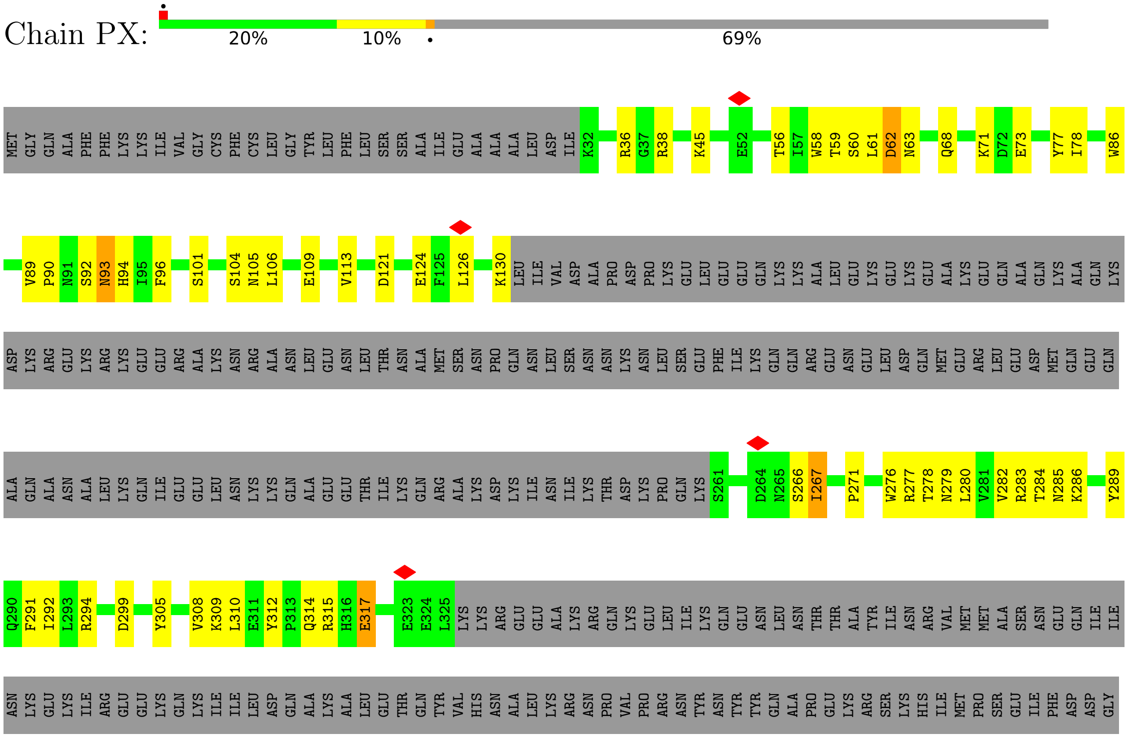
Chain NX:

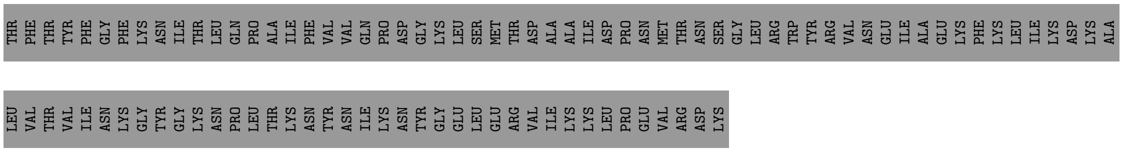


- Molecule 1: Cag pathogenicity island protein (Cag8)

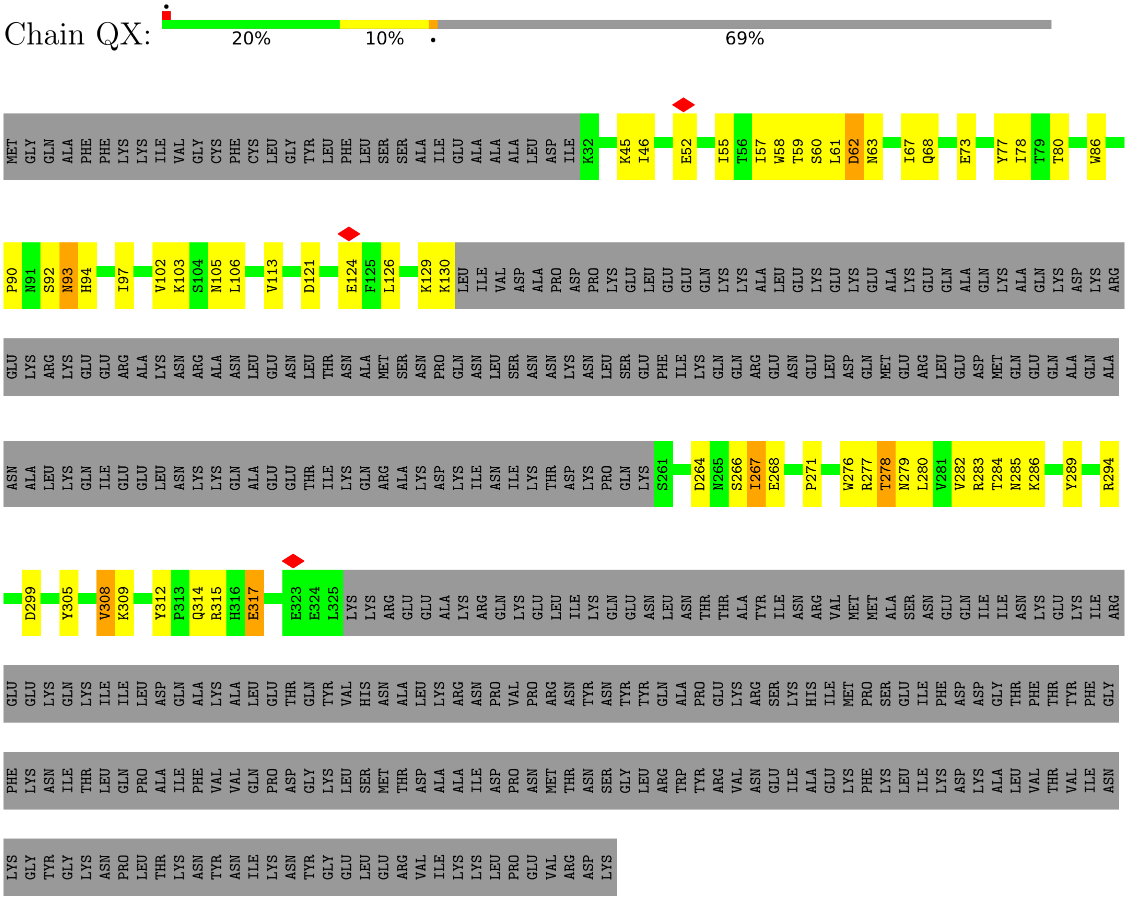


- Molecule 1: Cag pathogenicity island protein (Cag8)

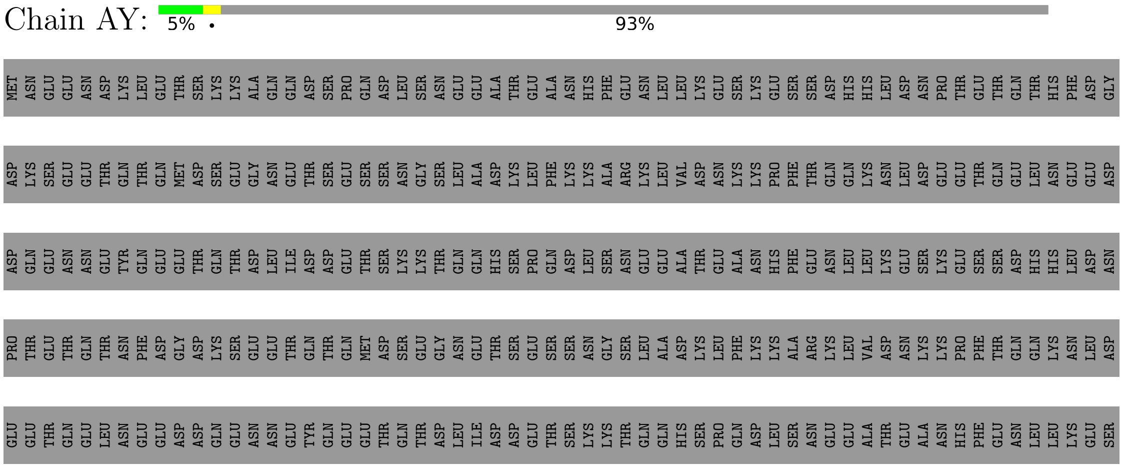


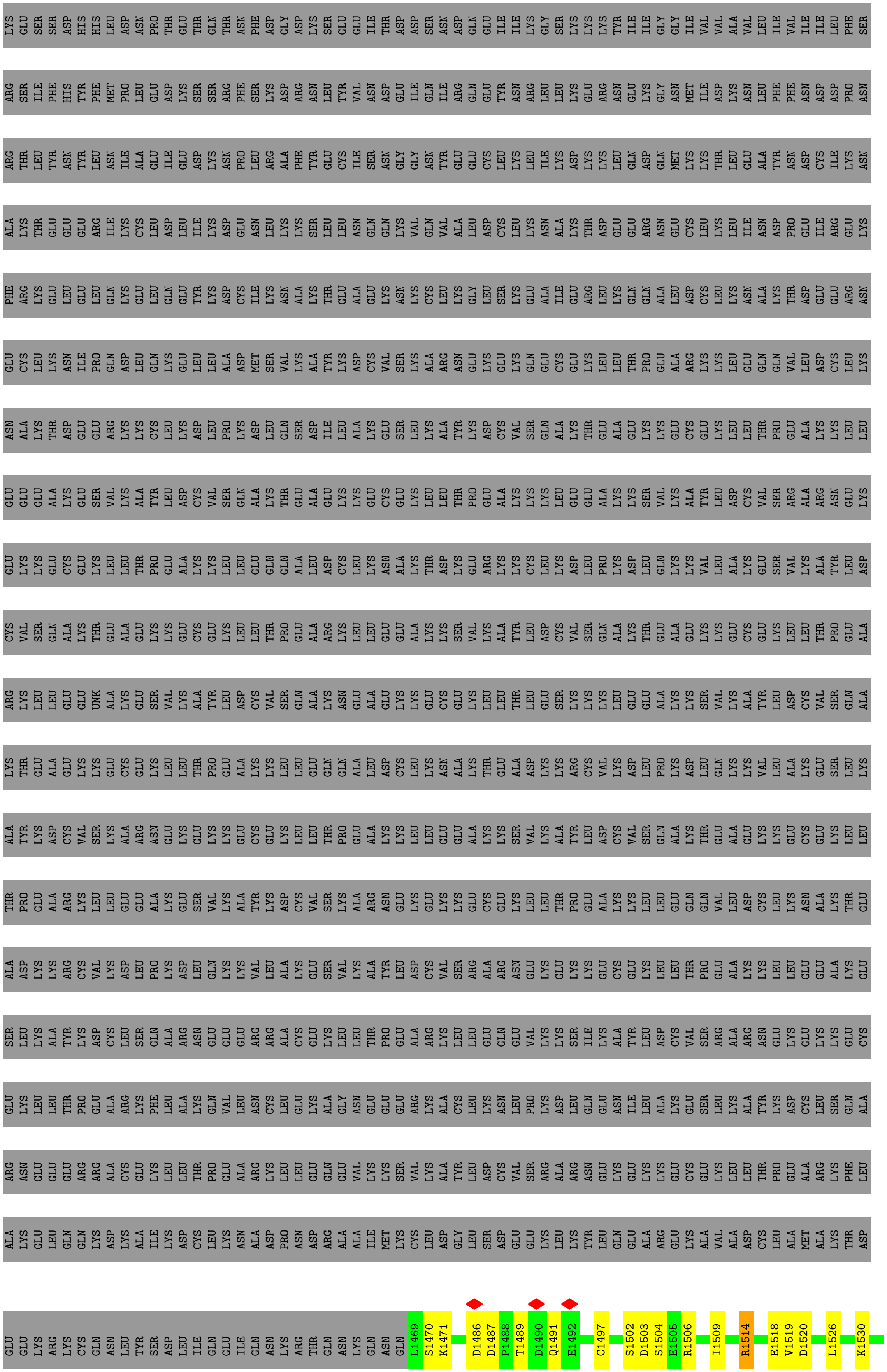


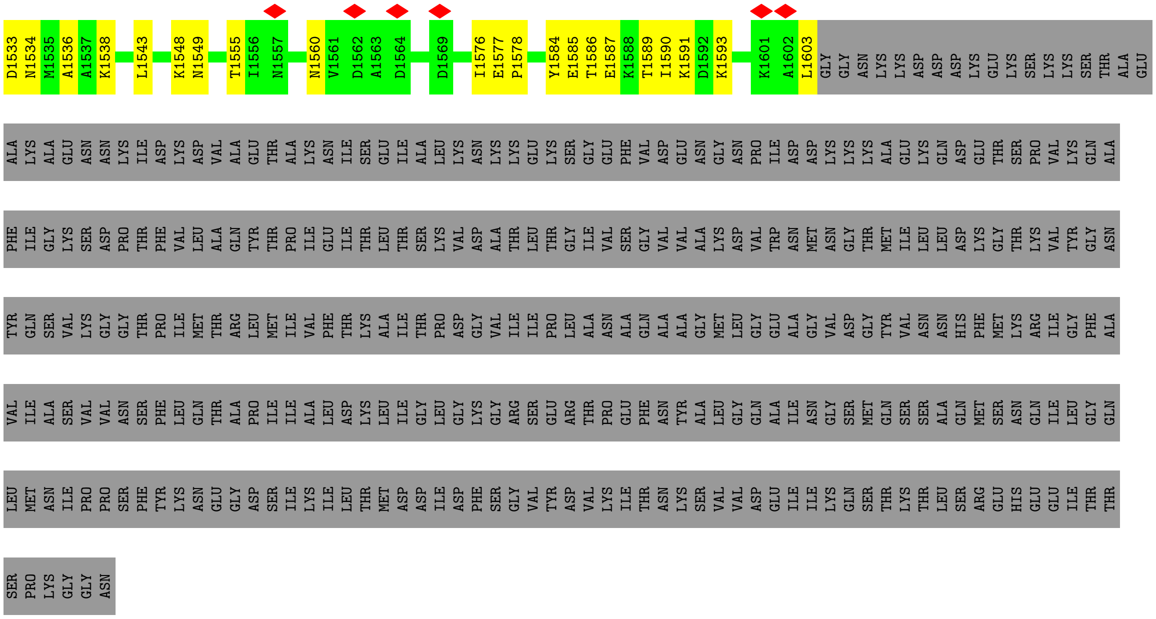
- Molecule 1: Cag pathogenicity island protein (Cag8)



- Molecule 2: Cag pathogenicity island protein (Cag7)

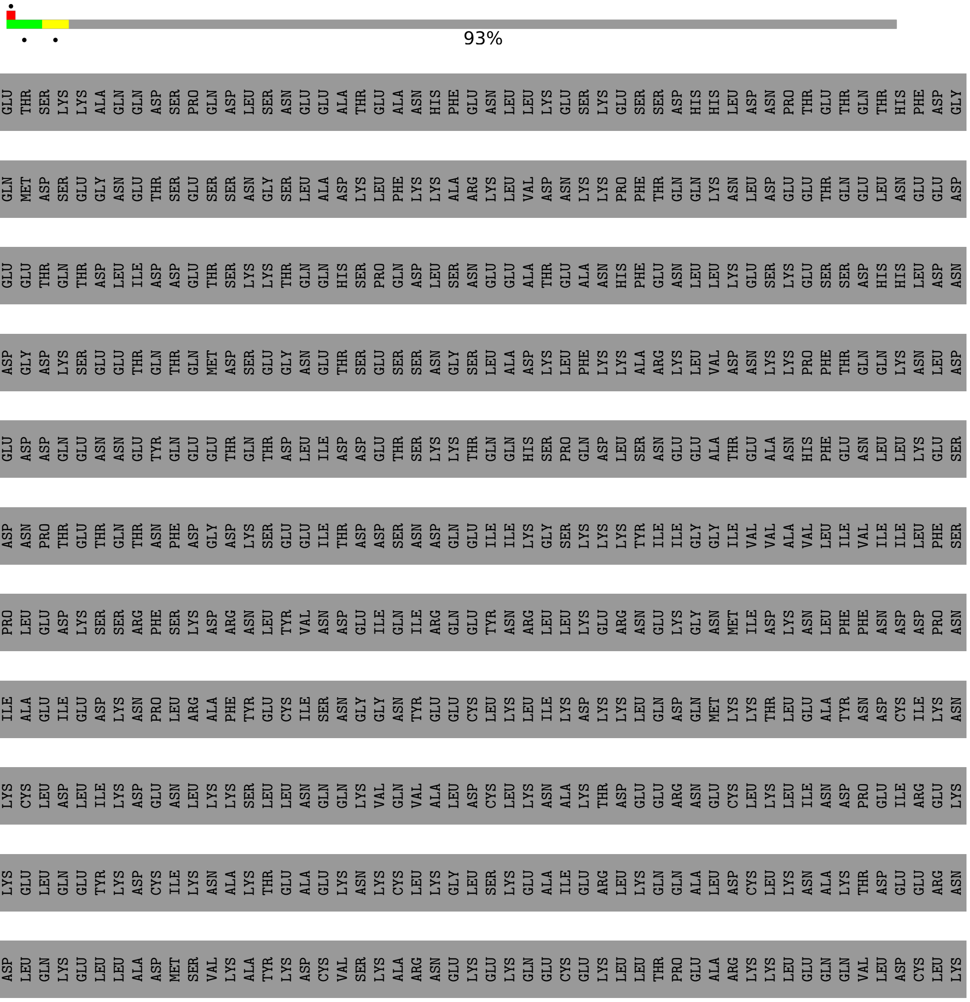


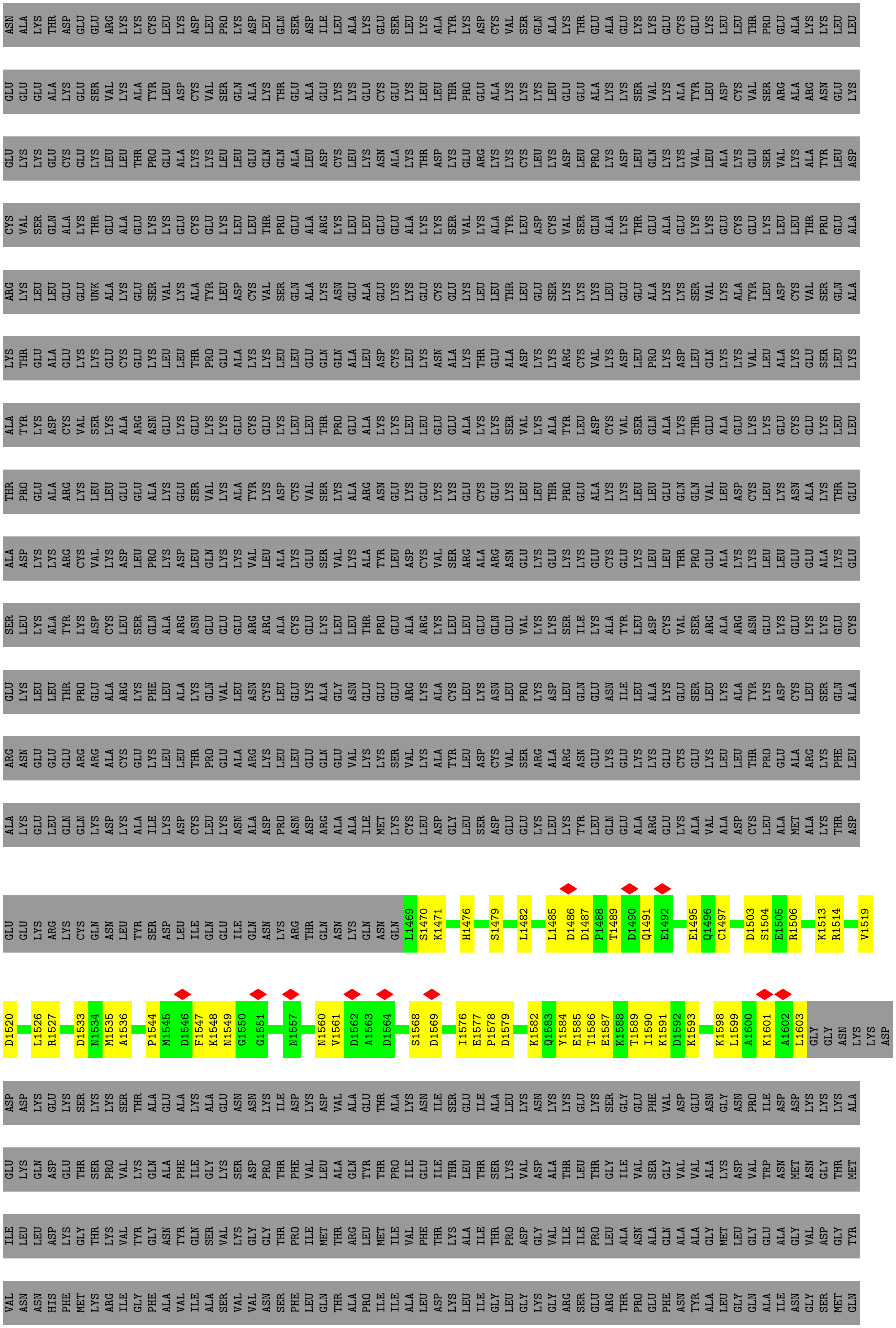

LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER
ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN
ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN
ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS
PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN
GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS
ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS
GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA
ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU
ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP
GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 S1470 K1471 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 C1497 S1502 D1503 S1504 E1505 R1506 I1509 R1514 E1518 V1519 D1520 L1526 K1530



- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain BY:



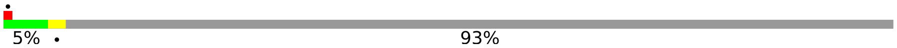

ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS
GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA
ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU
ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP
GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 S1470 K1471 H1476 S1479 L1482 L1485 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 E1495 Q1496 C1497 D1503 S1504 E1505 R1506 K1513 R1514 V1519
D1520 L1526 R1527 D1533 N1534 M1535 A1536 P1544 M1545 D1546 F1547 K1548 N1549 G1550 G1551 N1557 N1560 V1561 D1562 A1563 D1564 S1568 D1569 I1576 E1577 P1578 D1579 K1582 Q1583 Y1584 E1585 T1586 E1587 K1588 T1589 I1590 K1591 D1592 K1593 K1598 L1599 A1600 K1601 A1602 L1603 GLY GLY ASN LYS LYS ASP
ASP ASP LYS GLU LYS SER LYS LYS SER THR ALA GLU ALA LYS ALA GLU ASN ASN LYS ILE ASP LYS ASP VAL ALA GLU THR ALA LYS ASN ILE SER GLU ILE ALA LEU LYS ASN LYS LYS GLU LYS SER GLY GLU PHE VAL ASP GLU ASN GLY ASN PRO ILE ASP ASP LYS LYS LYS ALA
GLU LYS GLN ASP GLU THR SER PRO VAL LYS GLN ALA PHE ILE GLY LYS SER ASP PRO THR PHE VAL LEU ALA GLN TYR THR PRO ILE GLU ILE THR LEU THR SER LYS VAL ASP ALA THR LEU THR GLY ILE VAL SER GLY VAL VAL ALA LYS ASP VAL TRP ASN MET ASN GLY THR MET
ILE LEU LEU ASP LYS GLY THR LYS VAL TYR GLY ASN TYR GLN SER VAL LYS GLY GLY THR PRO ILE MET THR ARG LEU MET ILE VAL PHE THR LYS ALA ILE THR PRO ASP GLY VAL ILE ILE PRO LEU ALA ASN ALA GLN ALA ALA GLY MET LEU GLY GLU ALA GLY VAL ASP GLY TYR
VAL ASN ASN HIS PHE MET LYS ARG ILE GLY PHE ALA VAL ILE ALA SER VAL VAL ASN SER PHE LEU GLN THR ALA PRO ILE ILE ALA LEU ASP LYS LEU ILE GLY LEU GLY LYS GLY ARG SER GLU ARG THR PRO GLU PHE ASN TYR ALA LEU GLY GLN ALA ILE ASN GLY SER MET GLN

SER SER ALA GLN MET SER ASN GLN ILE LEU GLY GLN LEU MET ASN ILE PRO PRO SER PHE TYR LYS ASN GLU GLY ASP SER ILE LYS ILE LEU THR MET ASP ASP ILE ASP PHE SER GLY VAL TYR ASP VAL LYS ILE THR ASN LYS SER VAL VAL ASP GLU ILE ILE LYS GLN SER THR

LYS THR LEU SER ARG GLU HIS GLU GLU ILE THR THR SER PRO LYS GLY GLY ASN

- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain CY:



MET ASN GLU GLU ASN ASP LYS LEU GLU THR SER LYS LYS ALA GLN GLN ASP SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR HIS PHE ASP GLY

ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP GLU GLU THR GLN GLU LEU ASN GLU GLU ASP

ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN

PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP

GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER

LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER

ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN

ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN

ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS

PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN

GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS

ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU

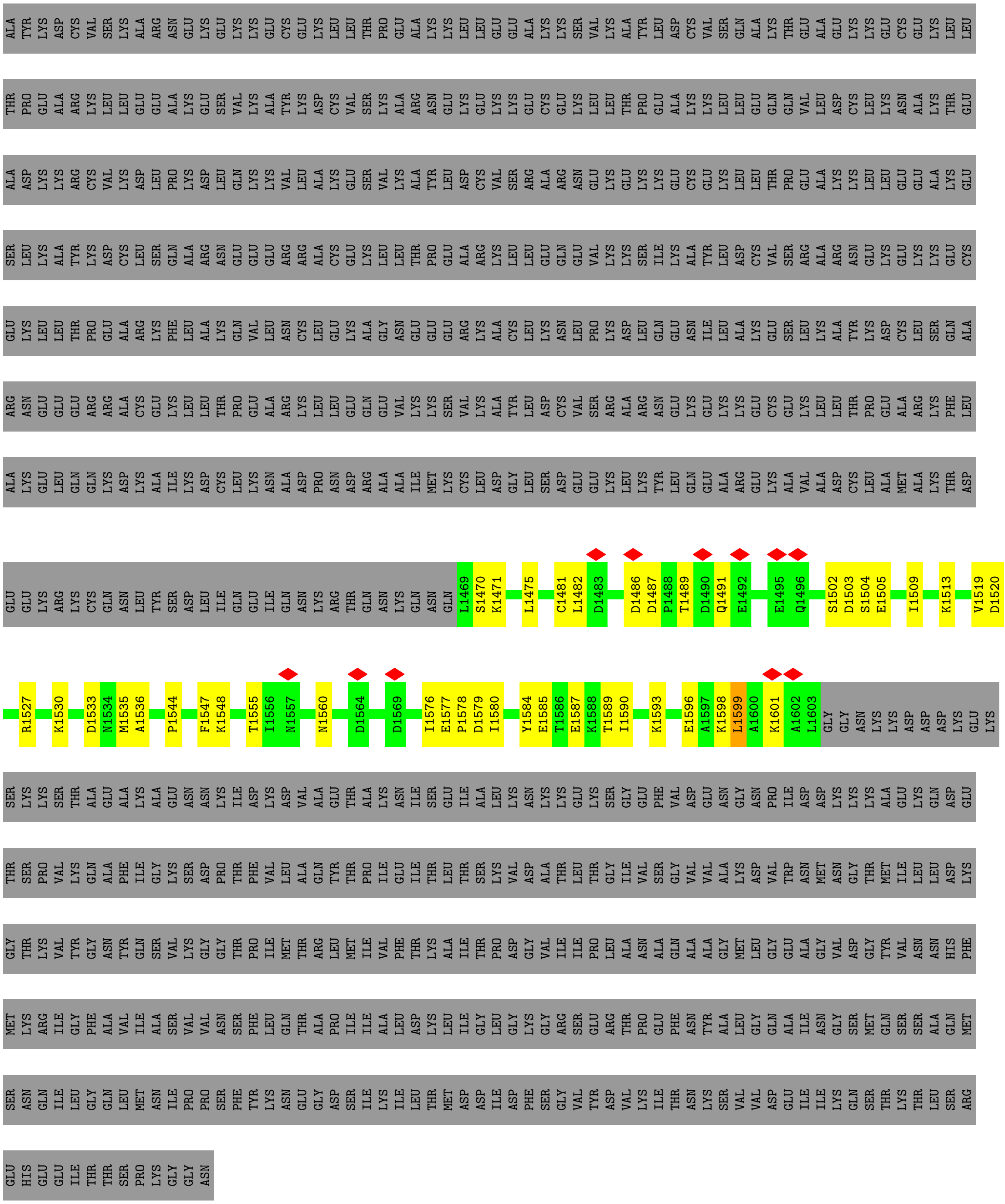
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS

GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP

CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA

ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA

LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS



ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU

THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU

ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU

SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS

GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA

ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU

ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP

GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 S1470 K1471 L1475 C1481 L1482 D1483 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 E1495 Q1496 S1502 D1503 S1504 E1505 I1509 K1513 V1519 D1520

R1527 K1530 D1533 N1534 M1535 A1536 P1544 F1547 K1548 T1555 I1556 N1557 N1560 D1564 D1569 I1576 E1577 P1578 D1579 I1580 Y1584 E1585 T1586 E1587 K1588 T1589 I1590 K1593 E1596 A1597 K1598 L1599 A1600 K1601 A1602 L1603 GLY GLY ASN LYS LYS ASP ASP ASP LYS GLU LYS

SER LYS LYS SER THR ALA GLU ALA LYS ALA GLU ASN ASN LYS ILE ASP LYS ASP VAL ALA GLU THR ALA LYS ASN ILE SER GLU ILE ALA LEU LYS ASN LYS LYS GLU LYS SER GLY GLU PHE VAL ASP GLU ASN GLY ASN PRO ILE ASP ASP LYS LYS LYS ALA GLU LYS GLN ASP GLU

THR SER PRO VAL LYS GLN ALA PHE ILE GLY LYS SER ASP PRO THR PHE VAL LEU ALA GLN TYR THR PRO ILE GLU ILE THR LEU THR SER LYS VAL ASP ALA THR LEU THR GLY ILE VAL SER GLY VAL VAL ALA LYS ASP VAL TRP ASN MET ASN GLY THR MET ILE LEU LEU ASP LYS

GLY THR LYS VAL TYR GLY ASN TYR GLN SER VAL LYS GLY GLY THR PRO ILE MET THR ARG LEU MET ILE VAL PHE THR LYS ALA ILE THR PRO ASP GLY VAL ILE ILE PRO LEU ALA ASN ALA GLN ALA ALA GLY MET LEU GLY GLU ALA GLY VAL ASP GLY TYR VAL ASN ASN HIS PHE

MET LYS ARG ILE GLY PHE ALA VAL ILE ALA SER VAL VAL ASN SER PHE LEU GLN THR ALA PRO ILE ILE ALA LEU ASP LYS LEU ILE GLY LEU GLY LYS GLY ARG SER GLU ARG THR PRO GLU PHE ASN TYR ALA LEU GLY GLN ALA ILE ASN GLY SER MET GLN SER SER ALA GLN MET

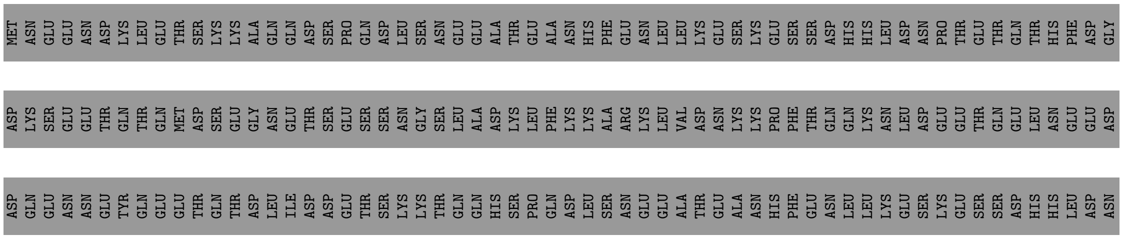
SER ASN GLN ILE LEU GLY GLN LEU MET ASN ILE PRO PRO SER PHE TYR LYS ASN GLU GLY ASP SER ILE LYS ILE LEU THR MET ASP ASP ILE ASP PHE SER GLY VAL TYR ASP VAL LYS ILE THR ASN LYS SER VAL VAL ASP GLU ILE ILE LYS GLN SER THR LYS THR LEU SER ARG

GLU HIS GLU GLU ILE THR THR SER PRO LYS GLY GLY ASN

- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain DY:

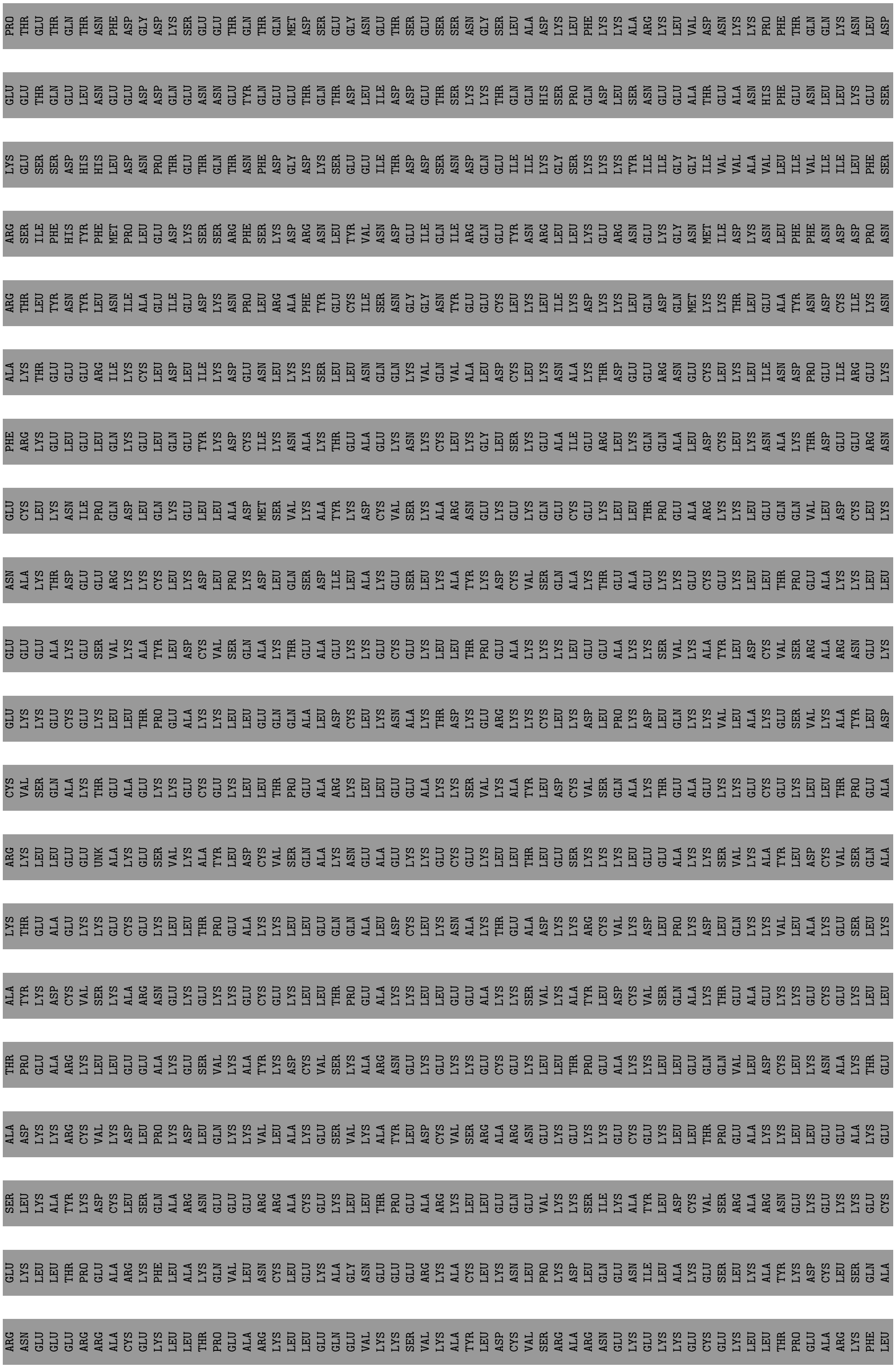
5% • 93%

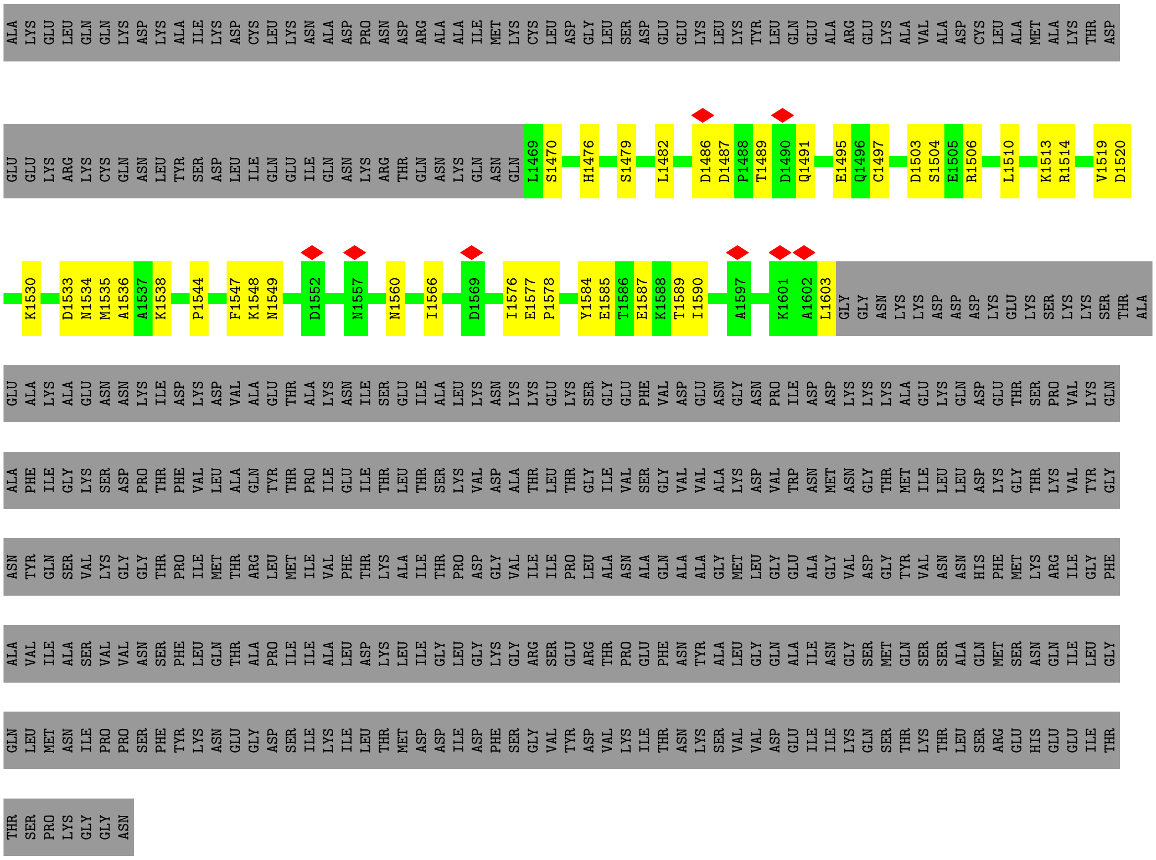


MET ASN GLU GLU ASN ASP LYS LEU GLU THR SER LYS LYS ALA GLN GLN ASP SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR HIS PHE ASP GLY

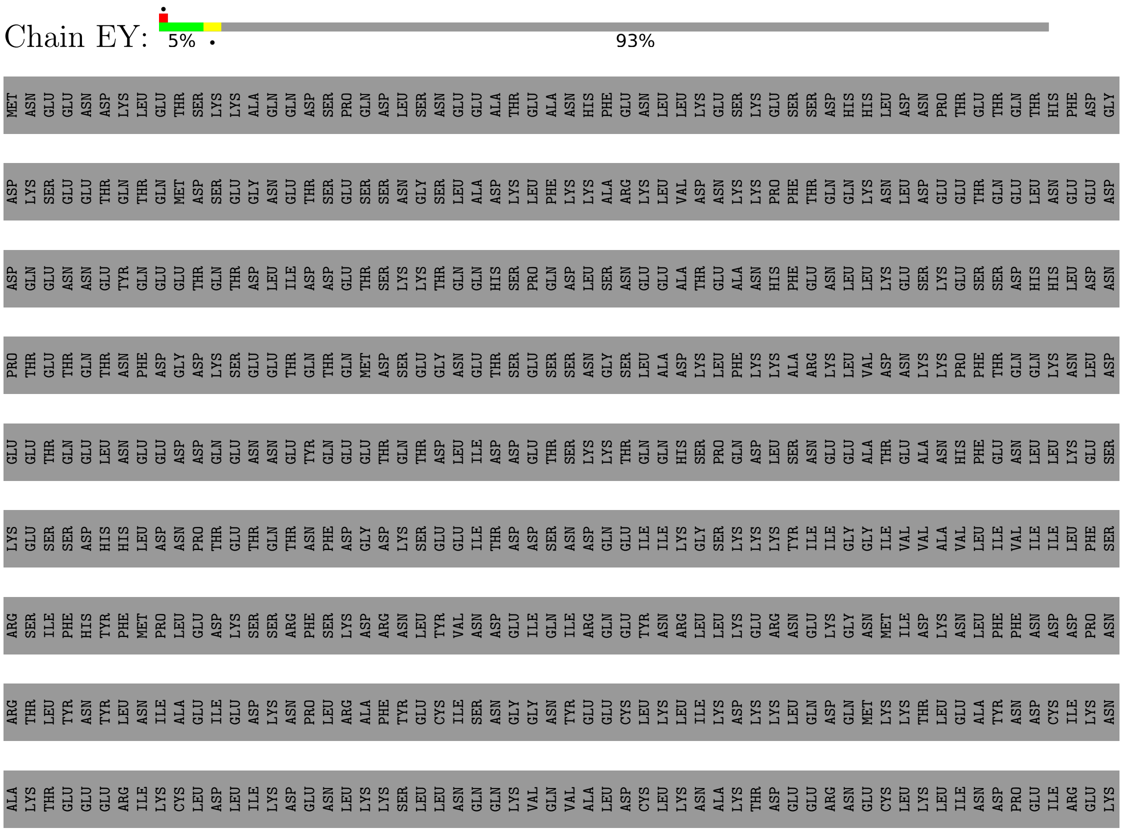
ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP GLU GLU THR GLN GLU LEU ASN GLU GLU ASP

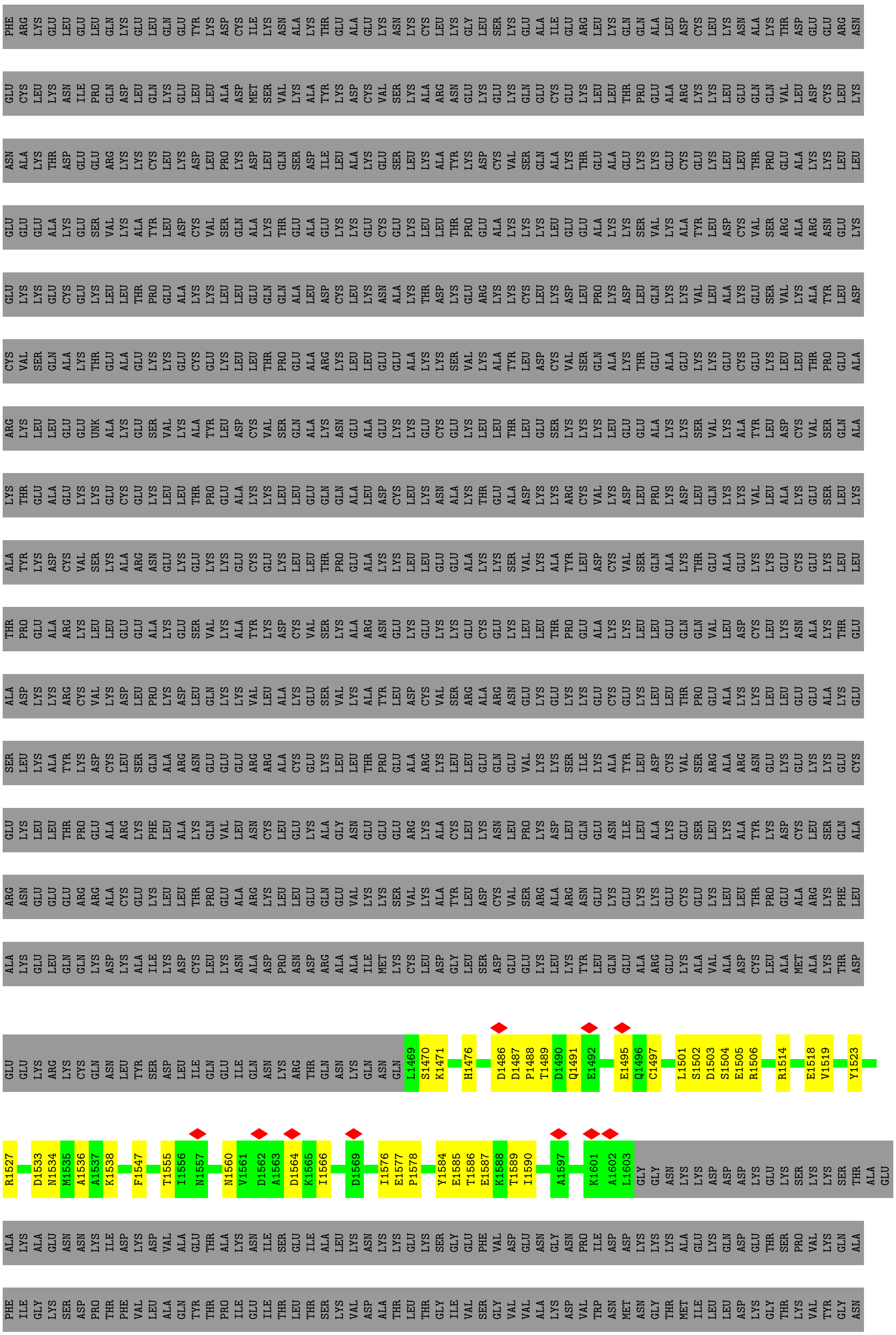
ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN


PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP
GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER
LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER
ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN
ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN
ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS
PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN
GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS
ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS
GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA
ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU



- Molecule 2: Cag pathogenicity island protein (Cag7)




PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN
GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS
ASN ALA LYS THR ASP GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS
GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA
ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU
ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP
GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 S1470 K1471 H1476 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 E1495 Q1496 C1497 L1501 S1502 D1503 S1504 E1505 R1506 R1514 E1518 V1519 Y1523
R1527 D1533 N1534 M1535 A1536 A1537 K1538 F1547 T1555 I1556 N1557 N1560 V1561 D1562 A1563 D1564 K1565 I1566 D1569 I1576 E1577 P1578 Y1584 E1585 T1586 E1587 K1588 T1589 I1590 A1597 K1601 A1602 L1603 GLY GLY ASN LYS LYS ASP ASP ASP LYS GLU LYS SER LYS SER THR ALA GLU
ALA LYS ALA GLU ASN ASN LYS ILE ASP LYS ASP VAL ALA GLU THR ALA LYS ASN ILE SER GLU ILE ALA LEU LYS ASN LYS GLU LYS SER GLY GLU PHE VAL ASP GLU ASN GLY ASN PRO ILE ASP ASP LYS LYS ALA GLU LYS GLN ASP GLU THR SER PRO VAL LYS GLN ALA
PHE ILE GLY LYS SER ASP PRO THR PHE VAL LEU ALA GLN TYR THR PRO ILE GLU ILE THR LEU THR SER LYS VAL ASP ALA THR LEU THR GLY ILE VAL SER GLY VAL VAL ALA LYS ASP VAL TRP ASN MET ASN GLY THR MET ILE LEU LEU ASP LYS GLY THR LYS VAL TYR GLY ASN

TYR GLN SER VAL LYS GLY GLY THR PRO ILE MET THR ARG LEU MET ILE VAL PHE THR LYS ALA ILE THR PRO ASP GLY VAL ILE ILE PRO LEU ALA ASN ALA GLN ALA ALA GLY MET LEU GLY GLU ALA GLY VAL ASP GLY TYR VAL ASN ASN HIS PHE MET LYS ARG ILE GLY PHE ALA

VAL ILE ALA SER VAL VAL ASN SER PHE LEU GLN THR ALA PRO ILE ILE ALA LEU ASP LYS LEU ILE GLY LEU GLY LYS GLY ARG SER GLU ARG THR PRO GLU PHE ASN TYR ALA LEU GLY GLN ALA ILE ASN GLY SER MET GLN SER SER ALA GLN MET SER ASN GLN ILE LEU GLY GLN

LEU MET ASN ILE PRO PRO SER PHE TYR LYS ASN GLU GLY ASP SER ILE LYS ILE LEU THR MET ASP ASP ILE ASP PHE SER GLY VAL TYR ASP VAL LYS ILE THR ASN LYS SER VAL VAL ASP GLU ILE ILE LYS GLN SER THR LYS THR LEU SER ARG GLU HIS GLU GLU ILE THR THR

SER PRO LYS GLY GLY ASN

- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain FY:

MET ASN GLU GLU ASN ASP LYS LEU GLU THR SER LYS LYS ALA GLN GLN ASP SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR HIS PHE ASP GLY

ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP GLU GLU THR GLN GLU LEU ASN GLU GLU ASP

ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN

PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP

GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER

LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER

ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN

ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN

ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS

PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN

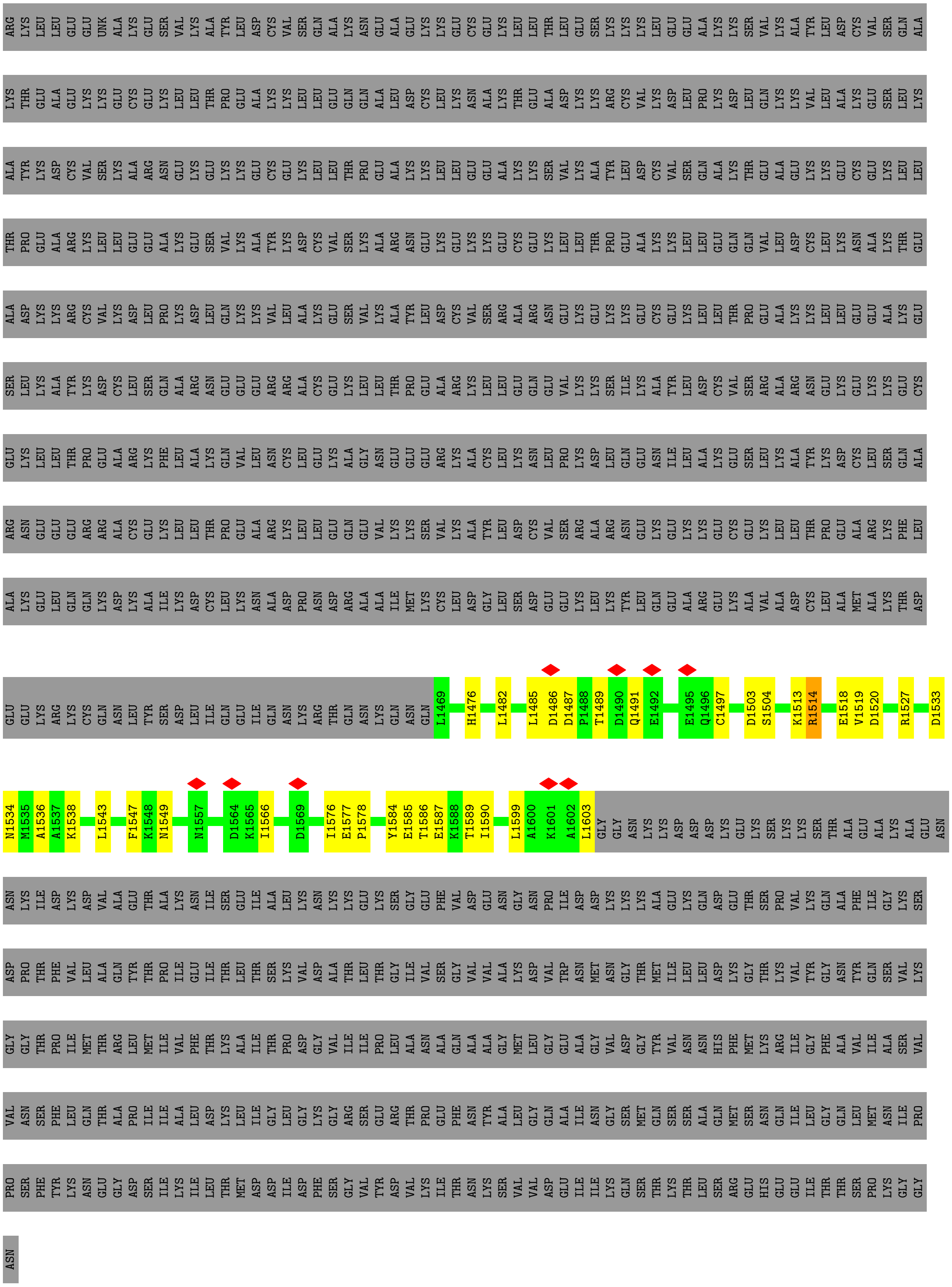
GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS

ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU

GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS

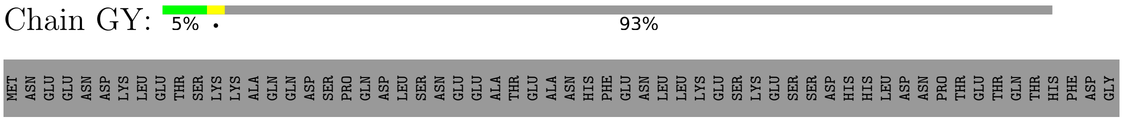
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP

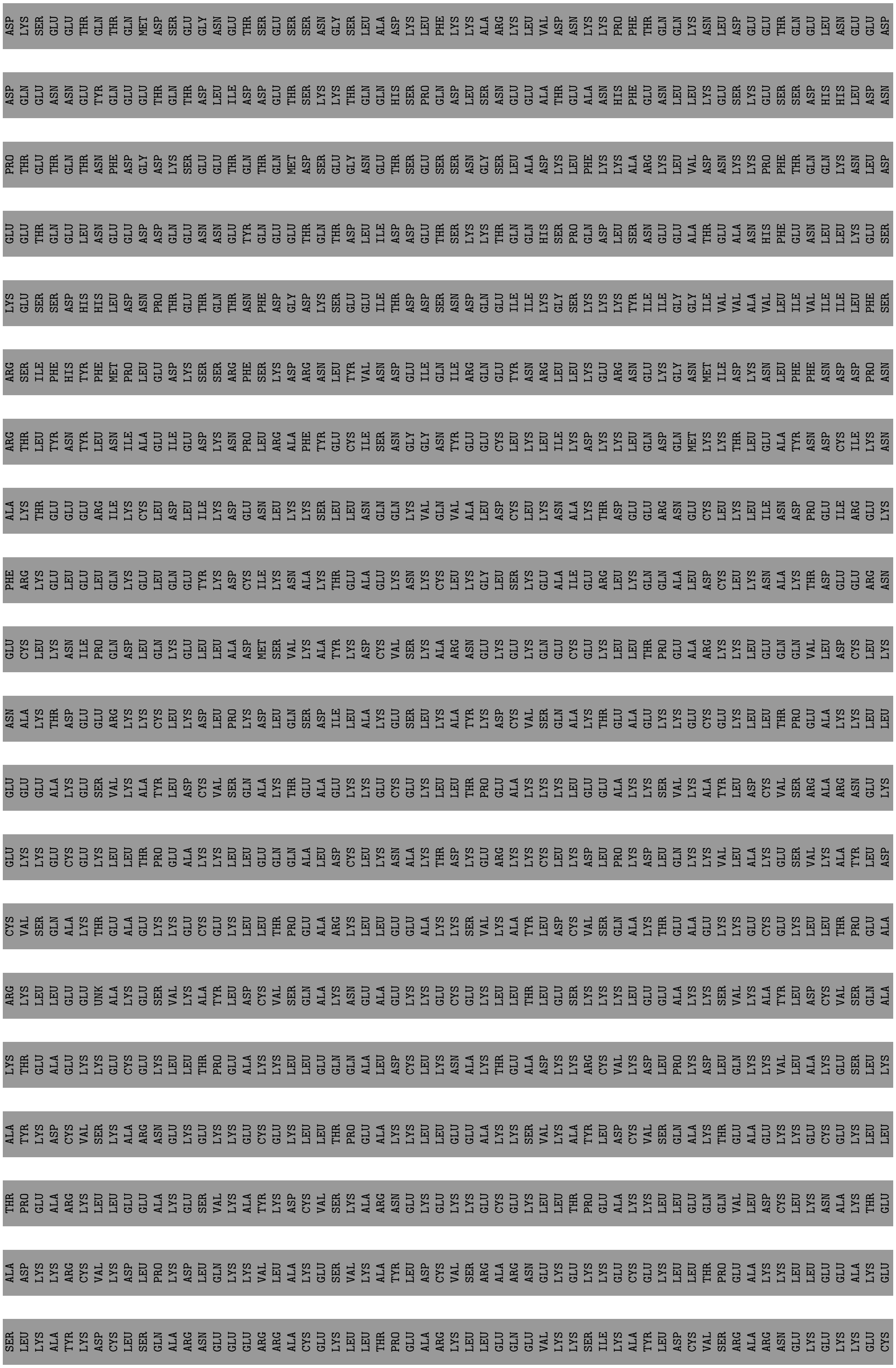
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA

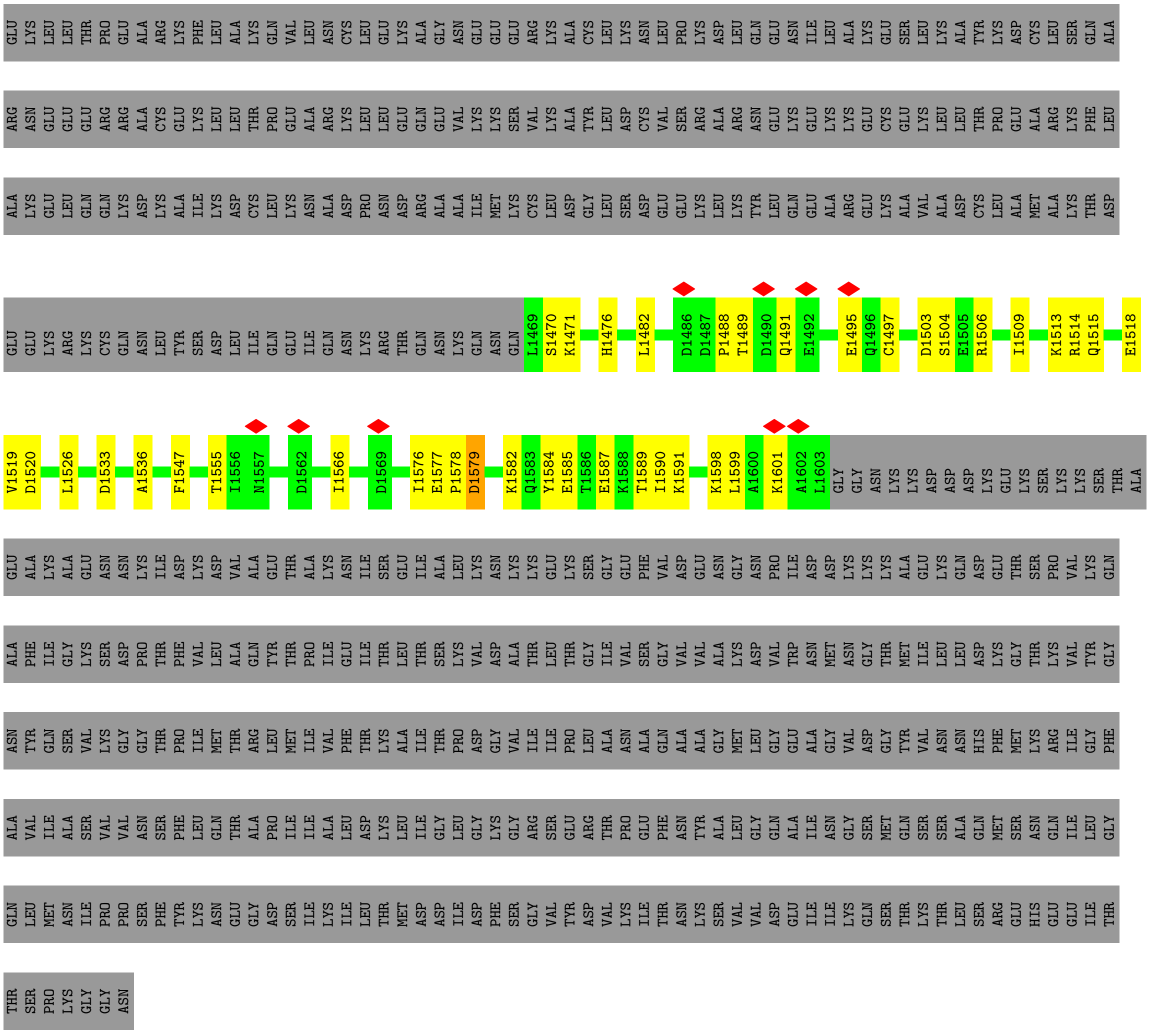


- Molecule 2: Cag pathogenicity island protein (Cag7)

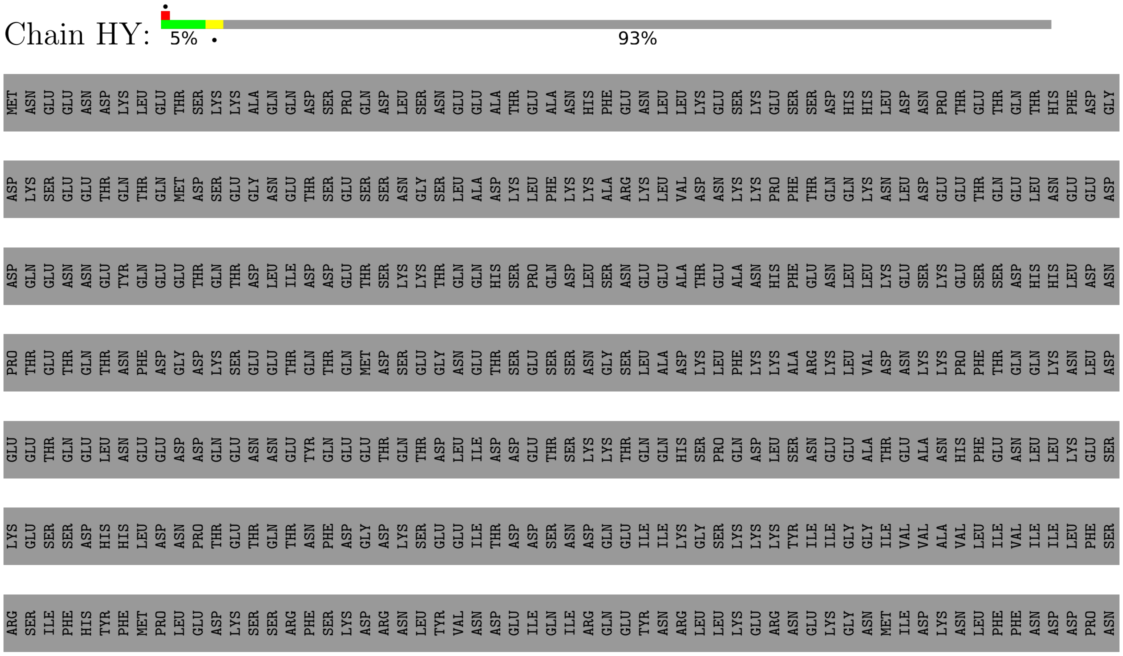
Chain GY:

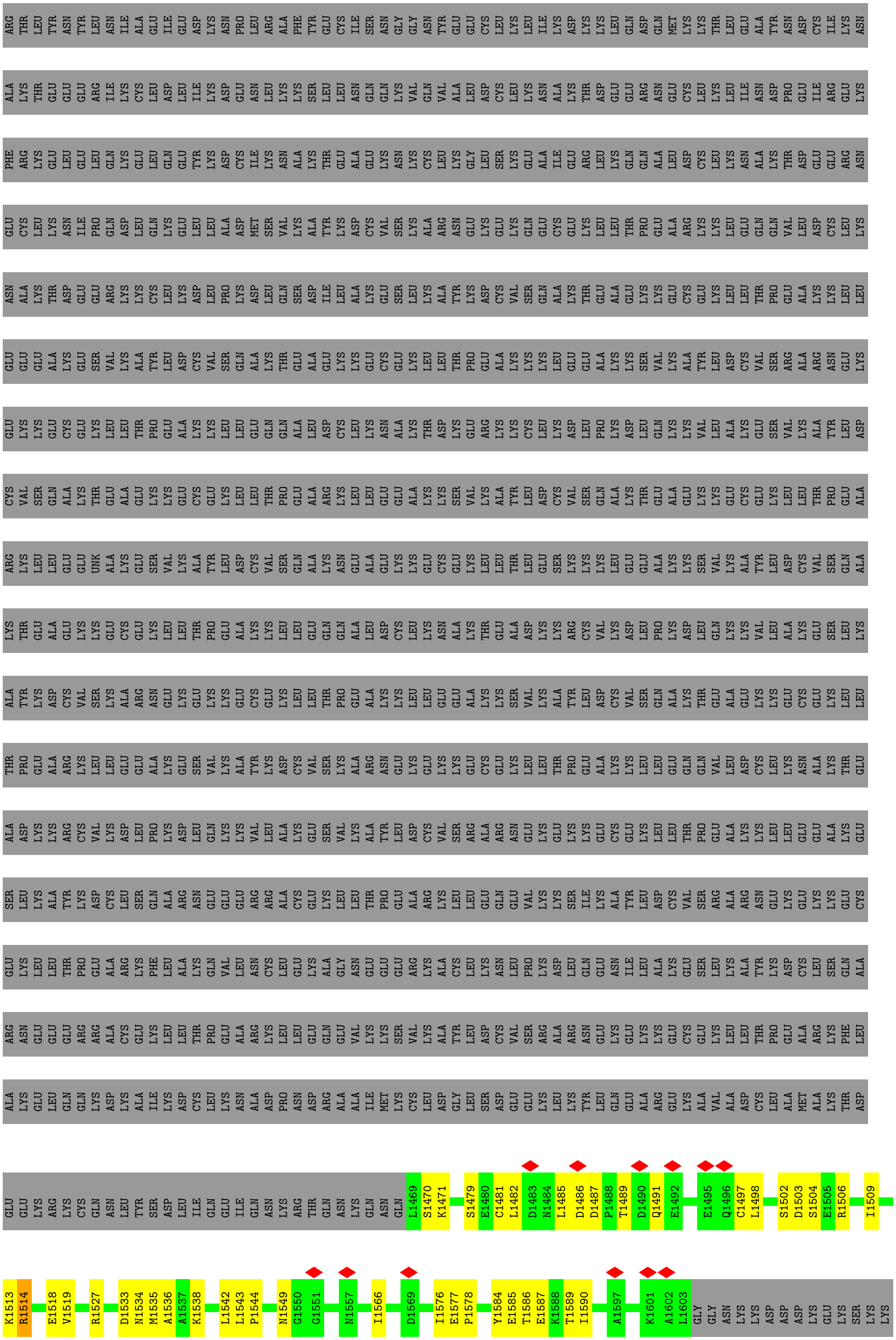


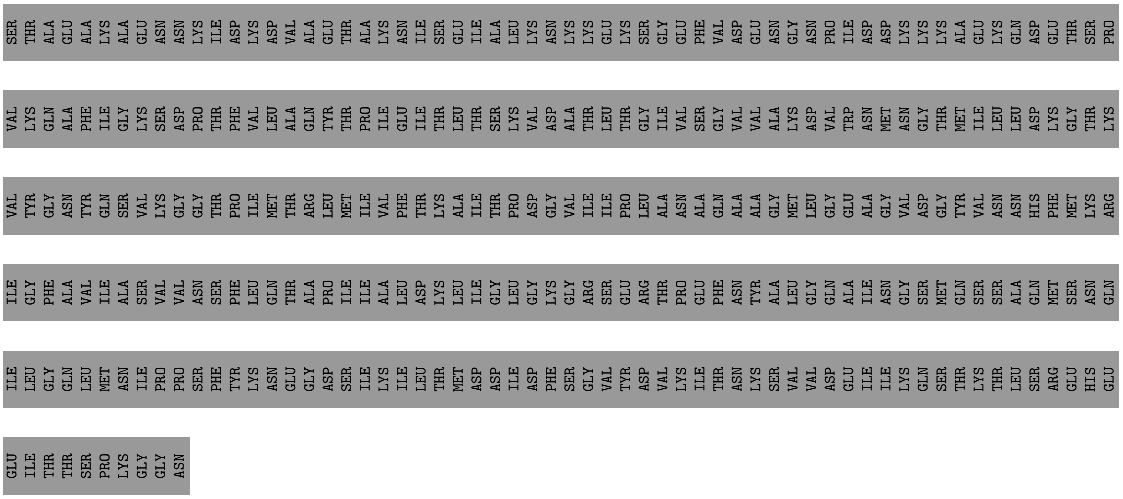

ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP GLU GLU THR GLN GLU LEU ASN GLU ASP
ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN
PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP
GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER
LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER
ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN
ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN
ALA LYS THR GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS
PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN
GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS
ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS



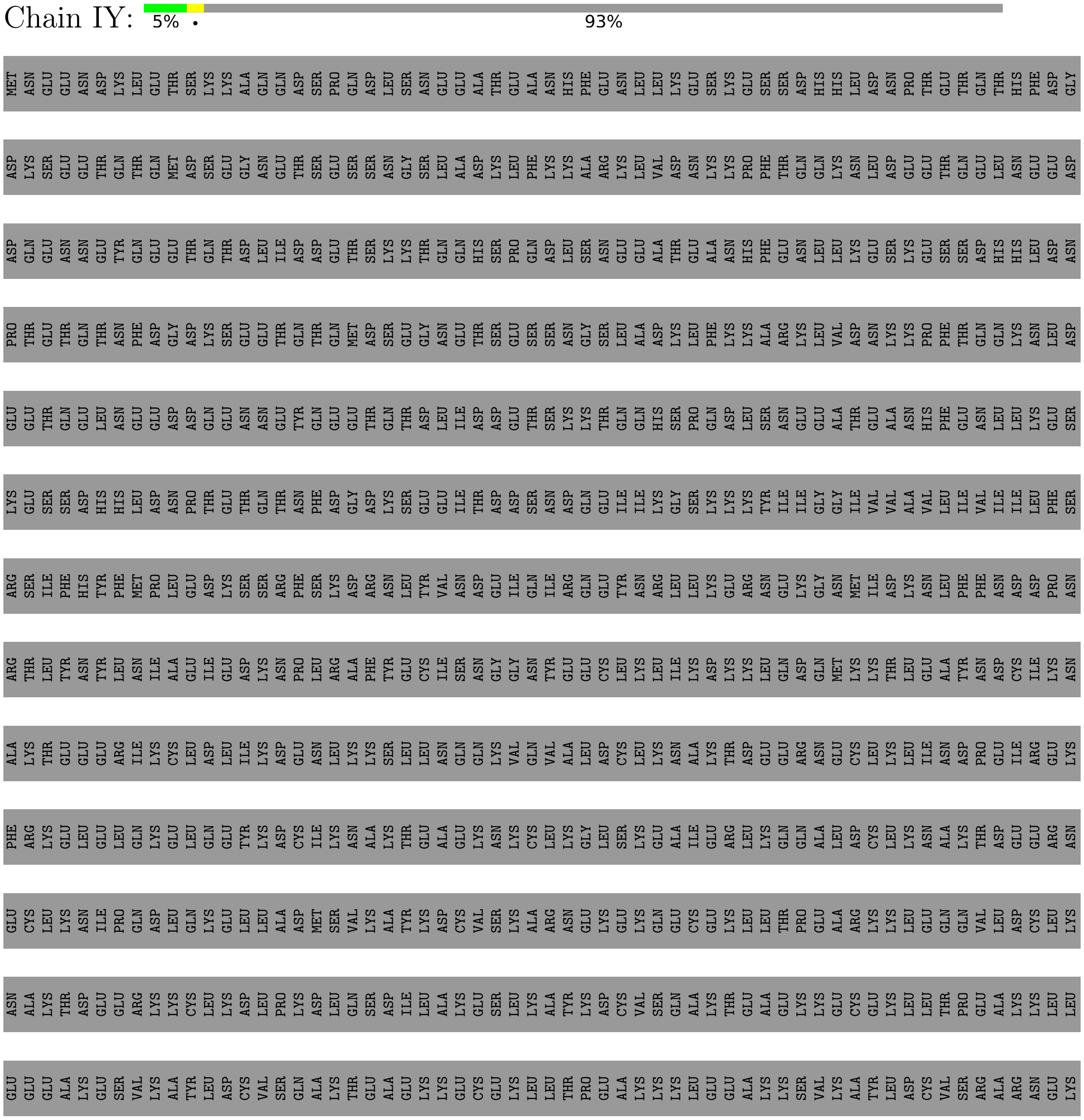
- Molecule 2: Cag pathogenicity island protein (Cag7)

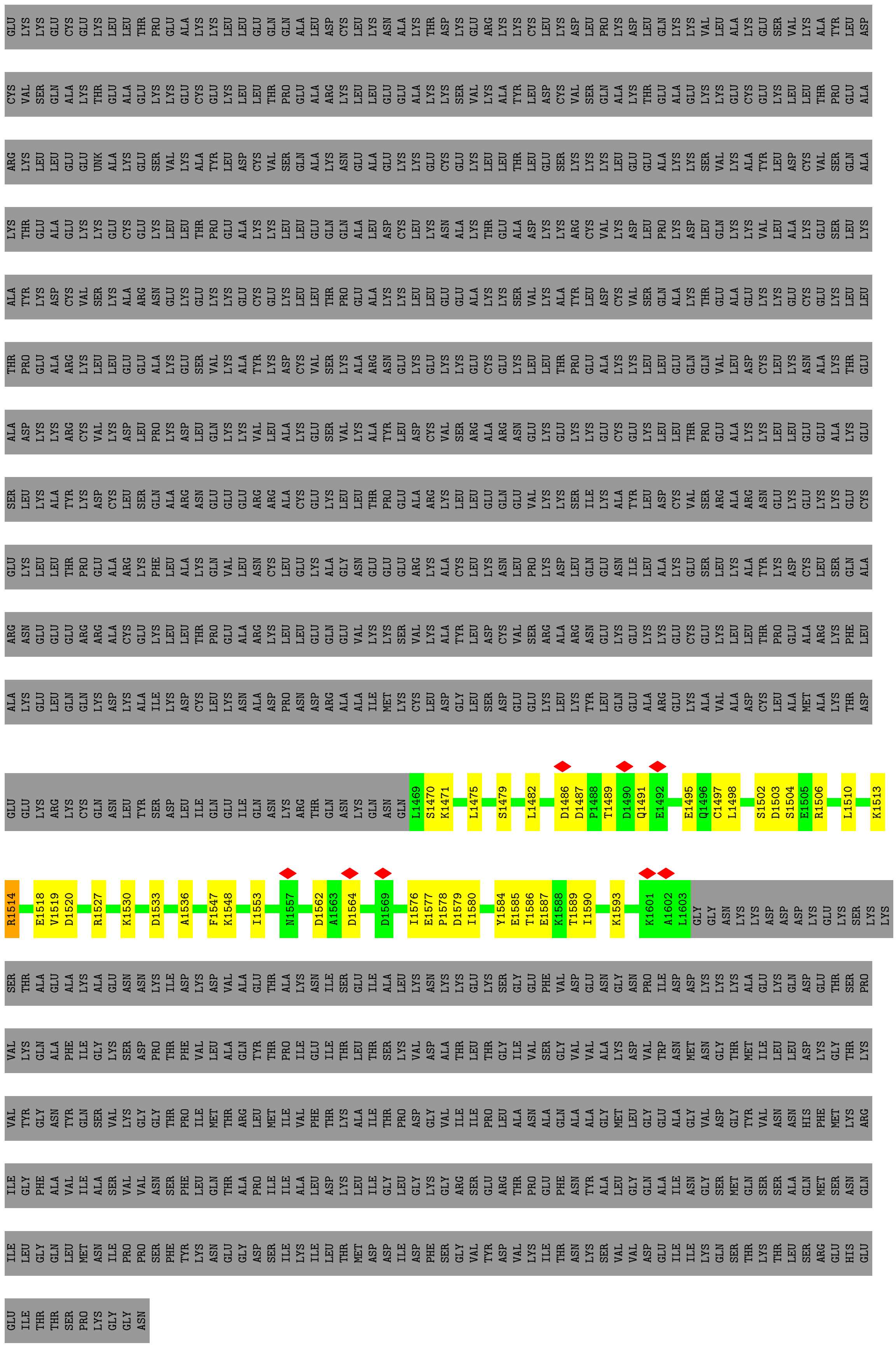



ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN
ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS
PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN
GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS
ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS
GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA
ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU
ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP
GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 S1470 K1471 S1479 E1480 C1481 L1482 D1483 N1484 L1485 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 E1495 Q1496 C1497 L1498 S1502 D1503 S1504 E1505 R1506 I1509
K1513 R1514 E1518 V1519 R1527 D1533 N1534 M1535 A1536 A1537 K1538 L1542 L1543 P1544 N1549 G1550 G1551 N1557 I1566 D1569 I1576 E1577 P1578 Y1584 E1585 T1586 E1587 K1588 T1589 I1590 A1597 K1601 A1602 L1603 GLY GLY ASN LYS LYS ASP ASP ASP LYS GLU LYS SER LYS LYS



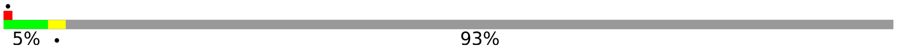
- Molecule 2: Cag pathogenicity island protein (Cag7)





- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain JY:



MET ASN GLU GLU ASN ASP LYS LEU GLU THR SER LYS LYS ALA GLN GLN ASP SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR HIS PHE ASP GLY

ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP GLU GLU THR GLN GLU LEU ASN GLU GLU ASP

ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN

PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP

GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER

LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER

ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN

ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN

ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS

PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN

GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS

ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU

GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS

GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP

CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA

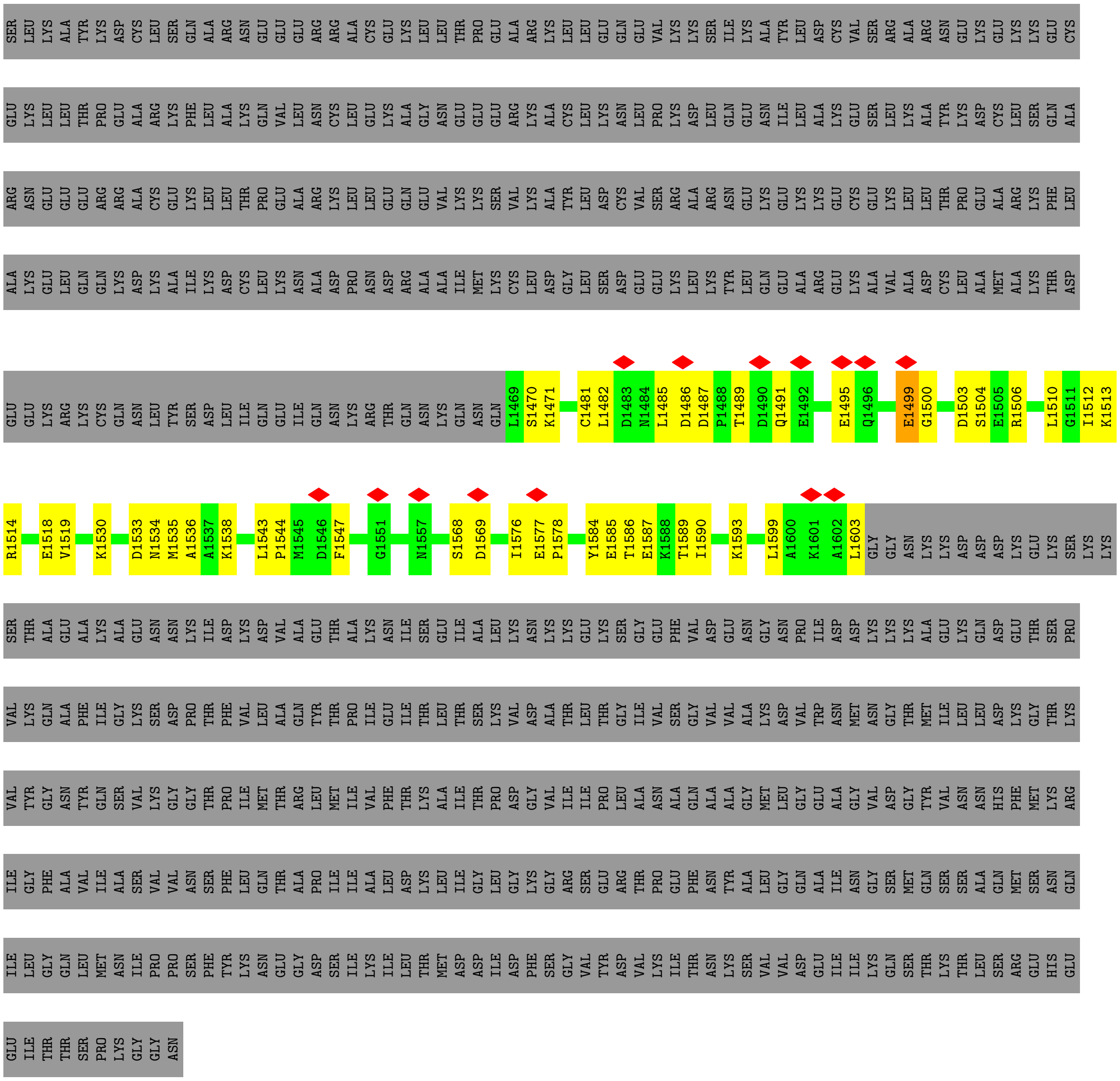
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA

LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS

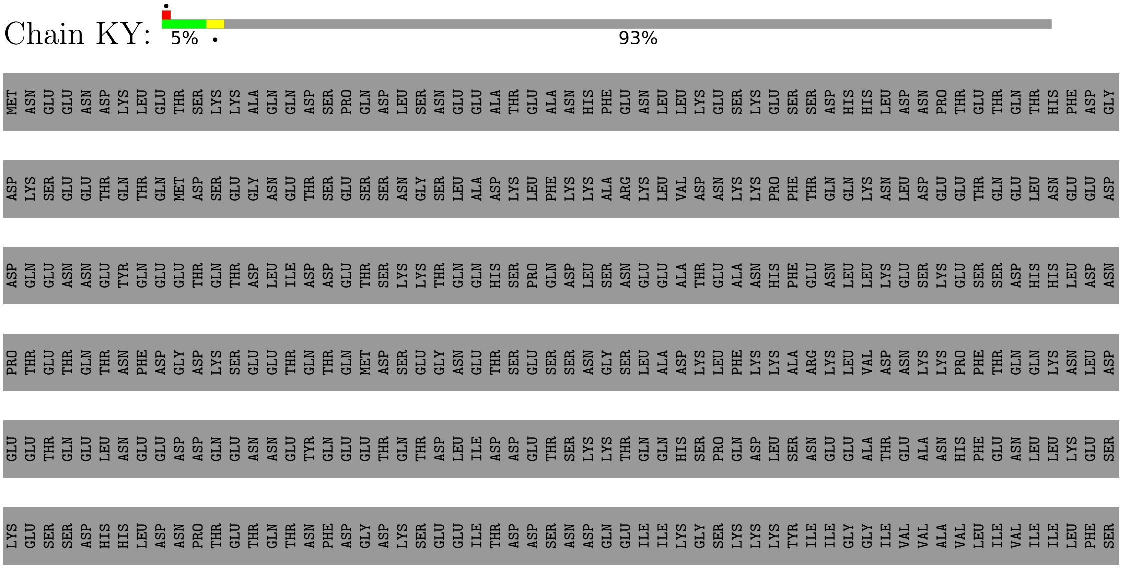
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU

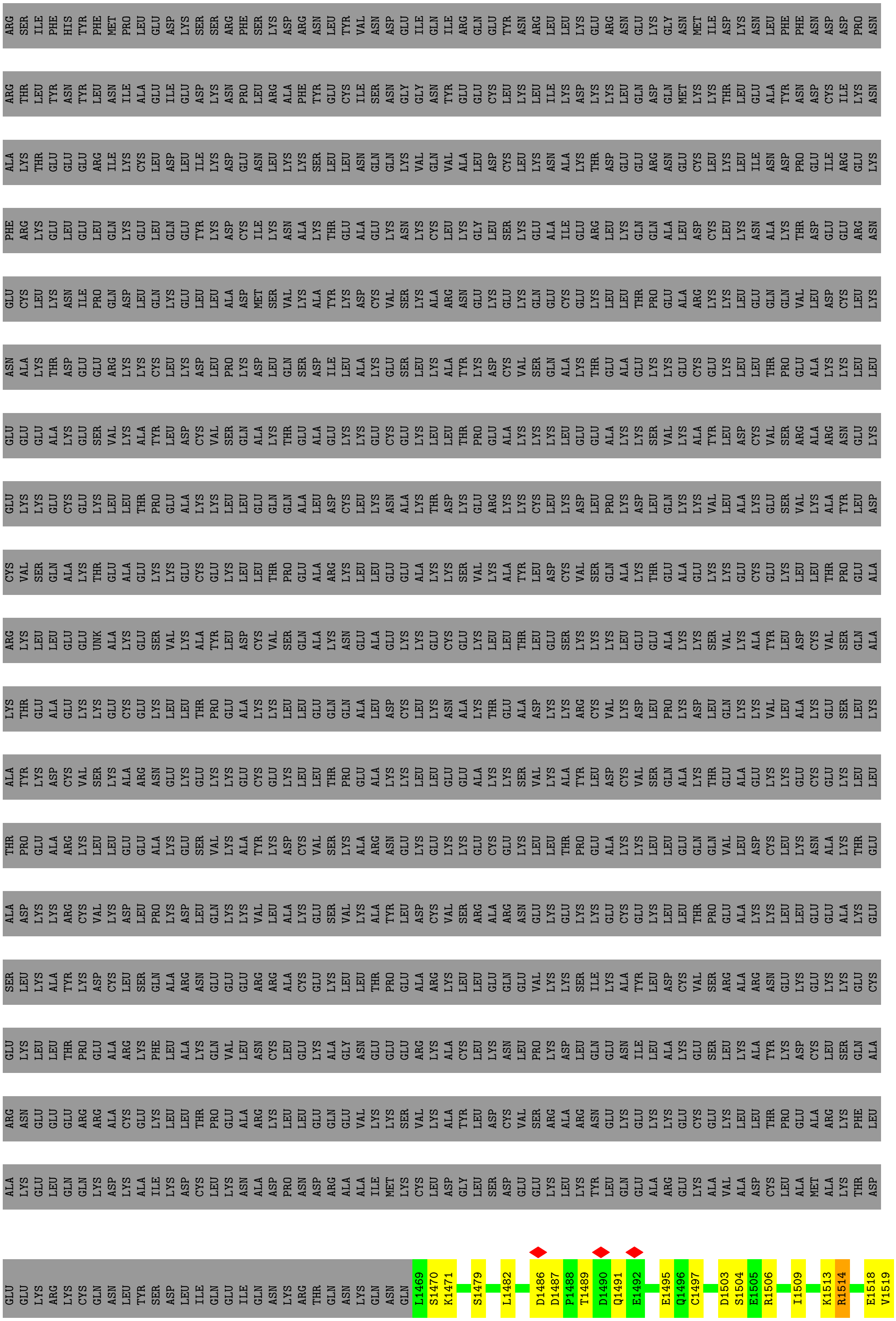
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU

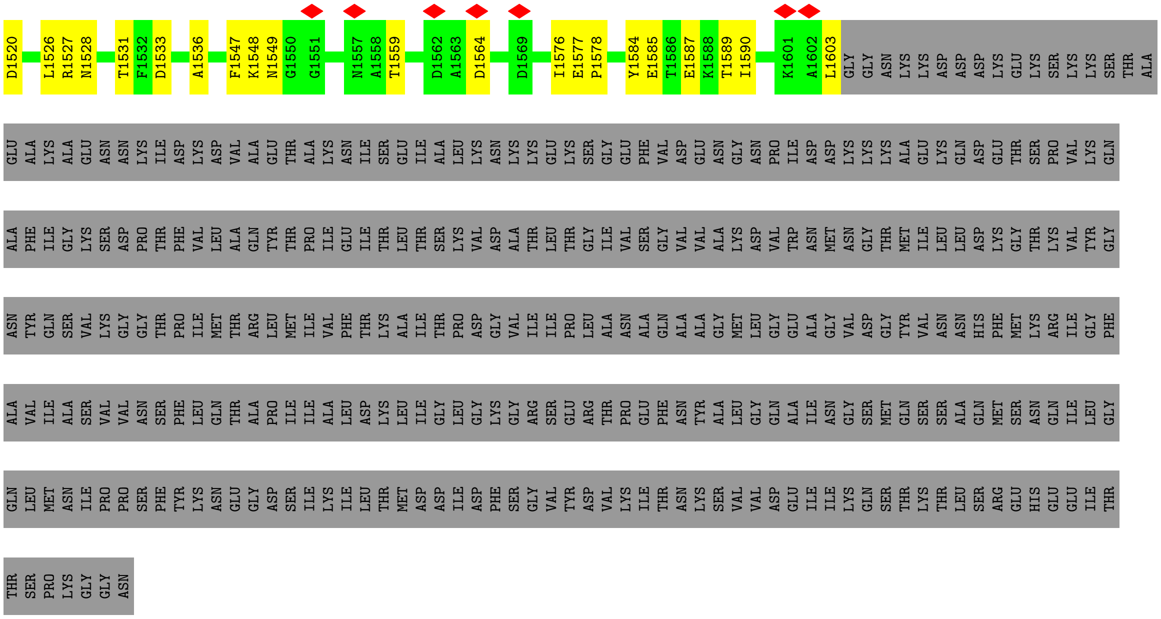
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU



- Molecule 2: Cag pathogenicity island protein (Cag7)

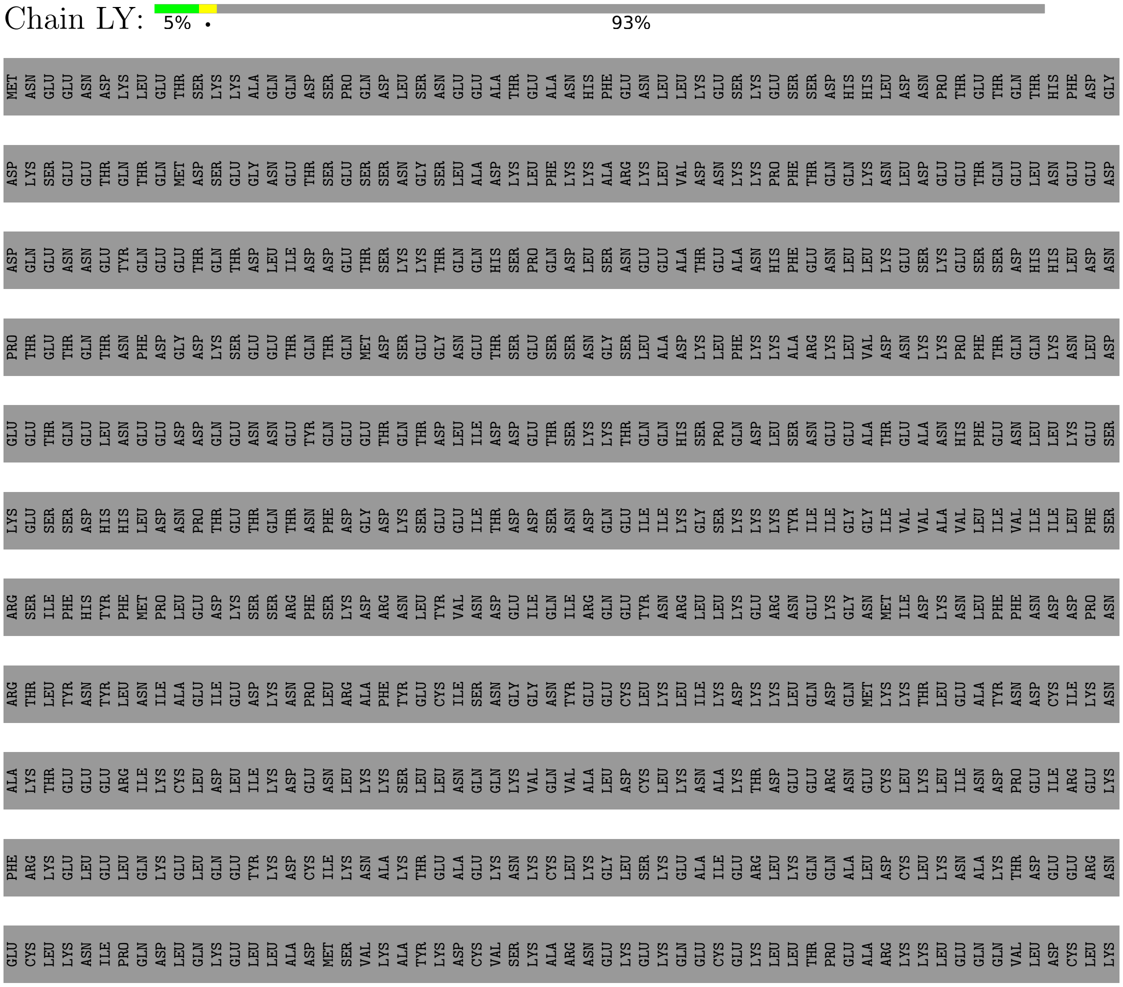


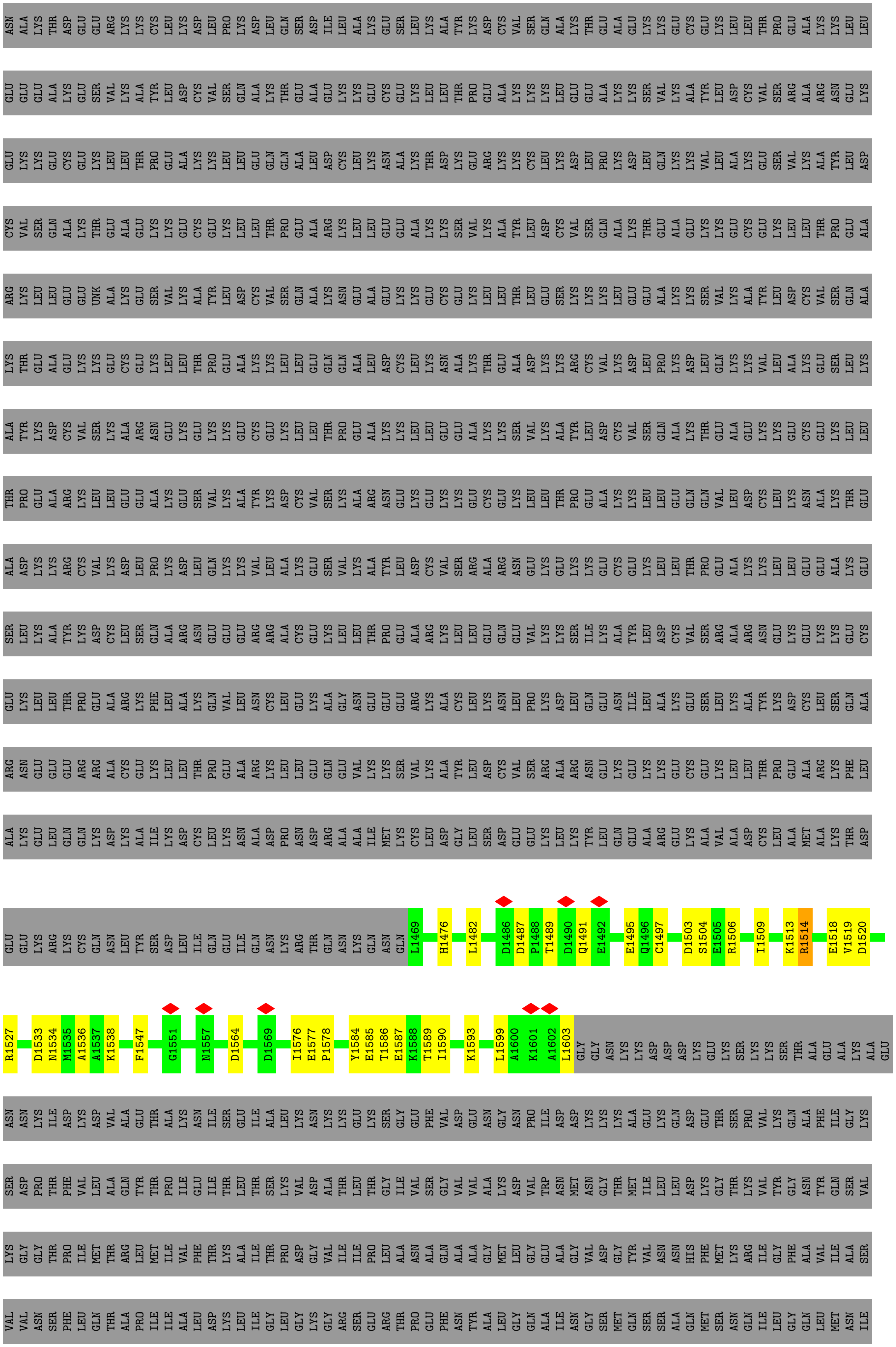

ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN
ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN
ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS
PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN
GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS
ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS
GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA
ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU
ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP
GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 S1470 K1471 S1479 L1482 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 E1495 Q1496 C1497 D1503 S1504 E1505 R1506 I1509 K1513 R1514 E1518 V1519



- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain LY:




ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS
GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA
ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU
ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP
GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 H1476 L1482 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 E1495 Q1496 C1497 D1503 S1504 E1505 R1506 I1509 K1513 R1514 E1518 V1519 D1520
R1527 D1533 N1534 M1535 A1536 A1537 K1538 F1547 G1551 N1557 D1564 D1569 I1576 E1577 P1578 Y1584 E1585 T1586 E1587 K1588 T1589 I1590 K1593 L1599 A1600 K1601 A1602 L1603 GLY GLY ASN LYS LYS ASP ASP LYS GLU LYS SER LYS LYS SER THR ALA GLU ALA LYS ALA GLU
ASN ASN LYS ILE ASP LYS ASP VAL ALA GLU THR ALA LYS ASN ILE SER GLU ILE ALA LEU LYS ASN LYS LYS GLU LYS SER GLY GLU PHE VAL ASP GLU ASN GLY ASN PRO ILE ASP ASP LYS LYS ALA GLU LYS GLN ASP GLU THR SER PRO VAL LYS GLN ALA PHE ILE GLY LYS
SER ASP PRO THR PHE VAL LEU ALA GLN TYR THR PRO ILE GLU ILE THR LEU THR SER LYS VAL ASP ALA THR LEU THR GLY ILE VAL SER GLY VAL VAL ALA LYS ASP VAL TRP ASN MET ASN GLY THR MET ILE LEU LEU ASP LYS GLY THR LYS VAL TYR GLY ASN TYR GLN SER VAL
LYS GLY GLY THR PRO ILE MET THR ARG LEU MET ILE VAL PHE THR LYS ALA ILE THR PRO ASP GLY VAL ILE ILE PRO LEU ALA ASN ALA GLN ALA ALA GLY MET LEU GLY GLU ALA GLY VAL ASP GLY TYR VAL ASN ASN HIS PHE MET LYS ARG ILE GLY PHE ALA VAL ILE ALA SER
VAL VAL ASN SER PHE LEU GLN THR ALA PRO ILE ILE ALA LEU ASP LYS LEU ILE GLY LEU GLY LYS GLY ARG SER GLU ARG THR PRO GLU PHE ASN TYR ALA LEU GLY GLN ALA ILE ASN GLY SER MET GLN SER SER ALA GLN MET SER ASN GLN ILE LEU GLY GLN LEU MET ASN ILE

PRO PRO SER PHE TYR LYS ASN GLU GLY ASP SER ILE LYS ILE LEU THR MET ASP ASP ILE ASP PHE SER GLY VAL TYR ASP VAL LYS ILE THR ASN LYS SER VAL VAL ASP GLU ILE ILE LYS GLN SER THR LYS THR LEU SER ARG GLU HIS GLU GLU ILE THR THR SER PRO LYS GLY

GLY ASN

- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain MY:

MET ASN GLU GLU ASN ASP LYS LEU GLU THR SER LYS LYS ALA GLN GLN ASP SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR HIS PHE ASP GLY

ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP GLU GLU THR GLN GLU LEU ASN GLU GLU ASP

ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN

PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP

GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER

LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER

ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN

ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN

ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS

PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN

GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS

ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU

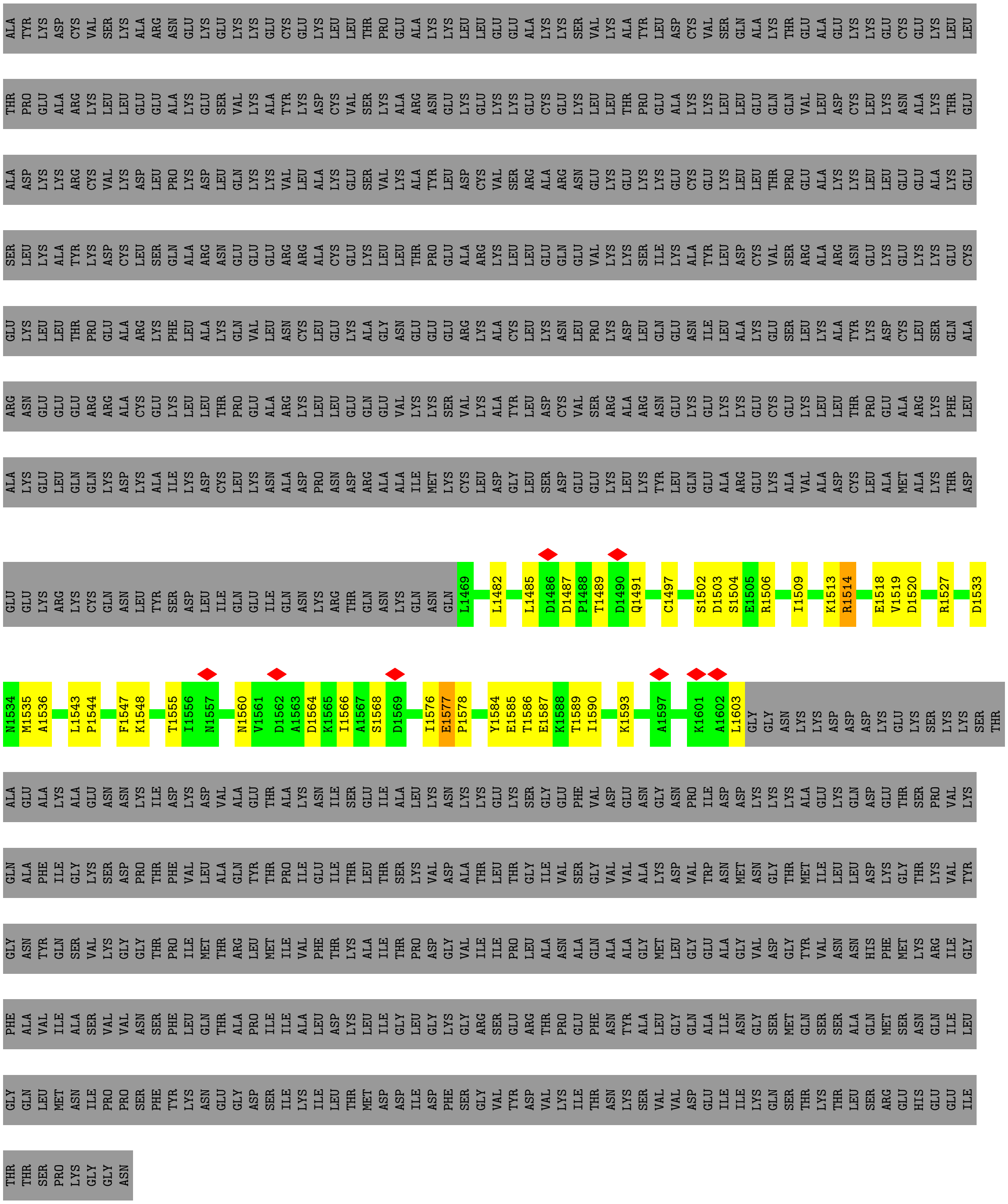
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS

GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP

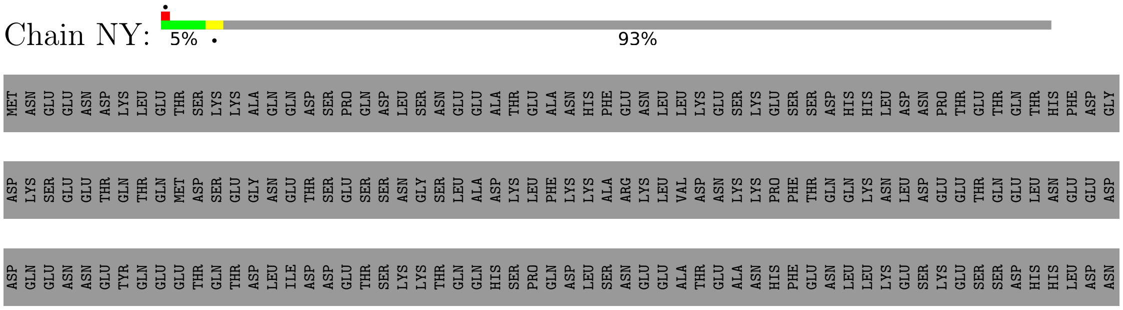
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA

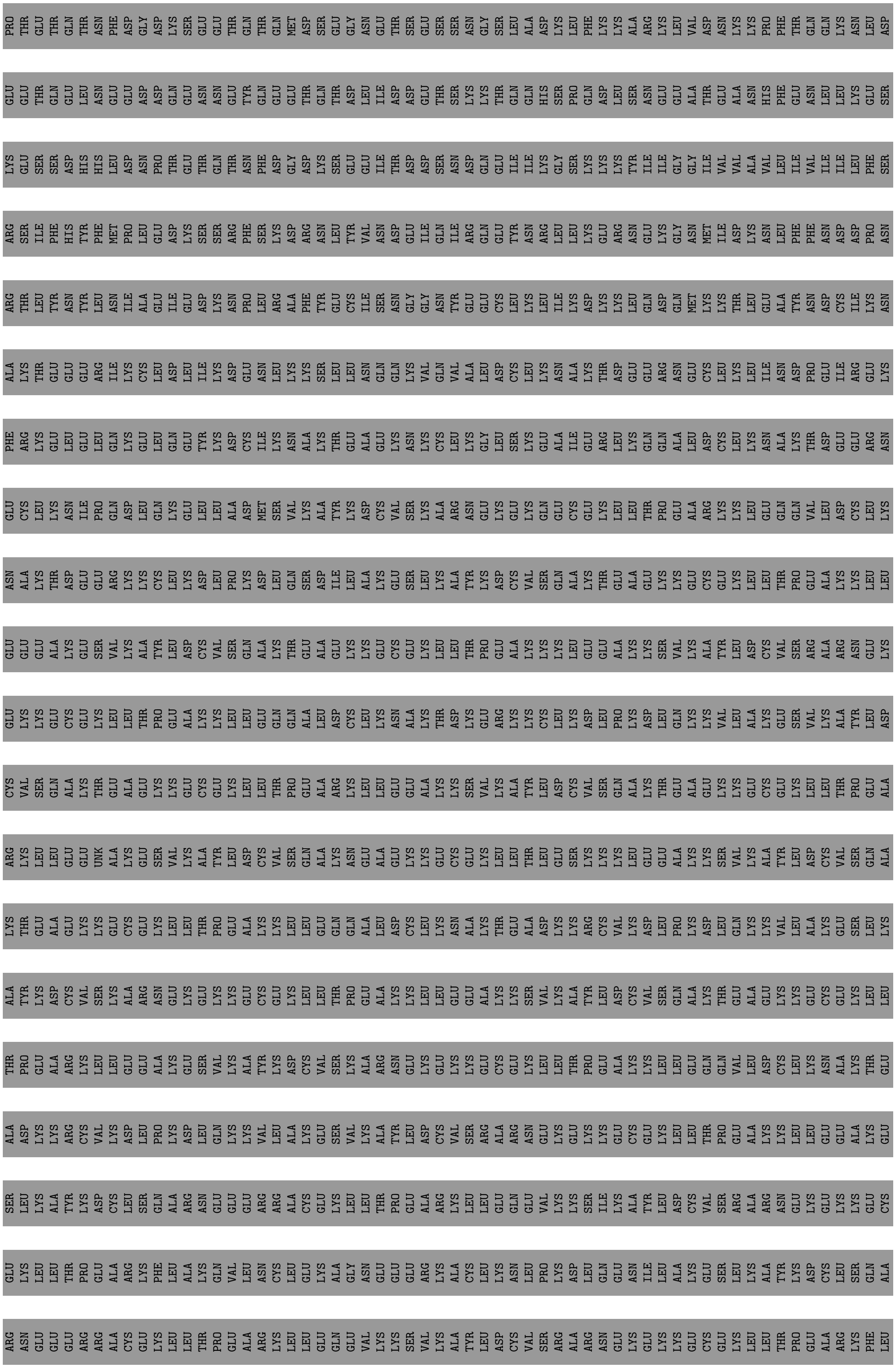
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA

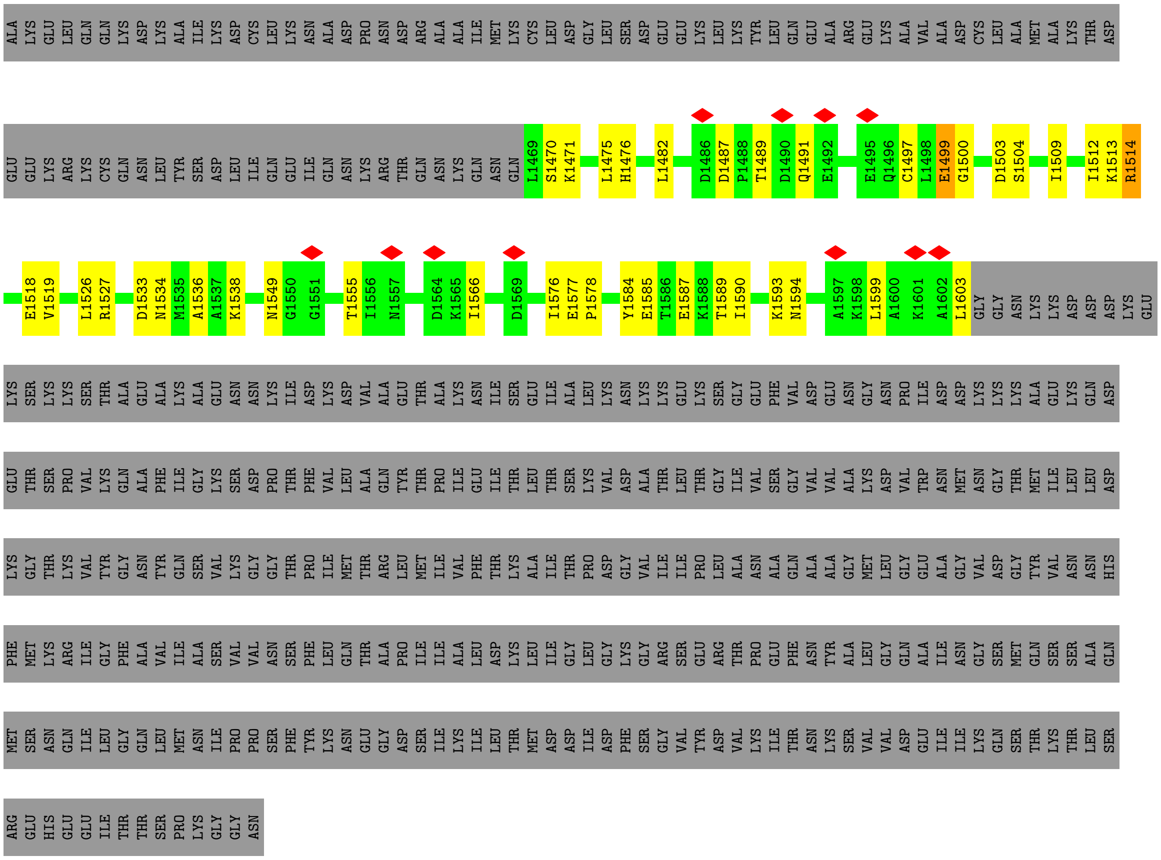
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS



• Molecule 2: Cag pathogenicity island protein (Cag7)




PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP
GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER
LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER
ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN
ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN
ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS
PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN
GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS
ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU
GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS
GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA
ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA
LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU
THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU
ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU
SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS
GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA
ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU



ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP

GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 S1470 K1471 L1475 H1476 L1482 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 E1495 Q1496 C1497 L1498 E1499 G1500 D1503 S1504 I1509 I1512 K1513 R1514

E1518 V1519 L1526 R1527 D1533 N1534 M1535 A1536 A1537 K1538 N1549 G1550 G1551 T1555 I1556 N1557 D1564 K1565 I1566 D1569 I1576 E1577 P1578 Y1584 E1585 T1586 E1587 K1588 T1589 I1590 K1593 N1594 A1597 K1598 L1599 A1600 K1601 A1602 L1603 GLY GLY ASN LYS LYS ASP ASP ASP LYS GLU

LYS SER LYS LYS SER THR ALA GLU ALA LYS ALA GLU ASN ASN LYS ILE ASP LYS ASP VAL ALA GLU THR ALA LYS ASN ILE SER GLU ILE ALA LEU LYS ASN LYS LYS GLU LYS SER GLY GLU PHE VAL ASP GLU ASN GLY ASN PRO ILE ASP ASP LYS LYS LYS ALA GLU LYS GLN ASP

GLU THR SER PRO VAL LYS GLN ALA PHE ILE GLY LYS SER ASP PRO THR PHE VAL LEU ALA GLN TYR THR PRO ILE GLU ILE THR LEU THR SER LYS VAL ASP ALA THR LEU THR GLY ILE VAL SER GLY VAL VAL ALA LYS ASP VAL TRP ASN MET ASN GLY THR MET ILE LEU LEU ASP

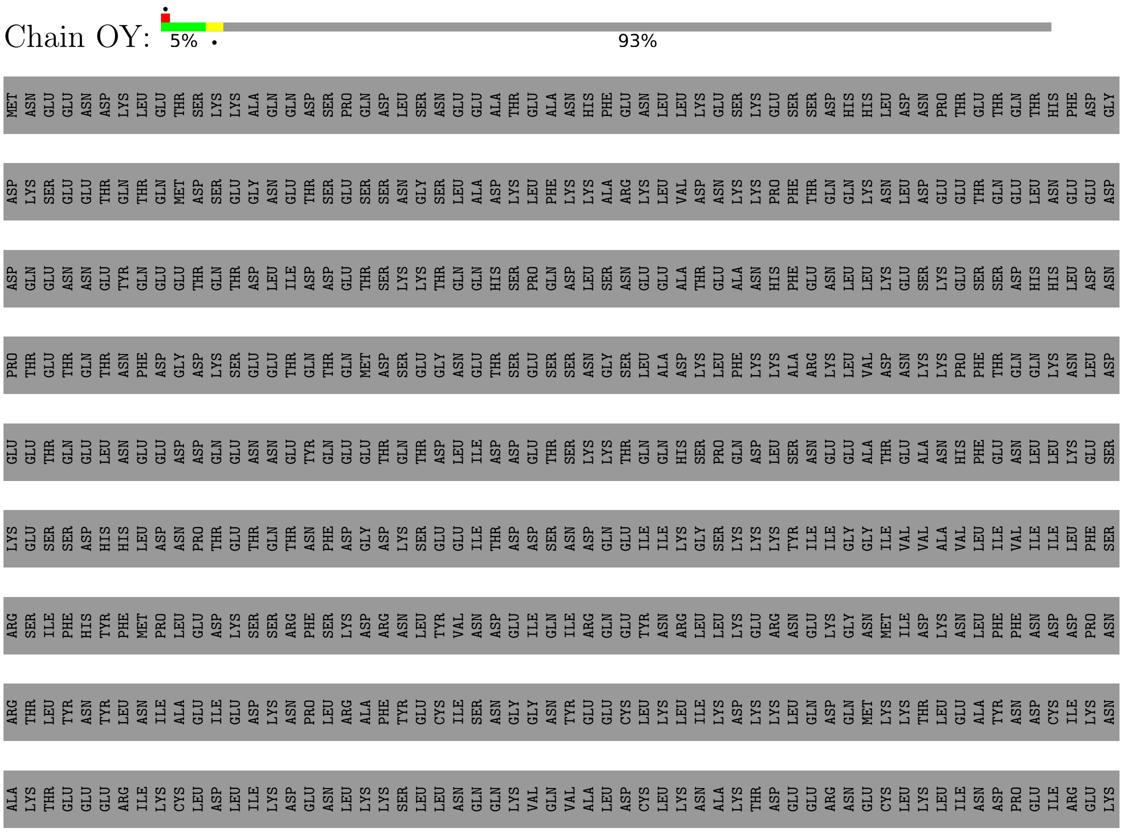
LYS GLY THR LYS VAL TYR GLY ASN TYR GLN SER VAL LYS GLY GLY THR PRO ILE MET THR ARG LEU MET ILE VAL PHE THR LYS ALA ILE THR PRO ASP GLY VAL ILE ILE PRO LEU ALA ASN ALA GLN ALA ALA GLY MET LEU GLY GLU ALA GLY VAL ASP GLY TYR VAL ASN ASN HIS

PHE MET LYS ARG ILE GLY PHE ALA VAL ILE ALA SER VAL VAL ASN SER PHE LEU GLN THR ALA PRO ILE ILE ALA LEU ASP LYS LEU ILE GLY LEU GLY LYS GLY ARG SER GLU ARG THR PRO GLU PHE ASN TYR ALA LEU GLY GLN ALA ILE ASN GLY SER MET GLN SER SER ALA GLN

MET SER ASN GLN ILE LEU GLY GLN LEU MET ASN ILE PRO PRO SER PHE TYR LYS ASN GLU GLY ASP SER ILE LYS ILE LEU THR MET ASP ASP ILE ASP PHE SER GLY VAL TYR ASP VAL LYS ILE THR ASN LYS SER VAL VAL ASP GLU ILE ILE LYS GLN SER THR LYS THR LEU SER

ARG GLU HIS GLU GLU ILE THR THR SER PRO LYS GLY GLY ASN

- Molecule 2: Cag pathogenicity island protein (Cag7)



MET ASN GLU GLU ASN ASP LYS LEU GLU THR SER LYS LYS ALA GLN GLN ASP SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR HIS PHE ASP GLY

ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP GLU GLU THR GLN GLU LEU ASN GLU GLU ASP

ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN

PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP

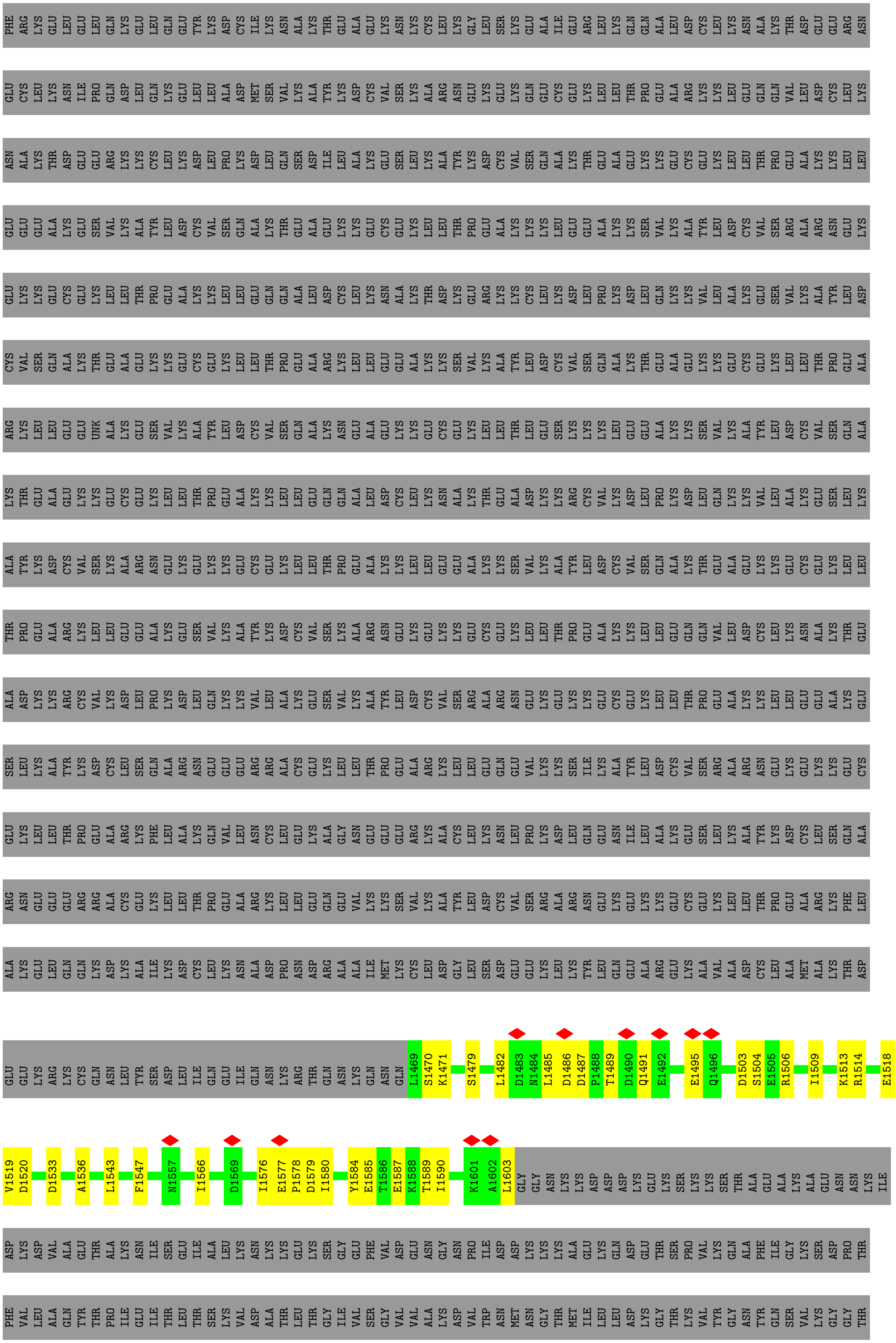
GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER

LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER

ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN

ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN

ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS


L1469
S1470
K1471
S1479
L1482
D1483
N1484
L1485
D1486
D1487
P1488
T1489
D1490
Q1491
E1492
E1495
Q1496
D1503
S1504
E1505
R1506
I1509
K1513
R1514
E1518
V1519
D1520
D1533
A1536
L1543
F1547
N1557
I1566
D1569
I1576
E1577
P1578
D1579
I1580
Y1584
E1585
T1586
E1587
K1588
T1589
I1590
K1601
A1602
L1603

PRO ILE MET THR ARG LEU MET ILE VAL PHE THR LYS ALA ILE THR PRO ASP GLY VAL ILE ILE PRO LEU ALA ASN ALA GLN ALA ALA GLY MET LEU GLY GLU ALA GLY VAL ASP GLY TYR VAL ASN ASN HIS PHE MET LYS ARG ILE GLY PHE ALA VAL ILE ALA SER VAL VAL ASN SER

PHE LEU GLN THR ALA PRO ILE ILE ALA LEU ASP LYS LEU ILE GLY LEU GLY LYS GLY ARG SER GLU ARG THR PRO GLU PHE ASN TYR ALA LEU GLY GLN ALA ILE ASN GLY SER MET GLN SER SER ALA GLN MET SER ASN GLN ILE LEU GLY GLN LEU MET ASN ILE PRO PRO SER PHE

TYR LYS ASN GLU GLY ASP SER ILE LYS ILE LEU THR MET ASP ASP ILE ASP PHE SER GLY VAL TYR ASP VAL LYS ILE THR ASN LYS SER VAL VAL ASP GLU ILE ILE LYS GLN SER THR LYS THR LEU SER ARG GLU HIS GLU GLU ILE THR THR SER PRO LYS GLY GLY ASN

- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain PY:

MET ASN GLU GLU ASN ASP LYS LEU GLU THR SER LYS LYS ALA GLN GLN ASP SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR HIS PHE ASP GLY

ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP GLU GLU THR GLN GLU LEU ASN GLU GLU ASP

ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN

PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP

GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER

LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER

ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN

ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN

ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS

PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN

GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS

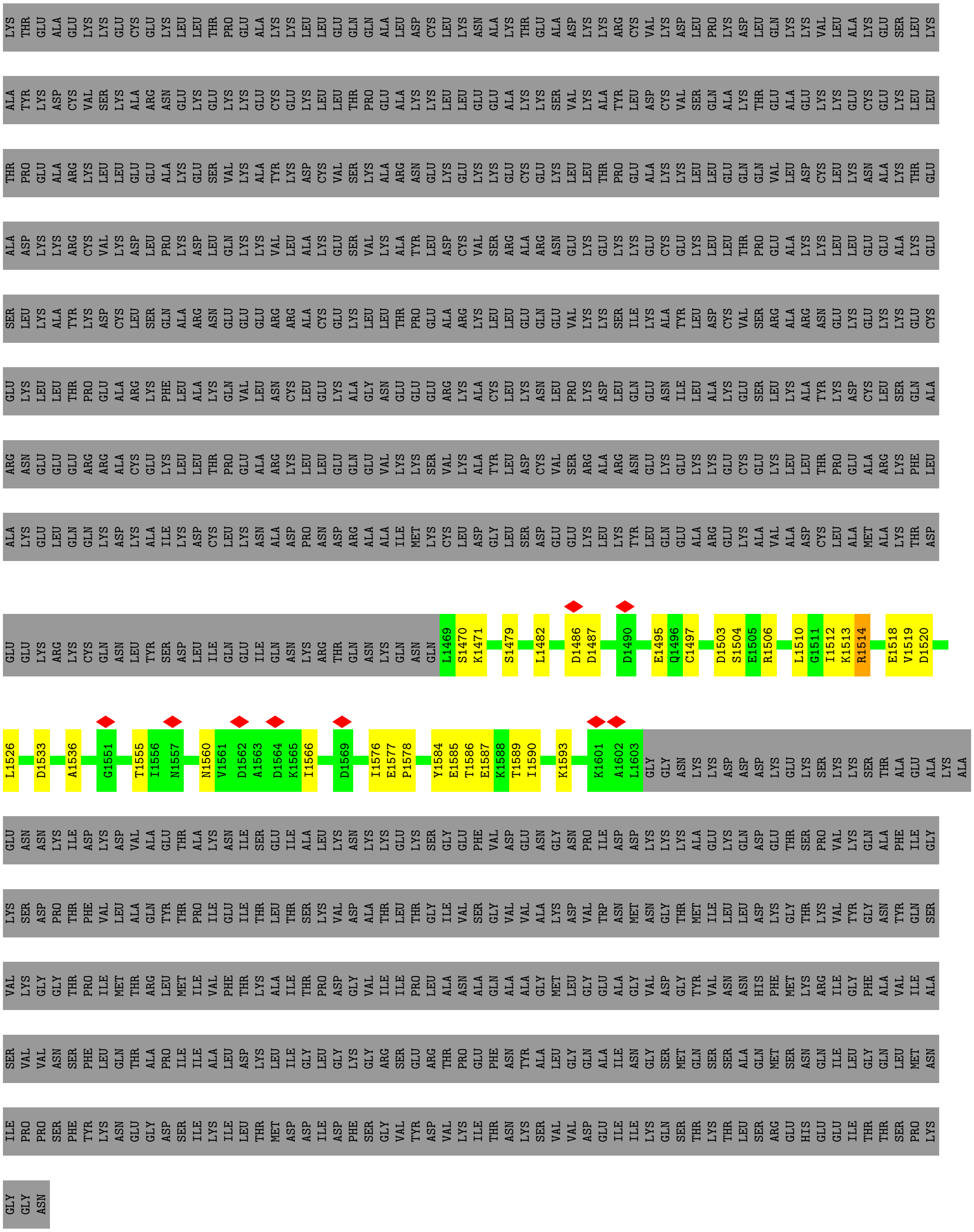
ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU

GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS

GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP

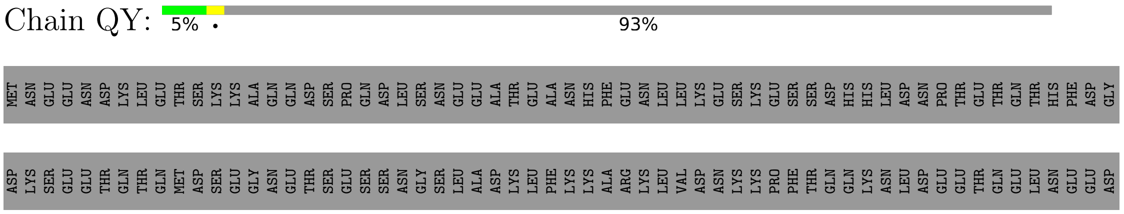
CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA

ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA



- Molecule 2: Cag pathogenicity island protein (Cag7)

Chain QY:



ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER LYS GLU SER SER ASP HIS HIS LEU ASP ASN

PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU THR GLN THR GLN MET ASP SER GLU GLY ASN GLU THR SER GLU SER SER ASN GLY SER LEU ALA ASP LYS LEU PHE LYS LYS ALA ARG LYS LEU VAL ASP ASN LYS LYS PRO PHE THR GLN GLN LYS ASN LEU ASP

GLU GLU THR GLN GLU LEU ASN GLU GLU ASP ASP GLN GLU ASN ASN GLU TYR GLN GLU GLU THR GLN THR ASP LEU ILE ASP ASP GLU THR SER LYS LYS THR GLN GLN HIS SER PRO GLN ASP LEU SER ASN GLU GLU ALA THR GLU ALA ASN HIS PHE GLU ASN LEU LEU LYS GLU SER

LYS GLU SER SER ASP HIS HIS LEU ASP ASN PRO THR GLU THR GLN THR ASN PHE ASP GLY ASP LYS SER GLU GLU ILE THR ASP ASP SER ASN ASP GLN GLU ILE ILE LYS GLY SER LYS LYS LYS TYR ILE ILE GLY GLY ILE VAL VAL ALA VAL LEU ILE VAL ILE ILE LEU PHE SER

ARG SER ILE PHE HIS TYR PHE MET PRO LEU GLU ASP LYS SER SER ARG PHE SER LYS ASP ARG ASN LEU TYR VAL ASN ASP GLU ILE GLN ILE ARG GLN GLU TYR ASN ARG LEU LEU LYS GLU ARG ASN GLU LYS GLY ASN MET ILE ASP LYS ASN LEU PHE PHE ASN ASP ASP PRO ASN

ARG THR LEU TYR ASN TYR LEU ASN ILE ALA GLU ILE GLU ASP LYS ASN PRO LEU ARG ALA PHE TYR GLU CYS ILE SER ASN GLY GLY ASN TYR GLU GLU CYS LEU LYS LEU ILE LYS ASP LYS LYS LEU GLN ASP GLN MET LYS LYS THR LEU GLU ALA TYR ASN ASP CYS ILE LYS ASN

ALA LYS THR GLU GLU GLU ARG ILE LYS CYS LEU ASP LEU ILE LYS ASP GLU ASN LEU LYS LYS SER LEU LEU ASN GLN GLN LYS VAL GLN VAL ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU GLU ARG ASN GLU CYS LEU LYS LEU ILE ASN ASP PRO GLU ILE ARG GLU LYS

PHE ARG LYS GLU LEU GLU LEU GLN LYS GLU LEU GLN GLU TYR LYS ASP CYS ILE LYS ASN ALA LYS THR GLU ALA GLU LYS ASN LYS CYS LEU LYS GLY LEU SER LYS GLU ALA ILE GLU ARG LEU LYS GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP GLU ARG ASN

GLU CYS LEU LYS ASN ILE PRO GLN ASP LEU GLN LYS GLU LEU LEU ALA ASP MET SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS GLN GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LYS LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS

ASN ALA LYS THR ASP GLU GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN SER ASP ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU

GLU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS

GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR ASP LYS GLU ARG LYS LYS CYS LEU LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP

CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA

ARG LYS LEU LEU GLU GLU UNK ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS ASN GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR LEU GLU SER LYS LYS LYS LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA

LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN ALA LEU ASP CYS LEU LYS ASN ALA LYS THR GLU ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER LEU LYS

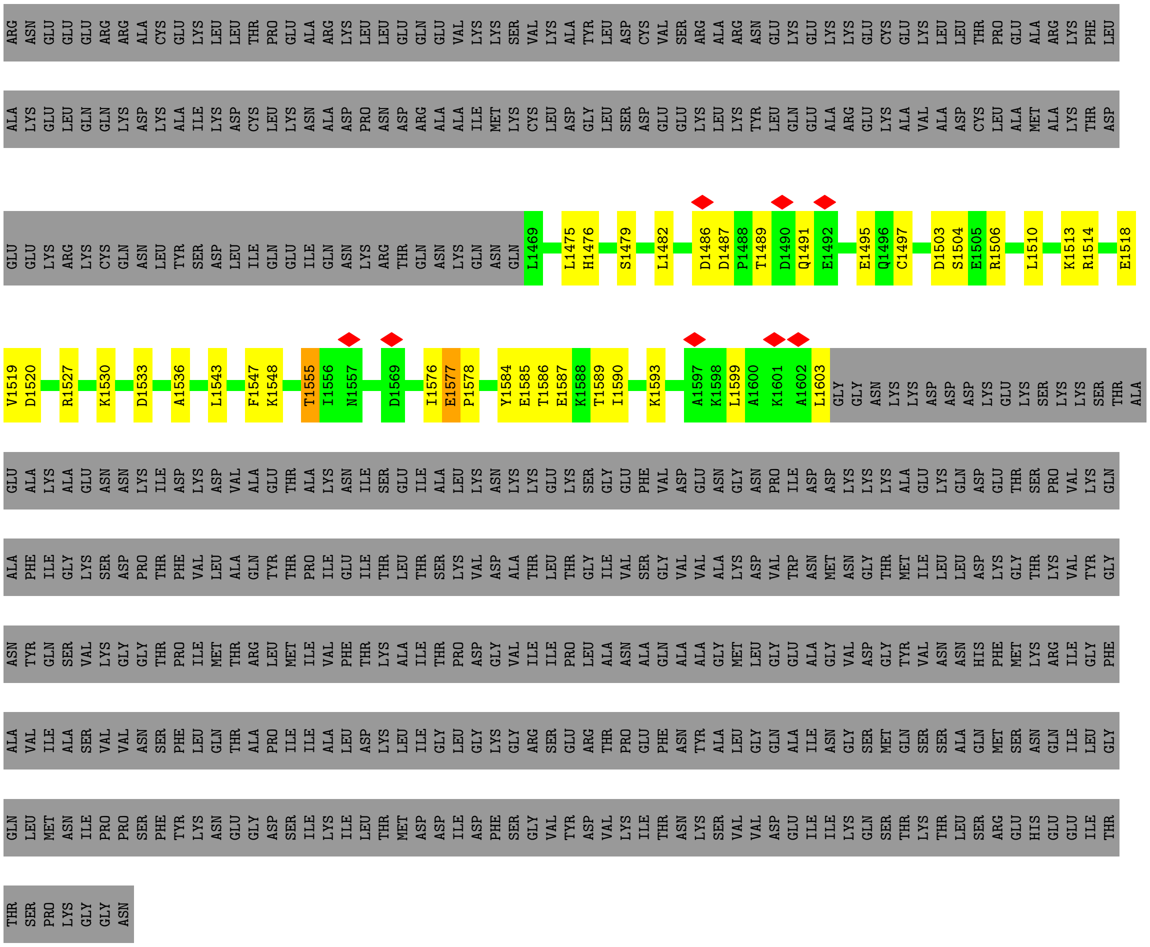
ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER GLN ALA LYS THR GLU ALA GLU LYS LYS GLU CYS GLU LYS LEU LEU

THR PRO GLU ALA ARG LYS LEU LEU GLU GLU ALA LYS GLU SER VAL LYS ALA TYR LYS ASP CYS VAL SER LYS ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLN GLN VAL LEU ASP CYS LEU LYS ASN ALA LYS THR GLU

ALA ASP LYS LYS ARG CYS VAL LYS ASP LEU PRO LYS ASP LEU GLN LYS LYS VAL LEU ALA LYS GLU SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA LYS LYS LEU LEU GLU GLU ALA LYS GLU

SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU GLU GLN GLU VAL LYS LYS SER ILE LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS

GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU ALA LYS GLN VAL LEU ASN CYS LEU GLU LYS ALA GLY ASN GLU GLU GLU ARG LYS ALA CYS LEU LYS ASN LEU PRO LYS ASP LEU GLN GLU ASN ILE LEU ALA LYS GLU SER LEU LYS ALA TYR LYS ASP CYS LEU SER GLN ALA


ARG ASN GLU GLU GLU ARG ARG ALA CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS LEU LEU GLU GLN GLU VAL LYS LYS SER VAL LYS ALA TYR LEU ASP CYS VAL SER ARG ALA ARG ASN GLU LYS GLU LYS LYS GLU CYS GLU LYS LEU LEU THR PRO GLU ALA ARG LYS PHE LEU
ALA LYS GLU LEU GLN GLN LYS ASP LYS ALA ILE LYS ASP CYS LEU LYS ASN ALA ASP PRO ASN ASP ARG ALA ALA ILE MET LYS CYS LEU ASP GLY LEU SER ASP GLU GLU LYS LEU LYS TYR LEU GLN GLU ALA ARG GLU LYS ALA VAL ALA ASP CYS LEU ALA MET ALA LYS THR ASP
GLU GLU LYS ARG LYS CYS GLN ASN LEU TYR SER ASP LEU ILE GLN GLU ILE GLN ASN LYS ARG THR GLN ASN LYS GLN ASN GLN L1469 L1475 H1476 S1479 L1482 D1486 D1487 P1488 T1489 D1490 Q1491 E1492 E1495 Q1496 C1497 D1503 S1504 E1505 R1506 L1510 K1513 R1514 E1518
V1519 D1520 R1527 K1530 D1533 A1536 L1543 F1547 K1548 T1555 I1556 N1557 D1569 I1576 E1577 P1578 Y1584 E1585 T1586 E1587 K1588 T1589 I1590 K1593 A1597 K1598 L1599 A1600 K1601 A1602 L1603 GLY GLY ASN LYS LYS ASP ASP ASP LYS GLU LYS SER LYS LYS SER THR ALA
GLU ALA LYS ALA GLU ASN ASN LYS ILE ASP LYS ASP VAL ALA GLU THR ALA LYS ASN ILE SER GLU ILE ALA LEU LYS ASN LYS LYS GLU LYS SER GLY GLU PHE VAL ASP GLU ASN GLY ASN PRO ILE ASP ASP LYS LYS LYS ALA GLU LYS GLN ASP GLU THR SER PRO VAL LYS GLN
ALA PHE ILE GLY LYS SER ASP PRO THR PHE VAL LEU ALA GLN TYR THR PRO ILE GLU ILE THR LEU THR SER LYS VAL ASP ALA THR LEU THR GLY ILE VAL SER GLY VAL VAL ALA LYS ASP VAL TRP ASN MET ASN GLY THR MET ILE LEU LEU ASP LYS GLY THR LYS VAL TYR GLY
ASN TYR GLN SER VAL LYS GLY GLY THR PRO ILE MET THR ARG LEU MET ILE VAL PHE THR LYS ALA ILE THR PRO ASP GLY VAL ILE ILE PRO LEU ALA ASN ALA GLN ALA ALA GLY MET LEU GLY GLU ALA GLY VAL ASP GLY TYR VAL ASN ASN HIS PHE MET LYS ARG ILE GLY PHE
ALA VAL ILE ALA SER VAL VAL ASN SER PHE LEU GLN THR ALA PRO ILE ILE ALA LEU ASP LYS LEU ILE GLY LEU GLY LYS GLY ARG SER GLU ARG THR PRO GLU PHE ASN TYR ALA LEU GLY GLN ALA ILE ASN GLY SER MET GLN SER SER ALA GLN MET SER ASN GLN ILE LEU GLY
GLN LEU MET ASN ILE PRO PRO SER PHE TYR LYS ASN GLU GLY ASP SER ILE LYS ILE LEU THR MET ASP ASP ILE ASP PHE SER GLY VAL TYR ASP VAL LYS ILE THR ASN LYS SER VAL VAL ASP GLU ILE ILE LYS GLN SER THR LYS THR LEU SER ARG GLU HIS GLU GLU ILE THR
THR SER PRO LYS GLY GLY ASN

4 Experimental information ⓘ

Property	**Value**	**Source**
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	20929	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	59.2	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.148	Depositor
Minimum map value	-0.069	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.002	Depositor
Recommended contour level	0.03	Depositor
Map size (Å)	836.39996, 836.39996, 836.39996	wwPDB
Map dimensions	510, 510, 510	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.64, 1.64, 1.64	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#$\|Z\|$ >5	RMSZ	#$\|Z\|$ >5
1	AX	0.39	0/1365	0.46	0/1845
1	BX	0.39	0/1365	0.46	0/1845
1	CX	0.39	0/1365	0.46	0/1845
1	DX	0.40	0/1365	0.46	0/1845
1	EX	0.39	0/1365	0.46	0/1845
1	FX	0.39	0/1365	0.46	0/1845
1	GX	0.39	0/1365	0.46	0/1845
1	HX	0.40	0/1365	0.46	0/1845
1	IX	0.39	0/1365	0.46	0/1845
1	JX	0.40	0/1365	0.46	0/1845
1	KX	0.39	0/1365	0.46	0/1845
1	LX	0.39	0/1365	0.46	0/1845
1	MX	0.39	0/1365	0.46	0/1845
1	NX	0.39	0/1365	0.46	0/1845
1	OX	0.39	0/1365	0.46	0/1845
1	PX	0.39	0/1365	0.46	0/1845
1	QX	0.40	0/1365	0.46	0/1845
2	AY	0.30	0/1061	0.41	0/1432
2	BY	0.30	0/1061	0.42	0/1432
2	CY	0.31	0/1061	0.43	0/1432
2	DY	0.31	0/1061	0.42	0/1432
2	EY	0.30	0/1061	0.42	0/1432
2	FY	0.30	0/1061	0.41	0/1432
2	GY	0.30	0/1061	0.42	0/1432
2	HY	0.33	0/1061	0.45	0/1432
2	IY	0.30	0/1061	0.41	0/1432
2	JY	0.31	0/1061	0.43	0/1432
2	KY	0.30	0/1061	0.42	0/1432
2	LY	0.30	0/1061	0.42	0/1432
2	MY	0.30	0/1061	0.42	0/1432
2	NY	0.30	0/1061	0.42	0/1432
2	OY	0.31	0/1061	0.42	0/1432
2	PY	0.30	0/1061	0.41	0/1432
2	QY	0.30	0/1061	0.41	0/1432

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
All	All	0.36	0/41242	0.44	0/55709

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	AX	1339	0	1355	47	0
1	BX	1339	0	1355	37	0
1	CX	1339	0	1355	54	0
1	DX	1339	0	1355	53	0
1	EX	1339	0	1355	43	0
1	FX	1339	0	1355	43	0
1	GX	1339	0	1355	48	0
1	HX	1339	0	1355	43	0
1	IX	1339	0	1355	41	0
1	JX	1339	0	1355	54	0
1	KX	1339	0	1355	40	0
1	LX	1339	0	1355	39	0
1	MX	1339	0	1355	43	0
1	NX	1339	0	1355	50	0
1	OX	1339	0	1355	42	0
1	PX	1339	0	1355	41	0
1	QX	1339	0	1355	44	0
2	AY	1050	0	1038	32	0
2	BY	1050	0	1038	36	0
2	CY	1050	0	1038	28	0
2	DY	1050	0	1038	29	0
2	EY	1050	0	1038	32	0
2	FY	1050	0	1038	28	0
2	GY	1050	0	1038	28	0
2	HY	1050	0	1038	29	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	IY	1050	0	1038	32	0
2	JY	1050	0	1038	32	0
2	KY	1050	0	1038	28	0
2	LY	1050	0	1038	24	0
2	MY	1050	0	1038	32	0
2	NY	1050	0	1038	29	0
2	OY	1050	0	1038	23	0
2	PY	1050	0	1038	24	0
2	QY	1050	0	1038	31	0
All	All	40613	0	40681	1048	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 13.

All (1048) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:LX:126:LEU:O	1:LX:130:LYS:HB2	1.65	0.96
1:MX:126:LEU:O	1:MX:130:LYS:HB2	1.68	0.93
1:QX:126:LEU:O	1:QX:130:LYS:HB2	1.68	0.93
1:NX:126:LEU:O	1:NX:130:LYS:HB2	1.71	0.91
1:JX:126:LEU:O	1:JX:130:LYS:HB2	1.71	0.91
1:HX:126:LEU:O	1:HX:130:LYS:HB2	1.71	0.90
1:KX:126:LEU:O	1:KX:130:LYS:HB2	1.73	0.89
1:AX:126:LEU:O	1:AX:130:LYS:HB2	1.73	0.88
1:IX:126:LEU:O	1:IX:130:LYS:HB2	1.74	0.87
1:GX:126:LEU:O	1:GX:130:LYS:HB2	1.75	0.87
1:DX:126:LEU:O	1:DX:130:LYS:HB2	1.74	0.87
1:CX:126:LEU:O	1:CX:130:LYS:HB2	1.74	0.86
1:BX:126:LEU:O	1:BX:130:LYS:HB2	1.74	0.86
1:FX:126:LEU:O	1:FX:130:LYS:HB2	1.79	0.83
1:OX:126:LEU:O	1:OX:130:LYS:HB2	1.79	0.82
2:GY:1576:ILE:HG21	2:HY:1584:TYR:HE1	1.45	0.81
1:PX:126:LEU:O	1:PX:130:LYS:HB2	1.80	0.81
2:HY:1482:LEU:HD13	2:HY:1513:LYS:HD2	1.61	0.80
2:OY:1576:ILE:HG21	2:PY:1584:TYR:HE1	1.48	0.79
2:NY:1576:ILE:HG21	2:OY:1584:TYR:HE1	1.49	0.78
1:QX:77:TYR:HB2	1:QX:283:ARG:HH21	1.49	0.78
2:PY:1576:ILE:HG21	2:QY:1584:TYR:HE1	1.49	0.77
2:LY:1576:ILE:HG21	2:MY:1584:TYR:HE1	1.50	0.77
2:MY:1576:ILE:HG21	2:NY:1584:TYR:HE1	1.50	0.76

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:OX:284:THR:HG23	1:OX:286:LYS:H	1.50	0.76
2:KY:1576:ILE:HG21	2:LY:1584:TYR:HE1	1.49	0.76
1:DX:73:GLU:OE2	1:DX:315:ARG:NH1	2.17	0.76
1:FX:277:ARG:HD2	1:FX:294:ARG:HH11	1.49	0.76
1:EX:126:LEU:O	1:EX:130:LYS:HB2	1.85	0.76
1:AX:104:SER:HB2	2:QY:1547:PHE:HB3	1.67	0.75
2:CY:1482:LEU:HD13	2:CY:1513:LYS:HD2	1.67	0.75
1:NX:73:GLU:OE2	1:NX:315:ARG:NH1	2.18	0.75
2:BY:1576:ILE:HG21	2:CY:1584:TYR:HE1	1.50	0.75
1:KX:104:SER:HB2	2:JY:1547:PHE:HB3	1.69	0.74
1:BX:277:ARG:HD2	1:BX:294:ARG:HH11	1.52	0.74
1:QX:73:GLU:OE2	1:QX:315:ARG:NH1	2.20	0.73
2:HY:1576:ILE:HG21	2:IY:1584:TYR:HE1	1.52	0.73
1:HX:73:GLU:OE2	1:HX:315:ARG:NH1	2.16	0.73
1:NX:104:SER:HB2	2:MY:1547:PHE:HB3	1.70	0.72
2:AY:1584:TYR:HE1	2:QY:1576:ILE:HG21	1.54	0.72
1:EX:73:GLU:OE2	1:EX:315:ARG:NH1	2.21	0.72
2:DY:1576:ILE:HG21	2:EY:1584:TYR:HE1	1.52	0.72
1:LX:73:GLU:OE2	1:LX:315:ARG:NH1	2.23	0.72
1:MX:73:GLU:OE2	1:MX:315:ARG:NH1	2.23	0.72
1:BX:73:GLU:OE2	1:BX:315:ARG:NH1	2.19	0.72
1:PX:104:SER:HB2	2:OY:1547:PHE:HB3	1.72	0.71
2:OY:1482:LEU:HD13	2:OY:1513:LYS:HD2	1.71	0.71
1:FX:104:SER:HB2	2:EY:1547:PHE:HB3	1.72	0.71
1:OX:277:ARG:HD2	1:OX:294:ARG:HH11	1.53	0.70
1:MX:104:SER:HB2	2:LY:1547:PHE:HB3	1.73	0.70
1:LX:78:ILE:HG21	1:LX:90:PRO:HG3	1.72	0.70
1:IX:73:GLU:OE2	1:IX:315:ARG:NH1	2.19	0.70
1:JX:104:SER:HB2	2:IY:1547:PHE:HB3	1.71	0.70
2:FY:1533:ASP:HA	2:GY:1519:VAL:HG21	1.72	0.70
2:IY:1576:ILE:HG21	2:JY:1584:TYR:HE1	1.55	0.70
1:AX:277:ARG:HD2	1:AX:294:ARG:HH11	1.57	0.69
1:IX:78:ILE:HG21	1:IX:90:PRO:HG3	1.75	0.69
1:AX:73:GLU:OE2	1:AX:315:ARG:NH1	2.25	0.69
1:KX:277:ARG:HD2	1:KX:294:ARG:HH11	1.56	0.69
1:LX:104:SER:HB2	2:KY:1547:PHE:HB3	1.73	0.69
2:EY:1576:ILE:HG21	2:FY:1584:TYR:HE1	1.57	0.69
1:MX:78:ILE:HG21	1:MX:90:PRO:HG3	1.74	0.68
1:EX:277:ARG:HD2	1:EX:294:ARG:HH11	1.58	0.68
2:KY:1533:ASP:HA	2:LY:1519:VAL:HG21	1.76	0.68
1:HX:68:GLN:HA	1:HX:94:HIS:HB3	1.76	0.68

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:JY:1482:LEU:HD13	2:JY:1513:LYS:HD2	1.76	0.67
1:JX:68:GLN:HB3	1:JX:309:LYS:HA	1.77	0.67
1:HX:277:ARG:HD2	1:HX:294:ARG:HH11	1.59	0.67
1:KX:73:GLU:OE2	1:KX:315:ARG:NH1	2.25	0.67
1:JX:73:GLU:OE2	1:JX:315:ARG:NH1	2.23	0.67
2:CY:1576:ILE:HG21	2:DY:1584:TYR:HE1	1.60	0.67
1:PX:277:ARG:HD2	1:PX:294:ARG:HH11	1.60	0.66
1:NX:277:ARG:HD2	1:NX:294:ARG:HH11	1.60	0.66
1:CX:73:GLU:OE2	1:CX:315:ARG:NH1	2.28	0.66
1:JX:277:ARG:HD2	1:JX:294:ARG:HH11	1.60	0.66
1:NX:78:ILE:HG21	1:NX:90:PRO:HG3	1.77	0.66
2:JY:1576:ILE:HG21	2:KY:1584:TYR:HE1	1.61	0.66
1:FX:61:LEU:HD22	1:FX:271:PRO:HG2	1.76	0.66
1:CX:104:SER:HB2	2:BY:1547:PHE:HB3	1.78	0.65
1:QX:67:ILE:HA	1:QX:308:VAL:HG23	1.78	0.65
1:LX:61:LEU:HD22	1:LX:271:PRO:HG2	1.78	0.65
1:FX:78:ILE:HG21	1:FX:90:PRO:HG3	1.79	0.65
1:IX:51:ASP:O	1:JX:43:ASN:ND2	2.29	0.65
1:OX:68:GLN:HB3	1:OX:309:LYS:HA	1.79	0.65
1:OX:61:LEU:HD22	1:OX:271:PRO:HG2	1.79	0.65
2:GY:1598:LYS:HA	2:GY:1601:LYS:HE3	1.80	0.64
1:GX:77:TYR:HB2	1:GX:283:ARG:HH21	1.62	0.64
1:KX:67:ILE:HA	1:KX:308:VAL:HG23	1.79	0.64
1:JX:78:ILE:HG21	1:JX:90:PRO:HG3	1.80	0.64
1:DX:104:SER:HB2	2:CY:1547:PHE:HB3	1.79	0.64
2:AY:1533:ASP:HA	2:BY:1519:VAL:HG21	1.80	0.64
1:KX:62:ASP:OD1	2:IY:1548:LYS:NZ	2.31	0.63
1:PX:78:ILE:HG21	1:PX:90:PRO:HG3	1.80	0.63
2:BY:1533:ASP:HA	2:CY:1519:VAL:HG21	1.79	0.63
1:GX:104:SER:HB2	2:FY:1547:PHE:HB3	1.80	0.63
1:BX:62:ASP:OD1	2:QY:1548:LYS:NZ	2.30	0.63
1:CX:129:LYS:O	1:DX:120:ARG:NH1	2.31	0.63
2:JY:1489:THR:O	2:JY:1491:GLN:NE2	2.31	0.63
1:DX:62:ASP:OD2	2:BY:1548:LYS:NZ	2.31	0.63
1:LX:277:ARG:HD2	1:LX:294:ARG:HH11	1.63	0.63
1:BX:105:ASN:OD1	1:BX:266:SER:OG	2.17	0.63
1:PX:105:ASN:OD1	1:PX:266:SER:OG	2.16	0.63
1:CX:51:ASP:O	1:DX:43:ASN:ND2	2.31	0.62
1:IX:77:TYR:HB2	1:IX:283:ARG:HH21	1.64	0.62
1:HX:78:ILE:HG21	1:HX:90:PRO:HG3	1.82	0.62
1:QX:105:ASN:OD1	1:QX:266:SER:OG	2.15	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:GY:1587:GLU:HA	2:GY:1590:ILE:HD12	1.82	0.62
1:OX:282:VAL:HG13	1:OX:289:TYR:HB2	1.82	0.61
1:PX:73:GLU:OE2	1:PX:315:ARG:NH1	2.21	0.61
2:FY:1536:ALA:HB3	2:GY:1519:VAL:HG23	1.82	0.61
2:IY:1587:GLU:HA	2:IY:1590:ILE:HD12	1.81	0.61
1:AX:78:ILE:HG21	1:AX:90:PRO:HG3	1.82	0.61
1:CX:299:ASP:OD1	1:CX:299:ASP:N	2.30	0.61
1:HX:104:SER:HB2	2:GY:1547:PHE:HB3	1.82	0.61
1:FX:45:LYS:HD3	1:FX:309:LYS:HB3	1.83	0.61
1:GX:61:LEU:HD22	1:GX:271:PRO:HG2	1.83	0.61
1:AX:43:ASN:HD21	1:QX:52:GLU:HA	1.64	0.61
2:CY:1587:GLU:HA	2:CY:1590:ILE:HD12	1.81	0.61
1:GX:73:GLU:OE2	1:GX:315:ARG:NH1	2.21	0.61
1:QX:277:ARG:HD2	1:QX:294:ARG:HH11	1.66	0.61
2:NY:1536:ALA:HB3	2:OY:1519:VAL:HG23	1.81	0.61
2:HY:1470:SER:OG	2:HY:1471:LYS:N	2.34	0.61
1:DX:277:ARG:HD2	1:DX:294:ARG:HH11	1.66	0.61
1:LX:92:SER:O	1:LX:93:ASN:ND2	2.34	0.61
1:CX:45:LYS:HD3	1:CX:309:LYS:HB3	1.83	0.60
1:MX:61:LEU:HD12	2:LY:1527:ARG:HD3	1.83	0.60
1:PX:284:THR:HG23	1:PX:286:LYS:H	1.65	0.60
1:MX:299:ASP:OD1	1:MX:299:ASP:N	2.32	0.60
2:DY:1587:GLU:HA	2:DY:1590:ILE:HD12	1.82	0.60
1:MX:105:ASN:OD1	1:MX:266:SER:OG	2.18	0.60
1:HX:92:SER:O	1:HX:93:ASN:ND2	2.34	0.60
2:AY:1519:VAL:HG23	2:QY:1536:ALA:HB3	1.83	0.60
1:AX:120:ARG:NH1	1:QX:129:LYS:O	2.34	0.60
1:OX:73:GLU:OE2	1:OX:315:ARG:NH1	2.19	0.60
1:DX:51:ASP:O	1:EX:43:ASN:ND2	2.35	0.60
2:BY:1587:GLU:OE1	2:BY:1591:LYS:NZ	2.34	0.60
1:BX:282:VAL:HG13	1:BX:289:TYR:HB2	1.83	0.60
1:QX:61:LEU:HD22	1:QX:271:PRO:HG2	1.84	0.59
2:BY:1489:THR:O	2:BY:1491:GLN:NE2	2.34	0.59
2:MY:1533:ASP:HA	2:NY:1519:VAL:HG21	1.84	0.59
1:DX:92:SER:HB2	2:CY:1560:ASN:HA	1.85	0.59
1:GX:92:SER:O	1:GX:93:ASN:ND2	2.35	0.59
1:CX:77:TYR:HB2	1:CX:283:ARG:HH21	1.67	0.59
1:JX:299:ASP:HB2	2:JY:1512:ILE:HD13	1.84	0.59
2:JY:1587:GLU:HA	2:JY:1590:ILE:HD12	1.84	0.59
1:AX:45:LYS:HD3	1:AX:309:LYS:HB3	1.84	0.59
1:BX:288:LEU:HD22	1:CX:68:GLN:HE21	1.67	0.59

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:CX:277:ARG:HD2	1:CX:294:ARG:HH11	1.67	0.59
2:HY:1533:ASP:HA	2:IY:1519:VAL:HG21	1.85	0.59
1:LX:51:ASP:O	1:MX:43:ASN:ND2	2.35	0.59
2:LY:1587:GLU:HA	2:LY:1590:ILE:HD12	1.84	0.59
1:FX:73:GLU:OE2	1:FX:315:ARG:NH1	2.20	0.59
1:HX:36:ARG:HH11	2:GY:1488:PRO:HD3	1.67	0.59
1:BX:80:THR:HG22	1:BX:280:LEU:HD13	1.85	0.59
1:FX:80:THR:HG22	1:FX:280:LEU:HA	1.84	0.59
1:PX:61:LEU:HD22	1:PX:271:PRO:HG2	1.83	0.59
2:BY:1587:GLU:HA	2:BY:1590:ILE:HD12	1.83	0.59
2:DY:1482:LEU:HD13	2:DY:1513:LYS:HD2	1.85	0.59
1:LX:61:LEU:HD12	2:KY:1527:ARG:HD3	1.85	0.58
1:OX:62:ASP:OD2	2:MY:1548:LYS:NZ	2.36	0.58
2:AY:1489:THR:O	2:AY:1491:GLN:NE2	2.35	0.58
2:LY:1489:THR:O	2:LY:1491:GLN:NE2	2.36	0.58
1:EX:92:SER:O	1:EX:93:ASN:ND2	2.36	0.58
1:IX:61:LEU:HD22	1:IX:271:PRO:HG2	1.85	0.58
2:EY:1587:GLU:HA	2:EY:1590:ILE:HD12	1.84	0.58
1:DX:61:LEU:HD22	1:DX:271:PRO:HG2	1.84	0.58
2:AY:1470:SER:OG	2:AY:1471:LYS:N	2.35	0.58
2:AY:1587:GLU:HA	2:AY:1590:ILE:HD12	1.84	0.58
2:PY:1470:SER:OG	2:PY:1471:LYS:N	2.34	0.58
1:BX:67:ILE:HD11	1:BX:97:ILE:HD13	1.85	0.58
1:NX:284:THR:HG23	1:NX:286:LYS:H	1.68	0.58
1:PX:92:SER:O	1:PX:93:ASN:ND2	2.37	0.58
2:PY:1587:GLU:HA	2:PY:1590:ILE:HD12	1.85	0.58
1:AX:61:LEU:HD12	2:QY:1527:ARG:HD3	1.83	0.58
1:JX:288:LEU:HD22	1:KX:68:GLN:HE21	1.68	0.58
2:KY:1564:ASP:OD1	2:KY:1564:ASP:N	2.31	0.58
1:BX:280:LEU:N	1:BX:291:PHE:O	2.30	0.58
1:CX:92:SER:O	1:CX:93:ASN:ND2	2.36	0.58
1:EX:288:LEU:HD22	1:FX:68:GLN:HE21	1.68	0.58
1:FX:67:ILE:HD11	1:FX:97:ILE:HD13	1.86	0.58
1:LX:105:ASN:OD1	1:LX:266:SER:OG	2.19	0.58
1:EX:105:ASN:OD1	1:EX:266:SER:OG	2.21	0.58
1:IX:93:ASN:HD22	2:HY:1566:ILE:HD13	1.69	0.58
1:GX:105:ASN:OD1	1:GX:266:SER:OG	2.19	0.58
2:DY:1536:ALA:HB3	2:EY:1519:VAL:HG23	1.86	0.58
2:FY:1534:ASN:OD1	2:FY:1538:LYS:NZ	2.30	0.58
2:AY:1536:ALA:HB3	2:BY:1519:VAL:HG23	1.86	0.57
2:BY:1482:LEU:HD13	2:BY:1513:LYS:HD2	1.86	0.57

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:GY:1503:ASP:OD2	2:GY:1504:SER:N	2.36	0.57
1:FX:105:ASN:OD1	1:FX:266:SER:OG	2.20	0.57
1:CX:105:ASN:OD1	1:CX:266:SER:OG	2.20	0.57
1:DX:77:TYR:HA	2:CY:1555:THR:HG23	1.85	0.57
1:JX:277:ARG:HD2	1:JX:294:ARG:NH1	2.19	0.57
1:JX:282:VAL:HG13	1:JX:289:TYR:HB2	1.86	0.57
1:MX:67:ILE:HA	1:MX:308:VAL:HG13	1.85	0.57
2:HY:1489:THR:O	2:HY:1491:GLN:NE2	2.36	0.57
1:CX:289:TYR:HH	1:CX:312:TYR:HH	1.53	0.57
1:BX:67:ILE:HA	1:BX:308:VAL:HG23	1.85	0.57
1:BX:92:SER:O	1:BX:93:ASN:ND2	2.37	0.57
1:FX:59:THR:OG1	1:FX:60:SER:N	2.37	0.57
1:KX:45:LYS:HD3	1:KX:309:LYS:HB3	1.86	0.57
1:DX:61:LEU:HD12	2:CY:1527:ARG:HD3	1.87	0.57
1:EX:71:LYS:HE2	2:DY:1566:ILE:HB	1.87	0.57
2:JY:1533:ASP:HA	2:KY:1519:VAL:HG21	1.86	0.57
2:QY:1587:GLU:HA	2:QY:1590:ILE:HD12	1.86	0.57
1:CX:62:ASP:OD1	2:AY:1548:LYS:NZ	2.37	0.57
1:NX:61:LEU:HD22	1:NX:271:PRO:HG2	1.87	0.57
2:CY:1533:ASP:HA	2:DY:1519:VAL:HG21	1.87	0.57
2:HY:1536:ALA:HB3	2:IY:1519:VAL:HG23	1.86	0.57
1:CX:101:SER:OG	2:AY:1549:ASN:ND2	2.38	0.57
1:OX:45:LYS:HD3	1:OX:309:LYS:HB3	1.87	0.57
1:HX:45:LYS:HD3	1:HX:309:LYS:HB3	1.87	0.56
1:HX:67:ILE:HA	1:HX:308:VAL:HG23	1.87	0.56
1:GX:59:THR:OG1	1:GX:60:SER:N	2.38	0.56
1:HX:77:TYR:HA	2:GY:1555:THR:HG23	1.86	0.56
1:QX:78:ILE:HG21	1:QX:90:PRO:HG3	1.86	0.56
1:AX:59:THR:HG21	1:AX:86:TRP:CZ3	2.40	0.56
1:CX:61:LEU:HD22	1:CX:271:PRO:HG2	1.86	0.56
1:AX:105:ASN:OD1	1:AX:266:SER:OG	2.20	0.56
1:QX:289:TYR:HH	1:QX:312:TYR:HH	1.53	0.56
2:NY:1482:LEU:HD13	2:NY:1513:LYS:HD2	1.87	0.56
1:JX:59:THR:OG1	1:JX:60:SER:N	2.38	0.56
1:OX:92:SER:O	1:OX:93:ASN:ND2	2.38	0.56
2:FY:1489:THR:O	2:FY:1491:GLN:NE2	2.39	0.56
2:MY:1543:LEU:HD12	2:NY:1526:LEU:HD11	1.87	0.56
1:AX:92:SER:O	1:AX:93:ASN:ND2	2.39	0.56
1:EX:78:ILE:HG21	1:EX:90:PRO:HG3	1.88	0.56
1:IX:271:PRO:HB3	1:IX:276:TRP:CE2	2.40	0.56
1:OX:57:ILE:HD12	1:OX:308:VAL:HG11	1.87	0.56

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:BY:1503:ASP:OD2	2:BY:1504:SER:N	2.38	0.56
2:DY:1489:THR:O	2:DY:1491:GLN:NE2	2.39	0.56
1:CX:280:LEU:N	1:CX:291:PHE:O	2.36	0.56
1:PX:77:TYR:HB2	1:PX:283:ARG:HH21	1.71	0.56
2:NY:1533:ASP:HA	2:OY:1519:VAL:HG21	1.87	0.56
1:HX:80:THR:HG22	1:HX:280:LEU:HD13	1.88	0.56
1:PX:45:LYS:HD3	1:PX:309:LYS:HB3	1.88	0.56
1:DX:45:LYS:HD3	1:DX:309:LYS:HB3	1.87	0.56
1:DX:277:ARG:HD2	1:DX:294:ARG:NH1	2.20	0.56
1:EX:104:SER:HB2	2:DY:1547:PHE:HB3	1.88	0.56
1:KX:92:SER:O	1:KX:93:ASN:ND2	2.39	0.56
1:BX:284:THR:HG23	1:BX:286:LYS:H	1.71	0.56
2:LY:1503:ASP:OD2	2:LY:1504:SER:N	2.39	0.56
1:LX:45:LYS:HD3	1:LX:309:LYS:HB3	1.87	0.55
1:NX:289:TYR:OH	1:NX:312:TYR:OH	2.22	0.55
2:FY:1487:ASP:OD2	2:FY:1489:THR:OG1	2.21	0.55
1:MX:59:THR:OG1	1:MX:60:SER:N	2.40	0.55
1:OX:78:ILE:HG21	1:OX:90:PRO:HG3	1.87	0.55
1:CX:282:VAL:HG13	1:CX:289:TYR:HB2	1.88	0.55
1:HX:61:LEU:HD22	1:HX:271:PRO:HG2	1.88	0.55
1:LX:282:VAL:HG13	1:LX:289:TYR:HB2	1.87	0.55
2:LY:1495:GLU:OE2	2:LY:1506:ARG:NH2	2.39	0.55
1:EX:45:LYS:HD3	1:EX:309:LYS:HB3	1.87	0.55
1:GX:282:VAL:HG13	1:GX:289:TYR:HB2	1.88	0.55
2:GY:1579:ASP:HB3	2:GY:1582:LYS:HD3	1.88	0.55
1:IX:59:THR:OG1	1:IX:60:SER:N	2.40	0.55
2:GY:1470:SER:OG	2:GY:1471:LYS:N	2.40	0.55
2:KY:1489:THR:O	2:KY:1491:GLN:NE2	2.39	0.55
2:PY:1533:ASP:HA	2:QY:1519:VAL:HG21	1.88	0.55
1:GX:46:ILE:HG23	1:GX:310:LEU:HD23	1.88	0.55
1:JX:271:PRO:HA	1:JX:276:TRP:CZ3	2.42	0.55
1:MX:45:LYS:HD3	1:MX:309:LYS:HB3	1.88	0.55
1:NX:45:LYS:HD3	1:NX:309:LYS:HB3	1.89	0.55
1:AX:51:ASP:O	1:BX:43:ASN:ND2	2.39	0.55
1:KX:284:THR:OG1	1:KX:285:ASN:N	2.38	0.55
1:KX:288:LEU:HD22	1:LX:68:GLN:HE21	1.71	0.55
1:QX:282:VAL:HG13	1:QX:289:TYR:HB2	1.87	0.55
2:HY:1587:GLU:HA	2:HY:1590:ILE:HD12	1.88	0.55
2:OY:1587:GLU:HA	2:OY:1590:ILE:HD12	1.88	0.55
1:CX:73:GLU:HG2	1:CX:286:LYS:HB2	1.88	0.55
1:FX:62:ASP:OD1	2:DY:1548:LYS:NZ	2.39	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AX:94:HIS:NE2	1:QX:283:ARG:HD3	2.22	0.55
2:LY:1533:ASP:HA	2:MY:1519:VAL:HG21	1.88	0.55
1:CX:283:ARG:HD3	1:DX:94:HIS:NE2	2.22	0.54
1:JX:289:TYR:OH	1:JX:312:TYR:OH	2.23	0.54
1:MX:61:LEU:HD22	1:MX:271:PRO:HG2	1.87	0.54
2:QY:1482:LEU:HD13	2:QY:1513:LYS:HD2	1.89	0.54
1:GX:89:VAL:HG13	1:GX:96:PHE:HB2	1.88	0.54
1:NX:92:SER:O	1:NX:93:ASN:ND2	2.41	0.54
1:IX:282:VAL:HG13	1:IX:289:TYR:HB2	1.89	0.54
2:IY:1533:ASP:HA	2:JY:1519:VAL:HG21	1.88	0.54
2:JY:1495:GLU:OE2	2:JY:1506:ARG:NH2	2.41	0.54
2:MY:1587:GLU:HA	2:MY:1590:ILE:HD12	1.88	0.54
1:KX:105:ASN:OD1	1:KX:266:SER:OG	2.19	0.54
2:IY:1482:LEU:HD13	2:IY:1513:LYS:HD2	1.88	0.54
2:LY:1536:ALA:HB3	2:MY:1519:VAL:HG23	1.88	0.54
1:JX:48:TYR:HD1	1:JX:55:ILE:HD11	1.71	0.54
1:FX:284:THR:OG1	1:FX:285:ASN:N	2.39	0.54
1:MX:277:ARG:HD2	1:MX:294:ARG:HH11	1.72	0.54
1:QX:92:SER:HB2	2:PY:1560:ASN:HA	1.88	0.54
2:QY:1489:THR:O	2:QY:1491:GLN:NE2	2.40	0.54
1:JX:61:LEU:HD22	1:JX:271:PRO:HG2	1.90	0.54
2:GY:1482:LEU:HD13	2:GY:1513:LYS:HD2	1.89	0.54
1:EX:271:PRO:HB3	1:EX:276:TRP:CE2	2.43	0.54
1:KX:129:LYS:O	1:LX:120:ARG:NH1	2.41	0.54
1:OX:105:ASN:OD1	1:OX:266:SER:OG	2.20	0.54
1:PX:282:VAL:HG13	1:PX:289:TYR:HB2	1.89	0.54
2:NY:1587:GLU:HA	2:NY:1590:ILE:HD12	1.89	0.54
1:BX:45:LYS:HD3	1:BX:309:LYS:HB3	1.90	0.53
1:CX:67:ILE:HA	1:CX:308:VAL:HG23	1.88	0.53
1:GX:284:THR:OG1	1:GX:285:ASN:N	2.40	0.53
1:KX:61:LEU:HD22	1:KX:271:PRO:HG2	1.90	0.53
2:IY:1536:ALA:HB3	2:JY:1519:VAL:HG23	1.90	0.53
1:EX:51:ASP:O	1:FX:43:ASN:ND2	2.41	0.53
1:GX:299:ASP:OD1	1:GX:299:ASP:N	2.31	0.53
2:FY:1587:GLU:HA	2:FY:1590:ILE:HD12	1.90	0.53
1:IX:283:ARG:HD3	1:JX:94:HIS:NE2	2.23	0.53
1:JX:37:GLY:HA2	1:JX:298:LYS:HB2	1.91	0.53
1:HX:271:PRO:HB3	1:HX:276:TRP:CE2	2.43	0.53
1:LX:277:ARG:HD2	1:LX:294:ARG:NH1	2.24	0.53
1:NX:43:ASN:OD1	1:NX:43:ASN:N	2.38	0.53
2:GY:1587:GLU:OE1	2:GY:1591:LYS:NZ	2.39	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:AY:1519:VAL:HG21	2:QY:1533:ASP:HA	1.91	0.53
2:KY:1536:ALA:HB3	2:LY:1519:VAL:HG23	1.91	0.53
1:BX:59:THR:OG1	1:BX:60:SER:N	2.41	0.53
2:GY:1579:ASP:OD1	2:GY:1582:LYS:N	2.34	0.53
1:BX:68:GLN:HE22	1:BX:94:HIS:CD2	2.27	0.53
1:NX:282:VAL:HG13	1:NX:289:TYR:HB2	1.91	0.53
1:PX:59:THR:OG1	1:PX:60:SER:N	2.41	0.53
1:QX:45:LYS:HD3	1:QX:309:LYS:HB3	1.90	0.53
2:CY:1596:GLU:HA	2:CY:1599:LEU:HD23	1.91	0.53
2:GY:1536:ALA:HB3	2:HY:1519:VAL:HG23	1.90	0.53
1:EX:39:VAL:HG11	1:EX:60:SER:HB2	1.91	0.53
2:JY:1470:SER:OG	2:JY:1471:LYS:N	2.42	0.53
2:PY:1585:GLU:O	2:PY:1589:THR:HG23	2.09	0.53
1:AX:59:THR:OG1	1:AX:60:SER:N	2.41	0.52
1:CX:58:TRP:H	1:CX:305:TYR:HD2	1.57	0.52
1:DX:271:PRO:HB3	1:DX:276:TRP:CE2	2.42	0.52
1:LX:68:GLN:HA	1:LX:94:HIS:HB3	1.90	0.52
1:BX:129:LYS:O	1:CX:120:ARG:NH1	2.42	0.52
1:GX:57:ILE:HD12	1:GX:308:VAL:HG21	1.91	0.52
1:GX:67:ILE:HA	1:GX:308:VAL:HG23	1.92	0.52
1:IX:45:LYS:HD3	1:IX:309:LYS:HB3	1.91	0.52
1:IX:68:GLN:HE22	1:IX:94:HIS:CD2	2.27	0.52
1:LX:80:THR:HG22	1:LX:280:LEU:HD13	1.92	0.52
1:OX:59:THR:OG1	1:OX:60:SER:N	2.41	0.52
2:KY:1470:SER:OG	2:KY:1471:LYS:N	2.40	0.52
1:EX:282:VAL:HG13	1:EX:289:TYR:HB2	1.92	0.52
1:GX:67:ILE:HD11	1:GX:97:ILE:HD13	1.91	0.52
1:GX:71:LYS:HE2	2:FY:1566:ILE:HB	1.91	0.52
1:KX:59:THR:OG1	1:KX:60:SER:N	2.42	0.52
2:HY:1503:ASP:OD1	2:HY:1504:SER:N	2.42	0.52
2:JY:1503:ASP:OD2	2:JY:1504:SER:N	2.42	0.52
1:DX:283:ARG:HD3	1:EX:94:HIS:NE2	2.25	0.52
1:GX:277:ARG:HD2	1:GX:294:ARG:HH11	1.74	0.52
1:JX:129:LYS:O	1:KX:120:ARG:NH1	2.42	0.52
2:DY:1503:ASP:OD1	2:DY:1504:SER:N	2.43	0.52
2:GY:1489:THR:O	2:GY:1491:GLN:NE2	2.42	0.52
1:FX:73:GLU:HG2	1:FX:286:LYS:HB2	1.92	0.52
1:BX:78:ILE:HG21	1:BX:90:PRO:HG3	1.91	0.52
2:EY:1489:THR:O	2:EY:1491:GLN:NE2	2.41	0.52
2:MY:1487:ASP:OD1	2:MY:1489:THR:OG1	2.24	0.52
1:AX:282:VAL:HG13	1:AX:289:TYR:HB2	1.92	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:FX:89:VAL:HG13	1:FX:96:PHE:HB2	1.90	0.52
1:FX:101:SER:OG	2:DY:1549:ASN:ND2	2.42	0.52
1:GX:45:LYS:HD3	1:GX:309:LYS:HB3	1.91	0.52
1:HX:59:THR:OG1	1:HX:60:SER:N	2.43	0.52
1:PX:36:ARG:HG2	1:PX:38:ARG:H	1.75	0.52
2:IY:1470:SER:OG	2:IY:1471:LYS:N	2.43	0.52
2:NY:1503:ASP:OD2	2:NY:1504:SER:N	2.43	0.52
1:CX:61:LEU:HD12	2:BY:1527:ARG:HD3	1.91	0.52
1:QX:68:GLN:HG2	1:QX:309:LYS:HG3	1.91	0.52
2:BY:1536:ALA:HB3	2:CY:1519:VAL:HG23	1.91	0.52
2:OY:1470:SER:OG	2:OY:1471:LYS:N	2.41	0.52
2:QY:1577:GLU:HG2	2:QY:1578:PRO:O	2.10	0.52
1:GX:78:ILE:HG21	1:GX:90:PRO:HG3	1.91	0.52
2:AY:1577:GLU:HG2	2:AY:1578:PRO:O	2.10	0.52
2:EY:1495:GLU:OE2	2:EY:1506:ARG:NH2	2.42	0.52
2:EY:1585:GLU:O	2:EY:1589:THR:HG23	2.10	0.52
1:AX:61:LEU:HD22	1:AX:271:PRO:HG2	1.91	0.52
1:DX:68:GLN:HB3	1:DX:309:LYS:HA	1.92	0.52
1:DX:282:VAL:HG13	1:DX:289:TYR:HB2	1.90	0.52
1:PX:289:TYR:HH	1:PX:312:TYR:HH	1.54	0.52
2:CY:1585:GLU:O	2:CY:1589:THR:HG23	2.10	0.52
2:EY:1470:SER:OG	2:EY:1471:LYS:N	2.43	0.52
2:FY:1482:LEU:HD13	2:FY:1513:LYS:HD2	1.91	0.52
1:CX:92:SER:HB2	2:BY:1560:ASN:HA	1.92	0.51
1:FX:93:ASN:HD22	2:EY:1566:ILE:HD13	1.75	0.51
1:NX:59:THR:OG1	1:NX:60:SER:N	2.43	0.51
2:AY:1585:GLU:O	2:AY:1589:THR:HG23	2.10	0.51
2:LY:1585:GLU:O	2:LY:1589:THR:HG23	2.11	0.51
1:GX:48:TYR:HB2	1:GX:310:LEU:HD22	1.93	0.51
1:NX:80:THR:HG22	1:NX:280:LEU:HD13	1.92	0.51
1:QX:271:PRO:HB3	1:QX:276:TRP:CE2	2.44	0.51
2:EY:1564:ASP:OD1	2:EY:1564:ASP:N	2.44	0.51
2:IY:1585:GLU:O	2:IY:1589:THR:HG23	2.10	0.51
1:AX:77:TYR:HA	2:QY:1555:THR:HG23	1.92	0.51
1:DX:67:ILE:HA	1:DX:308:VAL:HG23	1.90	0.51
1:FX:88:ILE:HG12	1:FX:97:ILE:HG22	1.93	0.51
1:IX:61:LEU:HD12	2:HY:1527:ARG:HD3	1.93	0.51
1:NX:60:SER:OG	1:NX:63:ASN:ND2	2.43	0.51
1:PX:71:LYS:HE2	2:OY:1566:ILE:HB	1.91	0.51
2:AY:1587:GLU:OE2	2:AY:1591:LYS:NZ	2.43	0.51
2:BY:1470:SER:OG	2:BY:1471:LYS:N	2.43	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:OY:1585:GLU:O	2:OY:1589:THR:HG23	2.10	0.51
1:DX:67:ILE:HD11	1:DX:97:ILE:HD13	1.92	0.51
1:EX:59:THR:OG1	1:EX:60:SER:N	2.43	0.51
1:GX:68:GLN:HE22	1:GX:94:HIS:CD2	2.28	0.51
1:LX:299:ASP:OD1	1:LX:299:ASP:N	2.33	0.51
2:FY:1503:ASP:OD2	2:FY:1504:SER:N	2.43	0.51
2:MY:1535:MET:HE2	2:MY:1544:PRO:HD3	1.91	0.51
1:NX:68:GLN:HA	1:NX:94:HIS:HB3	1.92	0.51
2:OY:1577:GLU:HG2	2:OY:1578:PRO:O	2.10	0.51
2:PY:1577:GLU:HG2	2:PY:1578:PRO:O	2.11	0.51
2:PY:1586:THR:HG22	2:QY:1599:LEU:HB2	1.92	0.51
2:QY:1585:GLU:O	2:QY:1589:THR:HG23	2.11	0.51
1:MX:68:GLN:HG2	1:MX:309:LYS:HG3	1.93	0.51
1:HX:33:ASN:OD1	1:HX:34:PHE:N	2.43	0.51
1:JX:284:THR:OG1	1:JX:285:ASN:N	2.42	0.51
1:MX:92:SER:O	1:MX:93:ASN:ND2	2.44	0.51
1:MX:282:VAL:HG13	1:MX:289:TYR:HB2	1.92	0.51
1:QX:68:GLN:HB3	1:QX:309:LYS:HA	1.92	0.51
2:HY:1534:ASN:OD1	2:HY:1538:LYS:NZ	2.31	0.51
2:NY:1534:ASN:OD1	2:NY:1538:LYS:NZ	2.31	0.51
1:JX:289:TYR:O	1:JX:290:GLN:NE2	2.44	0.51
1:LX:59:THR:OG1	1:LX:60:SER:N	2.42	0.51
2:FY:1585:GLU:O	2:FY:1589:THR:HG23	2.11	0.51
2:KY:1585:GLU:O	2:KY:1589:THR:HG23	2.10	0.51
2:MY:1593:LYS:HD2	2:NY:1603:LEU:HA	1.93	0.51
1:AX:59:THR:HG21	1:AX:86:TRP:HZ3	1.75	0.50
1:MX:73:GLU:HG2	1:MX:286:LYS:HB2	1.92	0.50
1:NX:277:ARG:HD2	1:NX:294:ARG:NH1	2.25	0.50
1:OX:68:GLN:HA	1:OX:94:HIS:HB3	1.93	0.50
2:DY:1585:GLU:O	2:DY:1589:THR:HG23	2.11	0.50
1:DX:57:ILE:HD12	1:DX:308:VAL:HG21	1.92	0.50
1:EX:62:ASP:OD1	2:CY:1548:LYS:NZ	2.44	0.50
1:QX:73:GLU:HG2	1:QX:286:LYS:HB2	1.93	0.50
2:BY:1585:GLU:O	2:BY:1589:THR:HG23	2.11	0.50
2:CY:1577:GLU:HG2	2:CY:1578:PRO:O	2.11	0.50
2:GY:1577:GLU:HG2	2:GY:1578:PRO:O	2.12	0.50
1:JX:68:GLN:HA	1:JX:94:HIS:HB3	1.94	0.50
1:LX:271:PRO:HB3	1:LX:276:TRP:CE2	2.47	0.50
1:MX:43:ASN:OD1	1:MX:43:ASN:N	2.42	0.50
1:PX:283:ARG:HD3	1:QX:94:HIS:NE2	2.26	0.50
1:QX:93:ASN:HD22	2:PY:1566:ILE:HD13	1.76	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:CY:1576:ILE:HG21	2:DY:1584:TYR:CE1	2.45	0.50
2:DY:1577:GLU:HG2	2:DY:1578:PRO:O	2.12	0.50
1:IX:299:ASP:OD1	1:IX:299:ASP:N	2.32	0.50
1:JX:61:LEU:HD12	2:IY:1527:ARG:HD3	1.93	0.50
1:JX:105:ASN:OD1	1:JX:266:SER:OG	2.22	0.50
1:NX:129:LYS:O	1:OX:120:ARG:NH1	2.44	0.50
1:AX:68:GLN:HA	1:AX:94:HIS:HB3	1.93	0.50
1:DX:33:ASN:OD1	1:DX:34:PHE:N	2.44	0.50
1:GX:289:TYR:OH	1:GX:312:TYR:OH	2.24	0.50
1:IX:277:ARG:HD2	1:IX:294:ARG:HH11	1.75	0.50
2:EY:1503:ASP:OD1	2:EY:1504:SER:N	2.44	0.50
2:GY:1514:ARG:HG3	2:GY:1515:GLN:N	2.26	0.50
1:JX:289:TYR:HH	1:JX:312:TYR:HH	1.56	0.50
1:OX:71:LYS:HE2	2:NY:1566:ILE:HB	1.94	0.50
2:IY:1576:ILE:HG21	2:JY:1584:TYR:CE1	2.42	0.50
1:LX:73:GLU:HG2	1:LX:286:LYS:HB2	1.92	0.50
1:QX:92:SER:O	1:QX:93:ASN:ND2	2.45	0.50
2:OY:1533:ASP:HA	2:PY:1519:VAL:HG21	1.94	0.50
1:CX:290:GLN:NE2	1:DX:307:THR:OG1	2.45	0.50
2:CY:1503:ASP:OD1	2:CY:1504:SER:N	2.45	0.50
2:GY:1533:ASP:HA	2:HY:1519:VAL:HG21	1.94	0.50
2:IY:1564:ASP:OD1	2:IY:1564:ASP:N	2.33	0.50
2:NY:1585:GLU:O	2:NY:1589:THR:HG23	2.12	0.50
2:OY:1489:THR:O	2:OY:1491:GLN:NE2	2.42	0.50
1:EX:305:TYR:HB3	1:EX:308:VAL:HG13	1.94	0.50
2:HY:1585:GLU:O	2:HY:1589:THR:HG23	2.12	0.50
1:CX:271:PRO:HB3	1:CX:276:TRP:CE2	2.47	0.49
1:HX:277:ARG:HD2	1:HX:294:ARG:NH1	2.24	0.49
1:JX:280:LEU:N	1:JX:291:PHE:O	2.45	0.49
2:AY:1593:LYS:HD2	2:BY:1603:LEU:HD23	1.94	0.49
2:NY:1577:GLU:HG2	2:NY:1578:PRO:O	2.12	0.49
1:FX:282:VAL:HG13	1:FX:289:TYR:HB2	1.93	0.49
1:JX:92:SER:O	1:JX:93:ASN:ND2	2.45	0.49
2:BY:1577:GLU:HG2	2:BY:1578:PRO:O	2.12	0.49
2:JY:1536:ALA:HB3	2:KY:1519:VAL:HG23	1.93	0.49
2:JY:1577:GLU:HG2	2:JY:1578:PRO:O	2.12	0.49
2:JY:1585:GLU:O	2:JY:1589:THR:HG23	2.11	0.49
2:MY:1482:LEU:HD13	2:MY:1513:LYS:HD2	1.94	0.49
1:DX:78:ILE:HG21	1:DX:90:PRO:HG3	1.93	0.49
1:EX:284:THR:HG23	1:EX:286:LYS:H	1.77	0.49
1:HX:105:ASN:OD1	1:HX:266:SER:OG	2.20	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:AX:271:PRO:HB3	1:AX:276:TRP:CE2	2.48	0.49
1:HX:282:VAL:HG13	1:HX:289:TYR:HB2	1.94	0.49
1:MX:278:THR:OG1	1:MX:279:ASN:N	2.46	0.49
2:EY:1536:ALA:HB3	2:FY:1519:VAL:HG23	1.95	0.49
2:JY:1486:ASP:OD1	2:JY:1487:ASP:N	2.45	0.49
2:MY:1577:GLU:HG2	2:MY:1578:PRO:O	2.13	0.49
1:CX:277:ARG:HD2	1:CX:294:ARG:NH1	2.27	0.49
1:GX:59:THR:HG21	1:GX:86:TRP:CZ3	2.47	0.49
1:HX:121:ASP:HA	1:HX:124:GLU:HG3	1.94	0.49
1:PX:68:GLN:HA	1:PX:94:HIS:HB3	1.94	0.49
1:PX:101:SER:OG	2:NY:1549:ASN:ND2	2.45	0.49
1:CX:57:ILE:HG21	1:CX:97:ILE:HD11	1.94	0.49
1:DX:92:SER:O	1:DX:93:ASN:ND2	2.45	0.49
1:GX:283:ARG:HD3	1:HX:94:HIS:NE2	2.28	0.49
1:HX:57:ILE:HD12	1:HX:308:VAL:HG21	1.95	0.49
2:DY:1534:ASN:OD1	2:DY:1538:LYS:NZ	2.32	0.49
1:DX:80:THR:HG22	1:DX:280:LEU:HD13	1.95	0.49
1:FX:36:ARG:HH11	2:EY:1488:PRO:HD3	1.78	0.49
1:IX:105:ASN:OD1	1:IX:266:SER:OG	2.22	0.49
1:PX:106:LEU:HD21	1:PX:267:ILE:HD13	1.94	0.49
2:GY:1585:GLU:O	2:GY:1589:THR:HG23	2.11	0.49
2:HY:1577:GLU:HG2	2:HY:1578:PRO:O	2.12	0.49
1:EX:67:ILE:HD11	1:EX:97:ILE:HD13	1.94	0.49
1:HX:59:THR:HG21	1:HX:86:TRP:CZ3	2.48	0.49
1:NX:59:THR:HG21	1:NX:86:TRP:CZ3	2.48	0.49
2:EY:1533:ASP:HA	2:FY:1519:VAL:HG21	1.94	0.49
2:JY:1535:MET:HE2	2:JY:1544:PRO:HD3	1.95	0.49
2:KY:1479:SER:HB2	2:KY:1509:ILE:HD11	1.94	0.49
2:KY:1482:LEU:HD13	2:KY:1513:LYS:HD2	1.95	0.49
2:MY:1536:ALA:HB3	2:NY:1519:VAL:HG23	1.95	0.49
1:MX:68:GLN:HA	1:MX:94:HIS:HB3	1.94	0.49
2:FY:1577:GLU:HG2	2:FY:1578:PRO:O	2.13	0.49
2:KY:1503:ASP:OD1	2:KY:1504:SER:N	2.45	0.49
2:MY:1503:ASP:OD1	2:MY:1504:SER:N	2.46	0.49
2:MY:1585:GLU:O	2:MY:1589:THR:HG23	2.12	0.49
1:AX:280:LEU:N	1:AX:291:PHE:O	2.41	0.49
1:CX:281:VAL:HG12	1:CX:290:GLN:HE22	1.76	0.49
1:MX:284:THR:HG23	1:MX:286:LYS:H	1.77	0.49
1:PX:271:PRO:HB3	1:PX:276:TRP:CE2	2.48	0.49
1:HX:67:ILE:HD11	1:HX:97:ILE:HD13	1.94	0.48
2:BY:1535:MET:HE2	2:BY:1544:PRO:HD3	1.95	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:IY:1577:GLU:HG2	2:IY:1578:PRO:O	2.12	0.48
1:IX:262:PRO:HB2	2:HY:1542:LEU:HD11	1.93	0.48
2:AY:1503:ASP:OD2	2:AY:1504:SER:N	2.46	0.48
2:LY:1577:GLU:HG2	2:LY:1578:PRO:O	2.13	0.48
1:KX:78:ILE:HG21	1:KX:90:PRO:HG3	1.93	0.48
1:MX:59:THR:HG21	1:MX:86:TRP:CZ3	2.48	0.48
1:OX:45:LYS:HE3	1:OX:309:LYS:HD3	1.96	0.48
1:OX:68:GLN:HG2	1:OX:309:LYS:HG3	1.96	0.48
1:OX:289:TYR:OH	1:OX:312:TYR:OH	2.30	0.48
2:IY:1593:LYS:HD2	2:JY:1603:LEU:HA	1.94	0.48
2:PY:1482:LEU:HD13	2:PY:1513:LYS:HD2	1.96	0.48
1:DX:59:THR:HG21	1:DX:86:TRP:CZ3	2.47	0.48
2:BY:1495:GLU:OE2	2:BY:1506:ARG:NH2	2.46	0.48
2:NY:1499:GLU:OE1	2:NY:1500:GLY:N	2.46	0.48
1:CX:103:LYS:NZ	1:CX:268:GLU:HB3	2.29	0.48
1:DX:121:ASP:O	1:DX:124:GLU:HG3	2.13	0.48
1:GX:271:PRO:HA	1:GX:276:TRP:CZ3	2.49	0.48
1:OX:48:TYR:HD1	1:OX:55:ILE:HD11	1.78	0.48
2:JY:1499:GLU:OE1	2:JY:1500:GLY:N	2.46	0.48
2:QY:1503:ASP:OD2	2:QY:1504:SER:N	2.47	0.48
1:FX:67:ILE:HA	1:FX:308:VAL:HG23	1.95	0.48
1:QX:276:TRP:O	1:QX:278:THR:HG22	2.14	0.48
1:AX:299:ASP:OD1	1:AX:299:ASP:N	2.35	0.48
1:BX:61:LEU:HD22	1:BX:271:PRO:HG2	1.95	0.48
1:CX:59:THR:OG1	1:CX:60:SER:N	2.45	0.48
1:KX:271:PRO:HB3	1:KX:276:TRP:CE2	2.48	0.48
2:AY:1534:ASN:OD1	2:AY:1538:LYS:NZ	2.34	0.48
2:HY:1535:MET:HE2	2:HY:1544:PRO:HD3	1.95	0.48
2:KY:1495:GLU:OE2	2:KY:1506:ARG:NH2	2.47	0.48
2:OY:1503:ASP:OD1	2:OY:1504:SER:N	2.47	0.48
2:PY:1593:LYS:HD2	2:QY:1603:LEU:HD23	1.96	0.48
1:DX:299:ASP:OD1	1:DX:299:ASP:N	2.29	0.48
1:GX:276:TRP:O	1:GX:278:THR:HG22	2.14	0.48
1:IX:33:ASN:OD1	1:IX:34:PHE:N	2.46	0.48
1:LX:91:ASN:ND2	2:KY:1559:THR:OG1	2.46	0.48
1:OX:89:VAL:HG13	1:OX:96:PHE:HB2	1.95	0.48
1:OX:271:PRO:HB3	1:OX:276:TRP:CE2	2.49	0.48
2:KY:1577:GLU:HG2	2:KY:1578:PRO:O	2.13	0.48
1:EX:67:ILE:HA	1:EX:308:VAL:HG23	1.94	0.48
1:EX:88:ILE:HG12	1:EX:97:ILE:HG22	1.95	0.48
1:FX:276:TRP:O	1:FX:278:THR:HG22	2.14	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:LX:59:THR:HG21	1:LX:86:TRP:CZ3	2.49	0.48
1:NX:280:LEU:N	1:NX:291:PHE:O	2.34	0.48
2:BY:1598:LYS:HA	2:BY:1601:LYS:HE3	1.95	0.48
1:DX:89:VAL:HG13	1:DX:96:PHE:HB2	1.95	0.47
1:IX:57:ILE:HD12	1:IX:308:VAL:HG11	1.96	0.47
1:JX:43:ASN:OD1	1:JX:43:ASN:N	2.34	0.47
1:QX:57:ILE:HD12	1:QX:308:VAL:HG21	1.96	0.47
1:QX:121:ASP:HA	1:QX:124:GLU:HG3	1.96	0.47
2:HY:1486:ASP:OD1	2:HY:1487:ASP:N	2.47	0.47
1:EX:68:GLN:HA	1:EX:94:HIS:HB3	1.94	0.47
1:NX:61:LEU:HD12	2:MY:1527:ARG:HD3	1.95	0.47
1:QX:80:THR:HG22	1:QX:280:LEU:HD13	1.94	0.47
2:MY:1564:ASP:OD1	2:MY:1564:ASP:N	2.45	0.47
2:QY:1495:GLU:OE2	2:QY:1506:ARG:NH2	2.47	0.47
1:AX:121:ASP:O	1:AX:124:GLU:HG3	2.14	0.47
1:CX:57:ILE:HD12	1:CX:308:VAL:HG21	1.95	0.47
1:HX:284:THR:OG1	1:HX:285:ASN:N	2.47	0.47
2:CY:1598:LYS:HA	2:CY:1601:LYS:HZ2	1.78	0.47
2:EY:1577:GLU:HG2	2:EY:1578:PRO:O	2.15	0.47
1:JX:57:ILE:HG21	1:JX:97:ILE:HD11	1.96	0.47
1:LX:301:PHE:O	2:LY:1476:HIS:HB2	2.14	0.47
2:EY:1514:ARG:O	2:EY:1518:GLU:HG2	2.15	0.47
2:IY:1503:ASP:OD2	2:IY:1504:SER:N	2.48	0.47
1:CX:276:TRP:O	1:CX:278:THR:HG22	2.15	0.47
1:FX:271:PRO:HB3	1:FX:276:TRP:CE2	2.50	0.47
1:KX:57:ILE:HD12	1:KX:308:VAL:HG21	1.95	0.47
1:QX:59:THR:HG21	1:QX:86:TRP:CZ3	2.49	0.47
2:NY:1470:SER:OG	2:NY:1471:LYS:N	2.45	0.47
1:BX:271:PRO:HA	1:BX:276:TRP:CZ3	2.50	0.47
1:LX:125:PHE:HA	1:LX:128:THR:HG22	1.97	0.47
1:AX:62:ASP:N	1:AX:62:ASP:OD2	2.47	0.47
1:DX:59:THR:OG1	1:DX:60:SER:N	2.47	0.47
1:GX:70:GLU:OE1	1:GX:315:ARG:NH1	2.46	0.47
1:KX:89:VAL:HG13	1:KX:96:PHE:HB2	1.96	0.47
1:OX:33:ASN:OD1	1:OX:34:PHE:N	2.48	0.47
2:EY:1534:ASN:OD1	2:EY:1538:LYS:NZ	2.34	0.47
2:KY:1487:ASP:OD2	2:KY:1489:THR:OG1	2.32	0.47
2:OY:1514:ARG:O	2:OY:1518:GLU:HG2	2.15	0.47
2:PY:1514:ARG:O	2:PY:1518:GLU:HG2	2.15	0.47
2:QY:1514:ARG:O	2:QY:1518:GLU:HG2	2.15	0.47
1:BX:33:ASN:OD1	1:BX:34:PHE:N	2.47	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:CX:281:VAL:HG12	1:CX:290:GLN:NE2	2.30	0.47
1:DX:301:PHE:O	2:DY:1476:HIS:HB2	2.15	0.47
1:GX:103:LYS:NZ	1:GX:268:GLU:HB3	2.29	0.47
1:JX:284:THR:HG23	1:JX:287:ALA:H	1.79	0.47
1:KX:276:TRP:O	1:KX:278:THR:HG22	2.15	0.47
1:NX:58:TRP:H	1:NX:305:TYR:HD2	1.62	0.47
1:OX:276:TRP:O	1:OX:278:THR:HG22	2.14	0.47
1:QX:305:TYR:HB3	1:QX:308:VAL:HG13	1.96	0.47
2:PY:1536:ALA:HB3	2:QY:1519:VAL:HG23	1.97	0.47
1:HX:68:GLN:HG2	1:HX:309:LYS:HG3	1.97	0.47
1:JX:305:TYR:HB3	1:JX:308:VAL:HG23	1.97	0.47
1:MX:44:LYS:HD3	1:MX:46:ILE:HG12	1.96	0.47
1:NX:73:GLU:O	1:NX:93:ASN:HA	2.15	0.47
1:BX:277:ARG:HH11	1:BX:294:ARG:NH1	2.13	0.47
1:GX:277:ARG:HD2	1:GX:294:ARG:NH1	2.29	0.47
1:HX:106:LEU:HD21	1:HX:267:ILE:HD13	1.97	0.47
1:MX:51:ASP:O	1:NX:43:ASN:ND2	2.48	0.47
1:MX:101:SER:OG	2:KY:1549:ASN:ND2	2.47	0.47
1:BX:277:ARG:HD2	1:BX:294:ARG:NH1	2.27	0.46
1:CX:68:GLN:HE22	1:CX:94:HIS:CD2	2.33	0.46
1:CX:88:ILE:HG12	1:CX:97:ILE:HG22	1.96	0.46
1:GX:78:ILE:HD13	1:GX:90:PRO:HB3	1.97	0.46
1:KX:277:ARG:HH11	1:KX:294:ARG:NH1	2.12	0.46
1:CX:68:GLN:HB3	1:CX:309:LYS:HA	1.97	0.46
1:NX:36:ARG:NH1	2:MY:1485:LEU:O	2.36	0.46
2:MY:1489:THR:O	2:MY:1491:GLN:NE2	2.45	0.46
1:HX:276:TRP:O	1:HX:278:THR:HG22	2.15	0.46
1:KX:59:THR:HG21	1:KX:86:TRP:CZ3	2.50	0.46
1:OX:77:TYR:HA	2:NY:1555:THR:HG23	1.98	0.46
1:OX:103:LYS:NZ	1:OX:268:GLU:HB3	2.31	0.46
1:OX:121:ASP:O	1:OX:124:GLU:HG3	2.16	0.46
2:AY:1576:ILE:HD13	2:BY:1584:TYR:CE1	2.50	0.46
1:EX:61:LEU:HD22	1:EX:271:PRO:HG2	1.98	0.46
1:GX:271:PRO:HB3	1:GX:276:TRP:CE2	2.50	0.46
1:IX:276:TRP:O	1:IX:278:THR:HG22	2.16	0.46
1:PX:280:LEU:N	1:PX:291:PHE:O	2.29	0.46
2:LY:1487:ASP:OD1	2:LY:1489:THR:OG1	2.31	0.46
1:AX:120:ARG:HH22	1:QX:130:LYS:HA	1.80	0.46
1:CX:36:ARG:NH1	2:BY:1485:LEU:O	2.40	0.46
1:FX:73:GLU:CD	1:FX:289:TYR:HH	2.17	0.46
2:BY:1593:LYS:HE3	2:BY:1593:LYS:HB3	1.82	0.46

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:DX:280:LEU:N	1:DX:291:PHE:O	2.37	0.46
1:EX:59:THR:HG21	1:EX:86:TRP:CZ3	2.50	0.46
1:QX:46:ILE:HG21	1:QX:55:ILE:HG21	1.98	0.46
1:QX:77:TYR:HA	2:PY:1555:THR:HG23	1.97	0.46
2:DY:1533:ASP:HA	2:EY:1519:VAL:HG21	1.97	0.46
2:LY:1514:ARG:O	2:LY:1518:GLU:HG2	2.16	0.46
2:NY:1487:ASP:OD1	2:NY:1489:THR:OG1	2.32	0.46
1:KX:305:TYR:HB3	1:KX:308:VAL:HG13	1.96	0.46
1:MX:62:ASP:OD1	1:MX:62:ASP:N	2.49	0.46
1:MX:271:PRO:HB3	1:MX:276:TRP:CE2	2.51	0.46
1:NX:289:TYR:HH	1:NX:312:TYR:HH	1.48	0.46
2:LY:1564:ASP:OD1	2:LY:1564:ASP:N	2.42	0.46
2:PY:1503:ASP:OD2	2:PY:1504:SER:N	2.49	0.46
1:AX:73:GLU:HG2	1:AX:286:LYS:HB2	1.96	0.46
1:EX:68:GLN:HB3	1:EX:309:LYS:HA	1.98	0.46
1:FX:59:THR:HG21	1:FX:86:TRP:CZ3	2.50	0.46
1:HX:101:SER:OG	2:FY:1549:ASN:ND2	2.48	0.46
2:NY:1475:LEU:HD22	2:NY:1509:ILE:HD11	1.98	0.46
1:HX:68:GLN:HB3	1:HX:309:LYS:HA	1.97	0.46
1:QX:299:ASP:OD1	1:QX:299:ASP:N	2.33	0.46
2:JY:1534:ASN:OD1	2:JY:1538:LYS:NZ	2.35	0.46
2:NY:1593:LYS:HD2	2:OY:1603:LEU:HD23	1.98	0.46
2:PY:1486:ASP:OD2	2:PY:1487:ASP:N	2.49	0.46
1:BX:283:ARG:HD3	1:CX:94:HIS:NE2	2.31	0.45
1:JX:101:SER:OG	2:HY:1549:ASN:ND2	2.48	0.45
2:KY:1528:ASN:O	2:KY:1531:THR:OG1	2.26	0.45
1:GX:301:PHE:O	2:GY:1476:HIS:HB2	2.16	0.45
1:NX:271:PRO:HA	1:NX:276:TRP:CH2	2.52	0.45
1:PX:121:ASP:O	1:PX:124:GLU:HG3	2.16	0.45
1:PX:289:TYR:OH	1:PX:312:TYR:OH	2.24	0.45
2:AY:1486:ASP:OD1	2:AY:1487:ASP:N	2.49	0.45
1:AX:102:VAL:HG12	1:AX:103:LYS:N	2.31	0.45
1:AX:277:ARG:HH11	1:AX:294:ARG:NH1	2.14	0.45
1:BX:121:ASP:O	1:BX:124:GLU:HG3	2.16	0.45
1:FX:77:TYR:HA	2:EY:1555:THR:HG23	1.96	0.45
1:FX:121:ASP:O	1:FX:124:GLU:HG3	2.15	0.45
1:HX:299:ASP:OD1	1:HX:299:ASP:N	2.31	0.45
1:IX:267:ILE:HG13	1:IX:268:GLU:O	2.17	0.45
1:GX:66:VAL:O	1:GX:307:THR:HA	2.17	0.45
1:IX:88:ILE:HG23	1:IX:97:ILE:HG22	1.99	0.45
1:NX:77:TYR:HA	2:MY:1555:THR:HG23	1.98	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:NX:301:PHE:O	2:NY:1476:HIS:HB2	2.16	0.45
1:OX:277:ARG:HH11	1:OX:294:ARG:NH1	2.14	0.45
2:IY:1486:ASP:OD1	2:IY:1487:ASP:N	2.49	0.45
2:IY:1495:GLU:OE2	2:IY:1506:ARG:NH2	2.49	0.45
1:AX:58:TRP:HH2	1:AX:294:ARG:HH21	1.64	0.45
1:AX:67:ILE:HD11	1:AX:97:ILE:HD13	1.97	0.45
1:FX:57:ILE:HD12	1:FX:308:VAL:HG21	1.98	0.45
1:JX:45:LYS:HE3	1:JX:309:LYS:HD3	1.98	0.45
1:KX:283:ARG:HD3	1:LX:94:HIS:NE2	2.31	0.45
1:QX:57:ILE:HG21	1:QX:97:ILE:HD11	1.98	0.45
1:QX:103:LYS:NZ	1:QX:268:GLU:HB3	2.31	0.45
1:EX:276:TRP:O	1:EX:278:THR:HG22	2.17	0.45
1:EX:278:THR:OG1	1:EX:279:ASN:N	2.48	0.45
1:KX:58:TRP:H	1:KX:305:TYR:HD2	1.63	0.45
1:QX:62:ASP:N	1:QX:62:ASP:OD1	2.50	0.45
2:FY:1543:LEU:HD12	2:GY:1526:LEU:HD11	1.99	0.45
2:PY:1510:LEU:HD23	2:PY:1510:LEU:HA	1.76	0.45
1:AX:288:LEU:HD22	1:BX:68:GLN:HE21	1.82	0.45
1:CX:130:LYS:HA	1:DX:120:ARG:HH22	1.81	0.45
1:EX:280:LEU:N	1:EX:291:PHE:O	2.45	0.45
1:IX:93:ASN:ND2	2:HY:1566:ILE:HD13	2.31	0.45
2:LY:1534:ASN:OD1	2:LY:1538:LYS:NZ	2.34	0.45
1:BX:305:TYR:HB3	1:BX:308:VAL:HG13	1.99	0.45
1:DX:58:TRP:H	1:DX:305:TYR:HD2	1.62	0.45
1:GX:66:VAL:HA	1:GX:95:ILE:O	2.17	0.45
1:NX:271:PRO:HA	1:NX:276:TRP:CZ3	2.52	0.45
1:QX:58:TRP:CZ2	2:QY:1476:HIS:HE1	2.35	0.45
1:QX:59:THR:OG1	1:QX:60:SER:N	2.50	0.45
2:DY:1576:ILE:HG21	2:EY:1584:TYR:CE1	2.42	0.45
1:FX:277:ARG:HD2	1:FX:294:ARG:NH1	2.25	0.45
1:JX:80:THR:HG22	1:JX:280:LEU:HD13	1.99	0.45
1:KX:80:THR:HG23	1:KX:280:LEU:HD13	1.99	0.45
1:MX:66:VAL:HG13	1:MX:307:THR:HA	1.99	0.45
1:NX:105:ASN:OD1	1:NX:266:SER:OG	2.21	0.45
1:QX:284:THR:OG1	1:QX:285:ASN:N	2.50	0.45
2:NY:1514:ARG:O	2:NY:1518:GLU:HG2	2.16	0.45
1:EX:57:ILE:HG21	1:EX:97:ILE:HD11	1.99	0.45
1:IX:121:ASP:O	1:IX:124:GLU:HG3	2.17	0.45
1:NX:88:ILE:HG23	1:NX:97:ILE:HG22	1.98	0.45
1:NX:299:ASP:HB2	2:NY:1512:ILE:HD13	1.98	0.45
1:PX:109:GLU:HG3	2:OY:1543:LEU:HD11	1.99	0.45

Continued on next page...

Continued from previous page...

Atom-1	**Atom-2**	**Interatomic distance (Å)**	**Clash overlap (Å)**
1:PX:277:ARG:HH11	1:PX:294:ARG:NH1	2.15	0.45
2:NY:1489:THR:O	2:NY:1491:GLN:NE2	2.47	0.45
1:AX:68:GLN:HE22	1:AX:94:HIS:CD2	2.35	0.44
1:GX:68:GLN:HB3	1:GX:309:LYS:HA	1.99	0.44
1:GX:73:GLU:HG2	1:GX:286:LYS:HB2	1.98	0.44
1:KX:280:LEU:N	1:KX:291:PHE:O	2.36	0.44
1:MX:57:ILE:HG21	1:MX:97:ILE:HD11	1.98	0.44
2:AY:1576:ILE:HG21	2:BY:1584:TYR:CE1	2.52	0.44
2:EY:1487:ASP:OD2	2:EY:1489:THR:OG1	2.32	0.44
1:DX:105:ASN:OD1	1:DX:266:SER:OG	2.27	0.44
1:EX:57:ILE:HD12	1:EX:308:VAL:HG21	2.00	0.44
1:JX:121:ASP:HA	1:JX:124:GLU:HG3	1.98	0.44
1:LX:103:LYS:NZ	1:LX:268:GLU:HB3	2.32	0.44
1:NX:121:ASP:O	1:NX:124:GLU:HG3	2.17	0.44
1:CX:106:LEU:HD21	1:CX:267:ILE:HD13	1.99	0.44
1:CX:305:TYR:HB3	1:CX:308:VAL:HG13	2.00	0.44
1:DX:68:GLN:HA	1:DX:94:HIS:HB3	1.98	0.44
1:DX:103:LYS:NZ	1:DX:268:GLU:HB3	2.31	0.44
1:DX:314:GLN:O	1:DX:317:GLU:HG3	2.18	0.44
1:FX:92:SER:O	1:FX:93:ASN:ND2	2.51	0.44
1:IX:36:ARG:NH1	2:HY:1485:LEU:O	2.33	0.44
2:AY:1526:LEU:HD11	2:QY:1543:LEU:HD12	2.00	0.44
2:CY:1489:THR:O	2:CY:1491:GLN:NE2	2.49	0.44
2:LY:1593:LYS:HD2	2:MY:1603:LEU:HD23	1.99	0.44
1:KX:77:TYR:HB2	1:KX:283:ARG:HH21	1.81	0.44
1:LX:67:ILE:HD11	1:LX:97:ILE:HD13	1.99	0.44
1:PX:59:THR:HG21	1:PX:86:TRP:CZ3	2.53	0.44
1:PX:62:ASP:OD1	1:PX:62:ASP:N	2.50	0.44
2:AY:1586:THR:HG22	2:BY:1599:LEU:HB2	1.97	0.44
2:HY:1509:ILE:HD13	2:HY:1509:ILE:HA	1.80	0.44
2:JY:1576:ILE:HG21	2:KY:1584:TYR:CE1	2.47	0.44
1:BX:59:THR:HG21	1:BX:86:TRP:CZ3	2.52	0.44
1:GX:68:GLN:HA	1:GX:94:HIS:HB3	1.99	0.44
1:GX:305:TYR:HB3	1:GX:308:VAL:HG13	1.99	0.44
1:KX:121:ASP:O	1:KX:124:GLU:HG3	2.18	0.44
1:LX:284:THR:HG23	1:LX:286:LYS:H	1.83	0.44
1:NX:71:LYS:HD3	2:MY:1568:SER:HA	1.99	0.44
1:EX:299:ASP:OD1	1:EX:299:ASP:N	2.37	0.44
1:GX:280:LEU:N	1:GX:291:PHE:O	2.36	0.44
1:OX:61:LEU:HD12	2:NY:1527:ARG:HD3	1.98	0.44
1:OX:283:ARG:HD3	1:PX:94:HIS:NE2	2.33	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:EY:1576:ILE:HG21	2:FY:1584:TYR:CE1	2.46	0.44
2:IY:1475:LEU:HD23	2:IY:1475:LEU:HA	1.84	0.44
2:OY:1536:ALA:HB3	2:PY:1519:VAL:HG23	1.99	0.44
1:FX:68:GLN:HB3	1:FX:309:LYS:HA	2.00	0.44
1:FX:305:TYR:HB3	1:FX:308:VAL:HG13	2.00	0.44
1:GX:126:LEU:HD23	1:GX:126:LEU:HA	1.85	0.44
1:OX:59:THR:HG21	1:OX:86:TRP:CZ3	2.52	0.44
1:EX:70:GLU:OE1	1:EX:315:ARG:NH1	2.49	0.44
1:FX:126:LEU:HD23	1:FX:126:LEU:HA	1.77	0.44
1:IX:59:THR:HG21	1:IX:86:TRP:CZ3	2.53	0.44
1:JX:62:ASP:OD1	1:JX:62:ASP:N	2.51	0.44
1:JX:286:LYS:O	1:JX:315:ARG:NH2	2.50	0.44
2:DY:1535:MET:HE2	2:DY:1544:PRO:HD3	2.00	0.44
1:KX:46:ILE:HG21	1:KX:55:ILE:HG21	1.99	0.44
1:KX:277:ARG:HD2	1:KX:294:ARG:NH1	2.30	0.44
1:NX:102:VAL:HG12	1:NX:103:LYS:N	2.33	0.44
1:OX:308:VAL:O	1:OX:308:VAL:HG13	2.18	0.44
2:FY:1486:ASP:OD1	2:FY:1487:ASP:N	2.50	0.44
2:FY:1586:THR:HG22	2:FY:1590:ILE:HD11	1.99	0.44
2:MY:1514:ARG:O	2:MY:1518:GLU:HG2	2.18	0.44
1:AX:82:PHE:CD1	2:QY:1548:LYS:HD3	2.52	0.43
1:BX:130:LYS:HA	1:CX:120:ARG:HH22	1.83	0.43
1:JX:59:THR:HG21	1:JX:86:TRP:CZ3	2.52	0.43
1:JX:276:TRP:O	1:JX:278:THR:HG22	2.18	0.43
1:NX:62:ASP:OD2	1:NX:62:ASP:N	2.50	0.43
1:NX:103:LYS:NZ	1:NX:268:GLU:HB3	2.33	0.43
1:PX:58:TRP:H	1:PX:305:TYR:HD2	1.66	0.43
2:OY:1485:LEU:HD23	2:OY:1485:LEU:HA	1.88	0.43
2:QY:1487:ASP:OD1	2:QY:1489:THR:OG1	2.35	0.43
1:CX:288:LEU:HD21	1:DX:66:VAL:HG11	2.00	0.43
1:DX:77:TYR:HB2	1:DX:283:ARG:HH21	1.82	0.43
1:DX:284:THR:OG1	1:DX:285:ASN:N	2.49	0.43
1:MX:59:THR:HG21	1:MX:86:TRP:HZ3	1.82	0.43
2:EY:1486:ASP:OD2	2:EY:1487:ASP:N	2.51	0.43
1:CX:78:ILE:HD12	1:CX:95:ILE:HD13	1.99	0.43
1:EX:103:LYS:NZ	1:EX:268:GLU:HB3	2.32	0.43
1:GX:67:ILE:HG23	1:GX:308:VAL:HG23	2.01	0.43
1:JX:310:LEU:HD23	1:JX:310:LEU:HA	1.81	0.43
1:LX:106:LEU:HD21	1:LX:267:ILE:HD13	2.01	0.43
2:AY:1514:ARG:O	2:AY:1518:GLU:HG2	2.17	0.43
2:CY:1502:SER:N	2:CY:1505:GLU:OE1	2.33	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:FY:1514:ARG:O	2:FY:1518:GLU:HG2	2.18	0.43
1:KX:73:GLU:O	1:KX:93:ASN:HA	2.18	0.43
1:QX:106:LEU:HD21	1:QX:267:ILE:HD13	2.01	0.43
1:QX:277:ARG:HD2	1:QX:294:ARG:NH1	2.32	0.43
1:BX:276:TRP:O	1:BX:278:THR:HG22	2.18	0.43
2:AY:1586:THR:HG22	2:BY:1599:LEU:HD22	2.00	0.43
1:EX:68:GLN:HG2	1:EX:309:LYS:HG3	2.00	0.43
1:HX:93:ASN:ND2	2:GY:1566:ILE:HD13	2.34	0.43
1:IX:92:SER:O	1:IX:93:ASN:ND2	2.51	0.43
2:CY:1470:SER:OG	2:CY:1471:LYS:N	2.52	0.43
2:IY:1593:LYS:HB2	2:IY:1593:LYS:HE3	1.67	0.43
1:CX:59:THR:HG21	1:CX:86:TRP:CZ3	2.53	0.43
1:FX:102:VAL:HG12	1:FX:103:LYS:N	2.34	0.43
1:NX:37:GLY:HA2	1:NX:298:LYS:HB2	2.01	0.43
1:PX:279:ASN:HA	1:PX:292:ILE:HA	2.01	0.43
2:KY:1514:ARG:O	2:KY:1518:GLU:HG2	2.18	0.43
1:IX:284:THR:HG23	1:IX:286:LYS:H	1.83	0.43
1:JX:271:PRO:HA	1:JX:276:TRP:CH2	2.54	0.43
1:JX:281:VAL:HG12	1:JX:290:GLN:HE22	1.84	0.43
1:KX:126:LEU:HD23	1:KX:126:LEU:HA	1.84	0.43
1:DX:101:SER:OG	2:BY:1549:ASN:ND2	2.52	0.43
1:EX:101:SER:HA	1:EX:271:PRO:HD3	2.01	0.43
1:GX:36:ARG:NH1	2:FY:1485:LEU:O	2.39	0.43
1:JX:82:PHE:CD1	2:IY:1548:LYS:HD3	2.54	0.43
1:KX:73:GLU:HG2	1:KX:286:LYS:HB2	2.00	0.43
1:MX:314:GLN:O	1:MX:317:GLU:HG3	2.19	0.43
2:CY:1486:ASP:OD1	2:CY:1487:ASP:N	2.52	0.43
2:CY:1579:ASP:OD1	2:CY:1580:ILE:N	2.52	0.43
2:DY:1495:GLU:OE2	2:DY:1506:ARG:NH2	2.52	0.43
1:AX:33:ASN:OD1	1:AX:34:PHE:N	2.52	0.43
1:AX:57:ILE:HD12	1:AX:308:VAL:HG21	2.01	0.43
1:QX:67:ILE:HD11	1:QX:97:ILE:HD13	2.00	0.43
2:EY:1501:LEU:HD22	2:EY:1505:GLU:HB3	2.00	0.43
2:JY:1543:LEU:HD12	2:KY:1526:LEU:HD11	2.01	0.43
1:HX:58:TRP:H	1:HX:305:TYR:HD2	1.64	0.42
1:HX:283:ARG:HD3	1:IX:94:HIS:NE2	2.34	0.42
1:IX:314:GLN:O	1:IX:317:GLU:HG3	2.19	0.42
1:NX:283:ARG:NE	1:OX:94:HIS:CE1	2.87	0.42
1:PX:58:TRP:HH2	1:PX:294:ARG:HH21	1.67	0.42
2:DY:1482:LEU:HD23	2:DY:1482:LEU:HA	1.91	0.42
2:IY:1502:SER:O	2:IY:1506:ARG:HG3	2.19	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:DX:73:GLU:O	1:DX:93:ASN:HA	2.19	0.42
1:EX:92:SER:HB3	2:DY:1560:ASN:HA	2.01	0.42
1:IX:73:GLU:O	1:IX:93:ASN:HA	2.19	0.42
1:JX:45:LYS:HD3	1:JX:309:LYS:HB3	2.00	0.42
1:JX:103:LYS:NZ	1:JX:268:GLU:HB3	2.33	0.42
2:BY:1568:SER:OG	2:BY:1569:ASP:N	2.51	0.42
2:JY:1568:SER:OG	2:JY:1569:ASP:N	2.51	0.42
2:OY:1543:LEU:HD12	2:PY:1526:LEU:HD11	2.01	0.42
1:DX:305:TYR:HB3	1:DX:308:VAL:HG13	2.00	0.42
1:HX:305:TYR:HB3	1:HX:308:VAL:HG13	2.00	0.42
1:IX:284:THR:OG1	1:IX:285:ASN:N	2.53	0.42
1:MX:271:PRO:HA	1:MX:276:TRP:CZ3	2.53	0.42
2:LY:1593:LYS:HE2	2:MY:1603:LEU:HA	2.02	0.42
1:AX:284:THR:HG23	1:AX:286:LYS:H	1.84	0.42
1:IX:73:GLU:HG2	1:IX:286:LYS:HB2	2.00	0.42
1:LX:271:PRO:HA	1:LX:276:TRP:CZ3	2.55	0.42
1:MX:277:ARG:HD2	1:MX:294:ARG:NH1	2.33	0.42
1:MX:277:ARG:HE	1:MX:292:ILE:HD11	1.84	0.42
1:OX:277:ARG:HD2	1:OX:294:ARG:NH1	2.28	0.42
1:QX:314:GLN:O	1:QX:317:GLU:HG3	2.20	0.42
2:CY:1530:LYS:HD3	2:CY:1530:LYS:HA	1.88	0.42
1:BX:92:SER:HB2	2:AY:1560:ASN:HA	2.02	0.42
1:DX:271:PRO:HA	1:DX:276:TRP:CZ3	2.55	0.42
1:FX:277:ARG:HH11	1:FX:294:ARG:NH1	2.18	0.42
1:HX:272:SER:HB2	1:HX:297:GLN:HE22	1.85	0.42
1:MX:57:ILE:HD13	1:MX:57:ILE:HA	1.89	0.42
1:MX:121:ASP:O	1:MX:124:GLU:HG3	2.19	0.42
1:MX:297:GLN:H	1:MX:300:ASN:HB2	1.85	0.42
1:PX:314:GLN:O	1:PX:317:GLU:HG3	2.19	0.42
2:KY:1486:ASP:OD1	2:KY:1487:ASP:N	2.52	0.42
2:PY:1482:LEU:HD23	2:PY:1482:LEU:HA	1.90	0.42
2:QY:1475:LEU:HD23	2:QY:1475:LEU:HA	1.87	0.42
1:EX:277:ARG:HD2	1:EX:294:ARG:NH1	2.31	0.42
1:HX:265:ASN:OD1	1:HX:265:ASN:N	2.49	0.42
1:OX:299:ASP:OD1	1:OX:299:ASP:N	2.37	0.42
2:EY:1502:SER:O	2:EY:1506:ARG:HG3	2.20	0.42
2:MY:1509:ILE:HD13	2:MY:1509:ILE:HA	1.86	0.42
2:OY:1486:ASP:OD2	2:OY:1487:ASP:N	2.52	0.42
2:PY:1495:GLU:OE2	2:PY:1506:ARG:NH2	2.52	0.42
1:AX:308:VAL:HG23	1:AX:308:VAL:O	2.19	0.42
1:GX:121:ASP:O	1:GX:124:GLU:HG3	2.19	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:PX:305:TYR:HB3	1:PX:308:VAL:HG23	2.02	0.42
2:EY:1586:THR:HG22	2:EY:1590:ILE:HD11	2.01	0.42
1:IX:277:ARG:HD2	1:IX:294:ARG:NH1	2.35	0.42
1:JX:58:TRP:HH2	1:JX:294:ARG:HH21	1.68	0.42
1:LX:70:GLU:OE1	1:LX:315:ARG:NH1	2.51	0.42
1:MX:276:TRP:O	1:MX:278:THR:HG22	2.20	0.42
1:NX:284:THR:HG23	1:NX:287:ALA:H	1.84	0.42
2:GY:1495:GLU:OE2	2:GY:1506:ARG:NH2	2.53	0.42
2:IY:1579:ASP:OD1	2:IY:1580:ILE:N	2.53	0.42
2:NY:1599:LEU:O	2:NY:1603:LEU:HG	2.19	0.42
2:QY:1486:ASP:OD1	2:QY:1487:ASP:N	2.53	0.42
1:BX:102:VAL:HG12	1:BX:103:LYS:N	2.35	0.42
1:LX:62:ASP:OD2	1:LX:62:ASP:N	2.53	0.42
2:GY:1509:ILE:HD13	2:GY:1509:ILE:HA	1.82	0.42
2:IY:1514:ARG:O	2:IY:1518:GLU:HG2	2.20	0.42
2:JY:1586:THR:HG22	2:JY:1590:ILE:HD11	2.02	0.42
2:JY:1599:LEU:O	2:JY:1603:LEU:HG	2.20	0.42
1:AX:284:THR:HG23	1:AX:287:ALA:H	1.85	0.42
1:FX:92:SER:HB2	2:EY:1560:ASN:HA	2.00	0.42
1:IX:77:TYR:CD2	1:JX:96:PHE:HE2	2.38	0.42
1:JX:272:SER:OG	1:JX:297:GLN:NE2	2.50	0.42
1:MX:62:ASP:OD2	2:KY:1548:LYS:NZ	2.53	0.42
1:NX:92:SER:HB3	2:MY:1560:ASN:HA	2.02	0.42
1:NX:278:THR:OG1	1:NX:279:ASN:N	2.52	0.42
2:CY:1535:MET:HE2	2:CY:1544:PRO:HD3	2.02	0.42
2:HY:1514:ARG:O	2:HY:1518:GLU:HG2	2.20	0.42
2:JY:1514:ARG:O	2:JY:1518:GLU:HG2	2.20	0.42
2:QY:1586:THR:HG22	2:QY:1590:ILE:HD11	2.01	0.42
1:AX:70:GLU:OE1	1:AX:315:ARG:NH1	2.53	0.41
1:BX:73:GLU:HG2	1:BX:286:LYS:HB2	2.02	0.41
1:CX:288:LEU:HD22	1:DX:68:GLN:NE2	2.35	0.41
1:EX:121:ASP:O	1:EX:124:GLU:HG3	2.20	0.41
1:HX:77:TYR:HB2	1:HX:283:ARG:HH21	1.85	0.41
1:KX:88:ILE:HG12	1:KX:97:ILE:HG22	2.01	0.41
1:LX:280:LEU:N	1:LX:291:PHE:O	2.39	0.41
1:MX:46:ILE:HG13	1:MX:308:VAL:HG23	2.01	0.41
2:AY:1603:LEU:HA	2:QY:1593:LYS:HE2	2.01	0.41
2:BY:1586:THR:HG22	2:BY:1590:ILE:HD11	2.02	0.41
2:FY:1482:LEU:HD23	2:FY:1482:LEU:HA	1.90	0.41
2:MY:1586:THR:HG22	2:MY:1590:ILE:HD11	2.02	0.41
1:EX:88:ILE:HG22	1:EX:90:PRO:HD3	2.01	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:EX:273:ASP:H	1:EX:297:GLN:NE2	2.18	0.41
1:IX:285:ASN:N	1:IX:285:ASN:OD1	2.53	0.41
1:OX:66:VAL:HG13	1:OX:307:THR:HA	2.02	0.41
1:PX:89:VAL:HG13	1:PX:96:PHE:HB2	2.01	0.41
2:HY:1498:LEU:HD23	2:HY:1498:LEU:HA	1.89	0.41
2:JY:1593:LYS:HD2	2:KY:1603:LEU:HD23	2.02	0.41
2:MY:1502:SER:O	2:MY:1506:ARG:HG3	2.20	0.41
1:HX:103:LYS:NZ	1:HX:268:GLU:HB3	2.35	0.41
1:NX:61:LEU:HD21	1:NX:295:ILE:HD13	2.02	0.41
1:NX:310:LEU:HD23	1:NX:310:LEU:HA	1.77	0.41
2:BY:1486:ASP:OD2	2:BY:1487:ASP:N	2.53	0.41
1:GX:273:ASP:H	1:GX:297:GLN:NE2	2.18	0.41
1:JX:88:ILE:HG12	1:JX:97:ILE:HG22	2.01	0.41
1:KX:36:ARG:NH1	2:JY:1485:LEU:O	2.44	0.41
2:FY:1599:LEU:O	2:FY:1603:LEU:HG	2.20	0.41
2:JY:1510:LEU:HD23	2:JY:1510:LEU:HA	1.84	0.41
1:AX:57:ILE:HG21	1:AX:97:ILE:HD11	2.03	0.41
1:FX:301:PHE:O	2:FY:1476:HIS:HB2	2.21	0.41
1:PX:276:TRP:O	1:PX:278:THR:HG22	2.20	0.41
1:PX:284:THR:OG1	1:PX:285:ASN:N	2.53	0.41
2:DY:1510:LEU:HD23	2:DY:1510:LEU:HA	1.79	0.41
2:KY:1587:GLU:HA	2:KY:1590:ILE:HD12	2.02	0.41
1:CX:66:VAL:HG13	1:CX:307:THR:HA	2.02	0.41
1:CX:284:THR:OG1	1:CX:285:ASN:N	2.52	0.41
1:DX:58:TRP:HH2	1:DX:294:ARG:HH21	1.69	0.41
1:HX:283:ARG:HH11	2:HY:1566:ILE:HG12	1.85	0.41
1:HX:314:GLN:O	1:HX:317:GLU:HG3	2.21	0.41
1:JX:73:GLU:O	1:JX:93:ASN:HA	2.20	0.41
1:KX:87:SER:O	2:IY:1553:ILE:HD11	2.20	0.41
1:LX:284:THR:OG1	1:LX:285:ASN:N	2.53	0.41
1:LX:314:GLN:O	1:LX:317:GLU:HG3	2.21	0.41
2:FY:1576:ILE:HG21	2:GY:1584:TYR:CE1	2.56	0.41
2:IY:1498:LEU:HD11	2:IY:1510:LEU:HD21	2.03	0.41
1:AX:73:GLU:O	1:AX:93:ASN:HA	2.21	0.41
1:AX:277:ARG:HD2	1:AX:294:ARG:NH1	2.31	0.41
1:DX:283:ARG:HB2	1:DX:288:LEU:HD12	2.03	0.41
1:DX:310:LEU:HD23	1:DX:310:LEU:HA	1.91	0.41
1:HX:310:LEU:HD23	1:HX:310:LEU:HA	1.82	0.41
1:IX:271:PRO:HA	1:IX:276:TRP:CZ3	2.56	0.41
1:OX:280:LEU:N	1:OX:291:PHE:O	2.39	0.41
2:DY:1486:ASP:OD2	2:DY:1487:ASP:N	2.54	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:IY:1562:ASP:N	2:IY:1562:ASP:OD1	2.54	0.41
2:IY:1586:THR:HG22	2:IY:1590:ILE:HD11	2.03	0.41
1:CX:57:ILE:HD13	1:CX:57:ILE:HA	1.93	0.41
1:CX:92:SER:HB3	2:BY:1561:VAL:HG12	2.03	0.41
1:FX:310:LEU:HA	1:FX:310:LEU:HD23	1.79	0.41
1:GX:314:GLN:O	1:GX:317:GLU:HG3	2.21	0.41
1:MX:48:TYR:HB2	1:MX:310:LEU:HD22	2.01	0.41
1:NX:102:VAL:HG23	1:NX:276:TRP:HZ2	1.86	0.41
2:CY:1475:LEU:HD21	2:CY:1505:GLU:HB3	2.02	0.41
2:DY:1548:LYS:HG3	2:EY:1527:ARG:HH22	1.86	0.41
2:HY:1586:THR:HG22	2:HY:1590:ILE:HD11	2.01	0.41
2:LY:1599:LEU:O	2:LY:1603:LEU:HG	2.21	0.41
2:QY:1530:LYS:HD3	2:QY:1530:LYS:HA	1.90	0.41
1:BX:301:PHE:O	2:BY:1476:HIS:HB2	2.21	0.41
1:DX:73:GLU:CD	1:DX:289:TYR:HH	2.23	0.41
1:JX:102:VAL:HG12	1:JX:103:LYS:N	2.36	0.41
2:AY:1530:LYS:HD3	2:AY:1530:LYS:HA	1.94	0.41
2:AY:1543:LEU:HD12	2:BY:1526:LEU:HD11	2.02	0.41
2:FY:1586:THR:HG23	2:GY:1599:LEU:HB2	2.03	0.41
2:HY:1502:SER:O	2:HY:1506:ARG:HG3	2.20	0.41
2:JY:1530:LYS:HD3	2:JY:1530:LYS:HA	1.83	0.41
2:MY:1593:LYS:HB2	2:MY:1593:LYS:HE3	1.74	0.41
2:OY:1579:ASP:OD1	2:OY:1580:ILE:N	2.54	0.41
1:CX:73:GLU:O	1:CX:93:ASN:HA	2.21	0.41
1:DX:276:TRP:O	1:DX:278:THR:HG22	2.21	0.41
1:IX:62:ASP:OD1	1:IX:62:ASP:N	2.54	0.41
1:JX:271:PRO:HA	1:JX:276:TRP:CE3	2.56	0.41
1:JX:278:THR:OG1	1:JX:279:ASN:N	2.54	0.41
1:PX:56:THR:HA	1:PX:292:ILE:HG23	2.03	0.41
1:PX:271:PRO:HA	1:PX:276:TRP:CZ3	2.56	0.41
2:CY:1536:ALA:HB3	2:DY:1519:VAL:HG23	2.03	0.41
2:EY:1523:TYR:OH	2:EY:1527:ARG:NH2	2.35	0.41
2:GY:1514:ARG:O	2:GY:1518:GLU:HG2	2.20	0.41
2:IY:1530:LYS:HD3	2:IY:1530:LYS:HA	1.92	0.41
2:LY:1482:LEU:HD13	2:LY:1513:LYS:HD2	2.03	0.41
2:LY:1586:THR:HG22	2:LY:1590:ILE:HD11	2.03	0.41
2:OY:1495:GLU:OE2	2:OY:1506:ARG:NH2	2.54	0.41
1:AX:88:ILE:HG12	1:AX:97:ILE:HG22	2.04	0.40
1:KX:288:LEU:HD22	1:LX:68:GLN:NE2	2.36	0.40
1:NX:57:ILE:HD12	1:NX:308:VAL:HG21	2.03	0.40
1:OX:59:THR:HG21	1:OX:86:TRP:CH2	2.56	0.40

Continued on next page...

Continued from previous page...

Atom-1	**Atom-2**	**Interatomic distance (Å)**	**Clash overlap (Å)**
1:PX:299:ASP:HB2	2:PY:1512:ILE:HD13	2.03	0.40
2:BY:1579:ASP:HB3	2:BY:1582:LYS:HD3	2.03	0.40
2:DY:1530:LYS:HD3	2:DY:1530:LYS:HA	1.91	0.40
2:IY:1489:THR:O	2:IY:1491:GLN:NE2	2.49	0.40
1:CX:70:GLU:OE1	1:CX:315:ARG:NH1	2.54	0.40
1:EX:58:TRP:CZ2	2:EY:1476:HIS:HE1	2.39	0.40
1:GX:61:LEU:HD12	2:FY:1527:ARG:HD3	2.03	0.40
1:LX:73:GLU:O	1:LX:93:ASN:HA	2.22	0.40
1:LX:276:TRP:O	1:LX:278:THR:HG22	2.21	0.40
1:NX:306:LEU:HD23	1:NX:306:LEU:HA	1.86	0.40
1:OX:280:LEU:HB2	1:OX:293:LEU:HD11	2.03	0.40
2:AY:1576:ILE:HG21	2:BY:1584:TYR:HE1	1.84	0.40
2:AY:1584:TYR:CE1	2:QY:1576:ILE:HG21	2.45	0.40
2:QY:1510:LEU:HD23	2:QY:1510:LEU:HA	1.82	0.40
1:AX:306:LEU:HD22	1:QX:279:ASN:ND2	2.37	0.40
1:AX:317:GLU:O	1:AX:321:VAL:HG13	2.22	0.40
1:BX:77:TYR:HA	2:AY:1555:THR:HG23	2.03	0.40
1:BX:102:VAL:HG23	1:BX:276:TRP:HZ2	1.86	0.40
1:FX:68:GLN:HE22	1:FX:94:HIS:CD2	2.40	0.40
1:FX:93:ASN:ND2	2:EY:1566:ILE:HD13	2.37	0.40
1:GX:58:TRP:H	1:GX:305:TYR:HD2	1.68	0.40
1:KX:53:LYS:HD2	1:KX:53:LYS:HA	1.94	0.40
1:MX:57:ILE:HD12	1:MX:308:VAL:HG11	2.03	0.40
1:NX:71:LYS:HE2	2:MY:1566:ILE:HB	2.02	0.40
1:OX:66:VAL:HA	1:OX:95:ILE:O	2.22	0.40
1:OX:312:TYR:HB3	1:OX:315:ARG:HB2	2.04	0.40
1:AX:102:VAL:HG23	1:AX:276:TRP:HZ2	1.85	0.40
1:FX:265:ASN:OD1	1:FX:265:ASN:N	2.53	0.40
1:IX:106:LEU:HD21	1:IX:267:ILE:HD13	2.03	0.40
1:MX:68:GLN:HB3	1:MX:309:LYS:HA	2.04	0.40
1:QX:68:GLN:HA	1:QX:94:HIS:HB3	2.02	0.40
2:AY:1502:SER:O	2:AY:1506:ARG:HG3	2.22	0.40
1:HX:271:PRO:HA	1:HX:276:TRP:CZ3	2.56	0.40
1:IX:107:MET:N	2:HY:1543:LEU:O	2.51	0.40
1:JX:73:GLU:HG2	1:JX:286:LYS:HB2	2.03	0.40
1:NX:284:THR:OG1	1:NX:285:ASN:N	2.54	0.40
1:PX:310:LEU:HD23	1:PX:310:LEU:HA	1.82	0.40
2:AY:1509:ILE:HD13	2:AY:1509:ILE:HA	1.92	0.40
2:CY:1593:LYS:HD2	2:DY:1603:LEU:HD23	2.03	0.40
2:NY:1482:LEU:HD23	2:NY:1482:LEU:HA	1.92	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	AX	160/521 (31%)	154 (96%)	6 (4%)	0	100	100
1	BX	160/521 (31%)	151 (94%)	9 (6%)	0	100	100
1	CX	160/521 (31%)	154 (96%)	6 (4%)	0	100	100
1	DX	160/521 (31%)	156 (98%)	4 (2%)	0	100	100
1	EX	160/521 (31%)	153 (96%)	7 (4%)	0	100	100
1	FX	160/521 (31%)	152 (95%)	8 (5%)	0	100	100
1	GX	160/521 (31%)	153 (96%)	7 (4%)	0	100	100
1	HX	160/521 (31%)	155 (97%)	5 (3%)	0	100	100
1	IX	160/521 (31%)	154 (96%)	6 (4%)	0	100	100
1	JX	160/521 (31%)	151 (94%)	9 (6%)	0	100	100
1	KX	160/521 (31%)	157 (98%)	3 (2%)	0	100	100
1	LX	160/521 (31%)	154 (96%)	6 (4%)	0	100	100
1	MX	160/521 (31%)	155 (97%)	5 (3%)	0	100	100
1	NX	160/521 (31%)	156 (98%)	4 (2%)	0	100	100
1	OX	160/521 (31%)	152 (95%)	8 (5%)	0	100	100
1	PX	160/521 (31%)	154 (96%)	6 (4%)	0	100	100
1	QX	160/521 (31%)	154 (96%)	6 (4%)	0	100	100
2	AY	133/1927 (7%)	127 (96%)	6 (4%)	0	100	100
2	BY	133/1927 (7%)	128 (96%)	5 (4%)	0	100	100
2	CY	133/1927 (7%)	129 (97%)	4 (3%)	0	100	100
2	DY	133/1927 (7%)	126 (95%)	7 (5%)	0	100	100
2	EY	133/1927 (7%)	127 (96%)	6 (4%)	0	100	100
2	FY	133/1927 (7%)	123 (92%)	10 (8%)	0	100	100
2	GY	133/1927 (7%)	129 (97%)	4 (3%)	0	100	100
2	HY	133/1927 (7%)	126 (95%)	7 (5%)	0	100	100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	IY	133/1927 (7%)	128 (96%)	5 (4%)	0	100	100
2	JY	133/1927 (7%)	127 (96%)	6 (4%)	0	100	100
2	KY	133/1927 (7%)	126 (95%)	7 (5%)	0	100	100
2	LY	133/1927 (7%)	127 (96%)	6 (4%)	0	100	100
2	MY	133/1927 (7%)	126 (95%)	7 (5%)	0	100	100
2	NY	133/1927 (7%)	127 (96%)	6 (4%)	0	100	100
2	OY	133/1927 (7%)	129 (97%)	4 (3%)	0	100	100
2	PY	133/1927 (7%)	127 (96%)	6 (4%)	0	100	100
2	QY	133/1927 (7%)	128 (96%)	5 (4%)	0	100	100
All	All	4981/41616 (12%)	4775 (96%)	206 (4%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	AX	152/469 (32%)	143 (94%)	9 (6%)	19	53
1	BX	152/469 (32%)	142 (93%)	10 (7%)	16	49
1	CX	152/469 (32%)	143 (94%)	9 (6%)	19	53
1	DX	152/469 (32%)	145 (95%)	7 (5%)	27	61
1	EX	152/469 (32%)	140 (92%)	12 (8%)	12	41
1	FX	152/469 (32%)	146 (96%)	6 (4%)	32	64
1	GX	152/469 (32%)	142 (93%)	10 (7%)	16	49
1	HX	152/469 (32%)	143 (94%)	9 (6%)	19	53
1	IX	152/469 (32%)	142 (93%)	10 (7%)	16	49
1	JX	152/469 (32%)	143 (94%)	9 (6%)	19	53
1	KX	152/469 (32%)	142 (93%)	10 (7%)	16	49
1	LX	152/469 (32%)	140 (92%)	12 (8%)	12	41

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	MX	152/469 (32%)	143 (94%)	9 (6%)	19	53
1	NX	152/469 (32%)	147 (97%)	5 (3%)	38	68
1	OX	152/469 (32%)	141 (93%)	11 (7%)	14	45
1	PX	152/469 (32%)	146 (96%)	6 (4%)	32	64
1	QX	152/469 (32%)	142 (93%)	10 (7%)	16	49
2	AY	115/1724 (7%)	112 (97%)	3 (3%)	46	74
2	BY	115/1724 (7%)	111 (96%)	4 (4%)	36	67
2	CY	115/1724 (7%)	111 (96%)	4 (4%)	36	67
2	DY	115/1724 (7%)	110 (96%)	5 (4%)	29	62
2	EY	115/1724 (7%)	114 (99%)	1 (1%)	78	90
2	FY	115/1724 (7%)	112 (97%)	3 (3%)	46	74
2	GY	115/1724 (7%)	112 (97%)	3 (3%)	46	74
2	HY	115/1724 (7%)	111 (96%)	4 (4%)	36	67
2	IY	115/1724 (7%)	111 (96%)	4 (4%)	36	67
2	JY	115/1724 (7%)	113 (98%)	2 (2%)	60	82
2	KY	115/1724 (7%)	112 (97%)	3 (3%)	46	74
2	LY	115/1724 (7%)	111 (96%)	4 (4%)	36	67
2	MY	115/1724 (7%)	111 (96%)	4 (4%)	36	67
2	NY	115/1724 (7%)	111 (96%)	4 (4%)	36	67
2	OY	115/1724 (7%)	112 (97%)	3 (3%)	46	74
2	PY	115/1724 (7%)	111 (96%)	4 (4%)	36	67
2	QY	115/1724 (7%)	110 (96%)	5 (4%)	29	62
All	All	4539/37281 (12%)	4325 (95%)	214 (5%)	30	60

All (214) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	AX	59	THR
1	AX	62	ASP
1	AX	63	ASN
1	AX	104	SER
1	AX	113	VAL
1	AX	118	MET
1	AX	264	ASP

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	AX	270	SER
1	AX	317	GLU
1	BX	41	VAL
1	BX	59	THR
1	BX	63	ASN
1	BX	93	ASN
1	BX	113	VAL
1	BX	114	ASN
1	BX	124	GLU
1	BX	126	LEU
1	BX	264	ASP
1	BX	317	GLU
1	CX	43	ASN
1	CX	63	ASN
1	CX	93	ASN
1	CX	113	VAL
1	CX	114	ASN
1	CX	124	GLU
1	CX	126	LEU
1	CX	267	ILE
1	CX	317	GLU
1	DX	41	VAL
1	DX	63	ASN
1	DX	93	ASN
1	DX	102	VAL
1	DX	113	VAL
1	DX	114	ASN
1	DX	317	GLU
1	EX	59	THR
1	EX	63	ASN
1	EX	93	ASN
1	EX	113	VAL
1	EX	114	ASN
1	EX	121	ASP
1	EX	124	GLU
1	EX	270	SER
1	EX	278	THR
1	EX	299	ASP
1	EX	317	GLU
1	EX	321	VAL
1	FX	41	VAL
1	FX	63	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	FX	93	ASN
1	FX	104	SER
1	FX	113	VAL
1	FX	284	THR
1	GX	49	LEU
1	GX	59	THR
1	GX	62	ASP
1	GX	63	ASN
1	GX	93	ASN
1	GX	113	VAL
1	GX	124	GLU
1	GX	278	THR
1	GX	284	THR
1	GX	317	GLU
1	HX	49	LEU
1	HX	62	ASP
1	HX	63	ASN
1	HX	80	THR
1	HX	93	ASN
1	HX	113	VAL
1	HX	267	ILE
1	HX	278	THR
1	HX	317	GLU
1	IX	43	ASN
1	IX	62	ASP
1	IX	63	ASN
1	IX	77	TYR
1	IX	93	ASN
1	IX	113	VAL
1	IX	114	ASN
1	IX	124	GLU
1	IX	278	THR
1	IX	317	GLU
1	JX	59	THR
1	JX	62	ASP
1	JX	63	ASN
1	JX	93	ASN
1	JX	104	SER
1	JX	113	VAL
1	JX	114	ASN
1	JX	264	ASP
1	JX	284	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	KX	63	ASN
1	KX	93	ASN
1	KX	113	VAL
1	KX	120	ARG
1	KX	264	ASP
1	KX	270	SER
1	KX	284	THR
1	KX	299	ASP
1	KX	308	VAL
1	KX	317	GLU
1	LX	43	ASN
1	LX	62	ASP
1	LX	63	ASN
1	LX	80	THR
1	LX	93	ASN
1	LX	104	SER
1	LX	113	VAL
1	LX	114	ASN
1	LX	124	GLU
1	LX	267	ILE
1	LX	278	THR
1	LX	317	GLU
1	MX	62	ASP
1	MX	63	ASN
1	MX	78	ILE
1	MX	113	VAL
1	MX	114	ASN
1	MX	124	GLU
1	MX	270	SER
1	MX	278	THR
1	MX	317	GLU
1	NX	59	THR
1	NX	62	ASP
1	NX	80	THR
1	NX	93	ASN
1	NX	113	VAL
1	OX	43	ASN
1	OX	63	ASN
1	OX	82	PHE
1	OX	93	ASN
1	OX	94	HIS
1	OX	113	VAL

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	OX	114	ASN
1	OX	120	ARG
1	OX	264	ASP
1	OX	299	ASP
1	OX	317	GLU
1	PX	62	ASP
1	PX	63	ASN
1	PX	93	ASN
1	PX	113	VAL
1	PX	267	ILE
1	PX	317	GLU
1	QX	62	ASP
1	QX	63	ASN
1	QX	93	ASN
1	QX	102	VAL
1	QX	113	VAL
1	QX	264	ASP
1	QX	267	ILE
1	QX	278	THR
1	QX	308	VAL
1	QX	317	GLU
2	AY	1497	CYS
2	AY	1514	ARG
2	AY	1520	ASP
2	BY	1479	SER
2	BY	1497	CYS
2	BY	1514	ARG
2	BY	1520	ASP
2	CY	1481	CYS
2	CY	1509	ILE
2	CY	1520	ASP
2	CY	1599	LEU
2	DY	1470	SER
2	DY	1479	SER
2	DY	1497	CYS
2	DY	1514	ARG
2	DY	1520	ASP
2	EY	1497	CYS
2	FY	1497	CYS
2	FY	1514	ARG
2	FY	1520	ASP
2	GY	1497	CYS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	GY	1520	ASP
2	GY	1579	ASP
2	HY	1479	SER
2	HY	1481	CYS
2	HY	1497	CYS
2	HY	1514	ARG
2	IY	1479	SER
2	IY	1497	CYS
2	IY	1514	ARG
2	IY	1520	ASP
2	JY	1481	CYS
2	JY	1499	GLU
2	KY	1497	CYS
2	KY	1514	ARG
2	KY	1520	ASP
2	LY	1497	CYS
2	LY	1509	ILE
2	LY	1514	ARG
2	LY	1520	ASP
2	MY	1497	CYS
2	MY	1514	ARG
2	MY	1520	ASP
2	MY	1577	GLU
2	NY	1497	CYS
2	NY	1499	GLU
2	NY	1514	ARG
2	NY	1594	ASN
2	OY	1479	SER
2	OY	1509	ILE
2	OY	1520	ASP
2	PY	1479	SER
2	PY	1497	CYS
2	PY	1514	ARG
2	PY	1520	ASP
2	QY	1479	SER
2	QY	1497	CYS
2	QY	1520	ASP
2	QY	1555	THR
2	QY	1577	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (116) such sidechains are listed below:

Mol	Chain	Res	Type
1	AX	43	ASN
1	AX	68	GLN
1	AX	93	ASN
1	BX	93	ASN
1	BX	94	HIS
1	CX	68	GLN
1	CX	290	GLN
1	DX	68	GLN
1	DX	93	ASN
1	DX	94	HIS
1	DX	297	GLN
1	EX	68	GLN
1	EX	297	GLN
1	FX	93	ASN
1	FX	297	GLN
1	GX	68	GLN
1	GX	297	GLN
1	HX	68	GLN
1	HX	93	ASN
1	HX	297	GLN
1	IX	93	ASN
1	IX	94	HIS
1	JX	68	GLN
1	JX	93	ASN
1	JX	94	HIS
1	JX	297	GLN
1	KX	93	ASN
1	LX	68	GLN
1	LX	94	HIS
1	LX	297	GLN
1	MX	68	GLN
1	MX	93	ASN
1	MX	297	GLN
1	NX	63	ASN
1	NX	68	GLN
1	NX	93	ASN
1	OX	68	GLN
1	OX	93	ASN
1	OX	265	ASN
1	PX	68	GLN
1	PX	93	ASN
1	PX	297	GLN
1	QX	68	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	QX	93	ASN
2	AY	1549	ASN
2	AY	1557	ASN
2	AY	1583	GLN
2	AY	1594	ASN
2	BY	1476	HIS
2	BY	1549	ASN
2	BY	1557	ASN
2	BY	1583	GLN
2	CY	1476	HIS
2	CY	1528	ASN
2	CY	1557	ASN
2	CY	1583	GLN
2	CY	1594	ASN
2	DY	1549	ASN
2	DY	1557	ASN
2	DY	1583	GLN
2	EY	1476	HIS
2	EY	1557	ASN
2	EY	1583	GLN
2	FY	1476	HIS
2	FY	1528	ASN
2	FY	1549	ASN
2	FY	1583	GLN
2	FY	1594	ASN
2	GY	1476	HIS
2	GY	1549	ASN
2	GY	1557	ASN
2	GY	1583	GLN
2	HY	1549	ASN
2	HY	1583	GLN
2	HY	1594	ASN
2	IY	1476	HIS
2	IY	1549	ASN
2	IY	1583	GLN
2	IY	1594	ASN
2	JY	1476	HIS
2	JY	1549	ASN
2	JY	1557	ASN
2	JY	1583	GLN
2	JY	1594	ASN
2	KY	1476	HIS

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	KY	1549	ASN
2	KY	1557	ASN
2	KY	1583	GLN
2	LY	1476	HIS
2	LY	1549	ASN
2	LY	1557	ASN
2	LY	1583	GLN
2	LY	1594	ASN
2	MY	1476	HIS
2	MY	1549	ASN
2	MY	1557	ASN
2	MY	1583	GLN
2	MY	1594	ASN
2	NY	1476	HIS
2	NY	1549	ASN
2	NY	1583	GLN
2	NY	1594	ASN
2	OY	1476	HIS
2	OY	1557	ASN
2	OY	1583	GLN
2	OY	1594	ASN
2	PY	1549	ASN
2	PY	1557	ASN
2	PY	1583	GLN
2	PY	1594	ASN
2	QY	1476	HIS
2	QY	1528	ASN
2	QY	1549	ASN
2	QY	1557	ASN
2	QY	1583	GLN
2	QY	1594	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

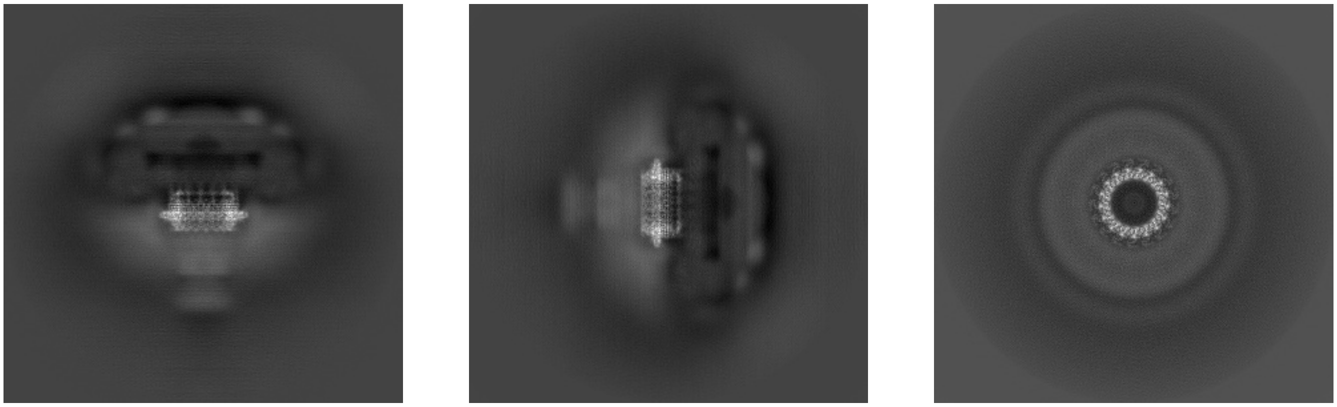
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-20021. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

6.1.1 Primary map

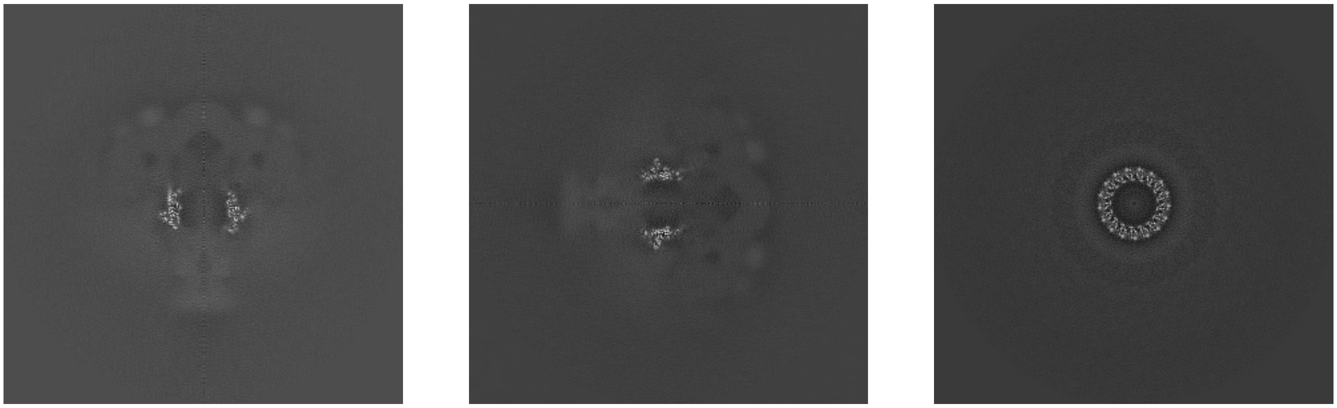


X Y Z

The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map

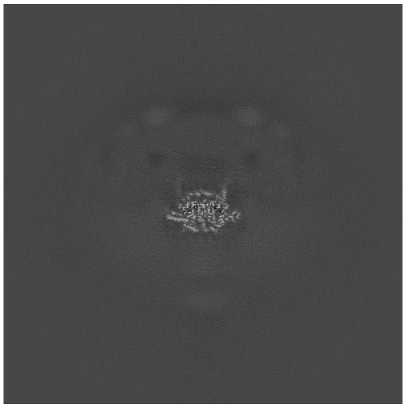


X Index: 255 Y Index: 255 Z Index: 255

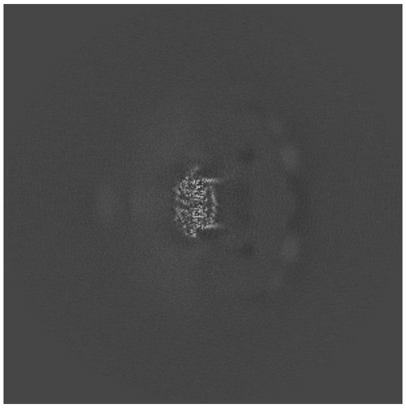
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices

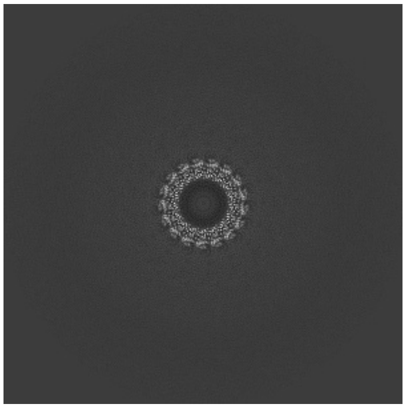
6.3.1 Primary map



X Index: 288



Y Index: 223

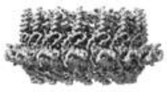


Z Index: 243

The images above show the largest variance slices of the map in three orthogonal directions.

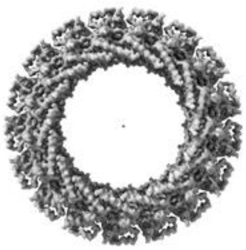
6.4 Orthogonal surface views

6.4.1 Primary map



X

Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.03. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

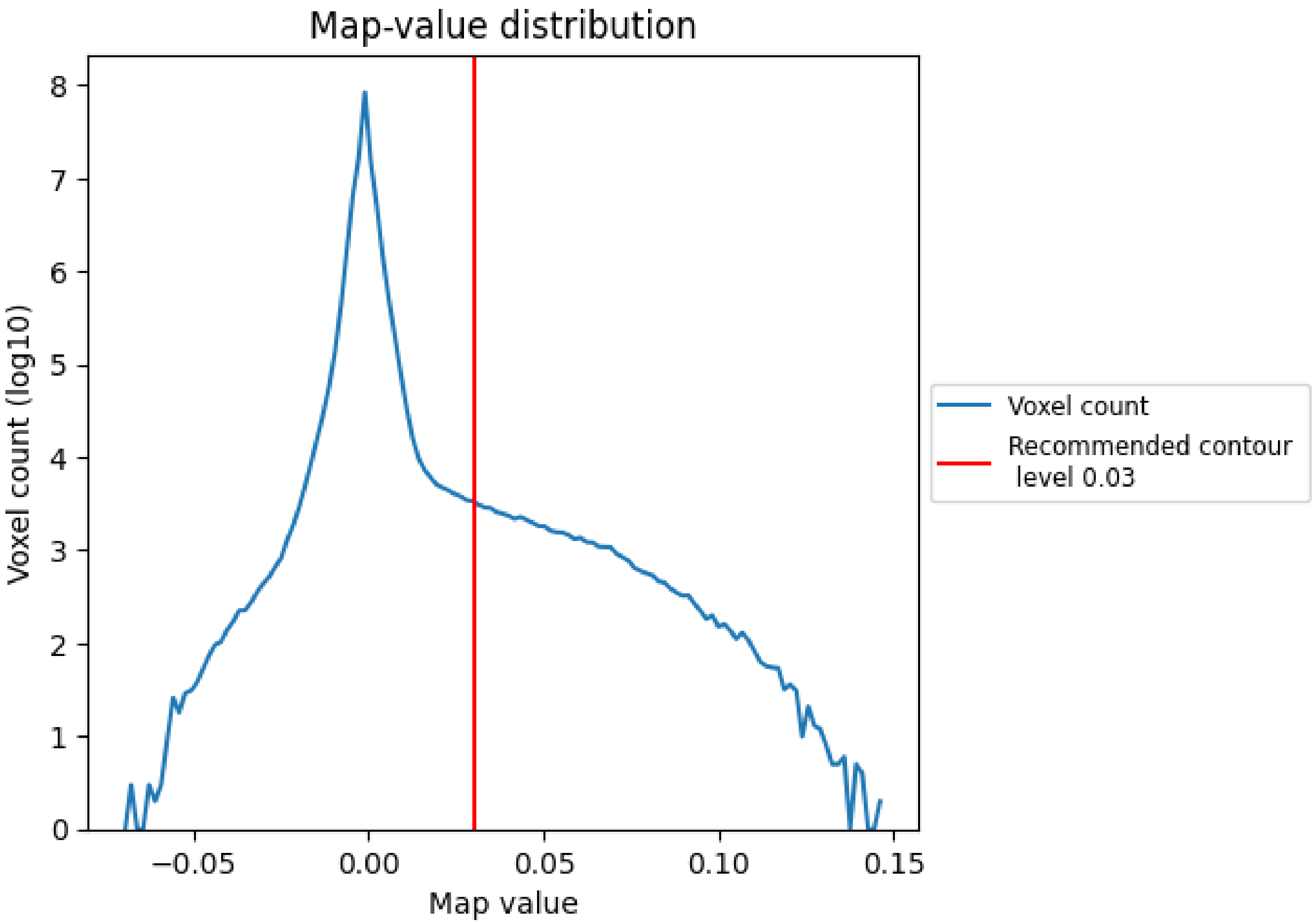
6.5 Mask visualisation (i)

This section was not generated. No masks/segmentation were deposited.

7 Map analysis ⓘ

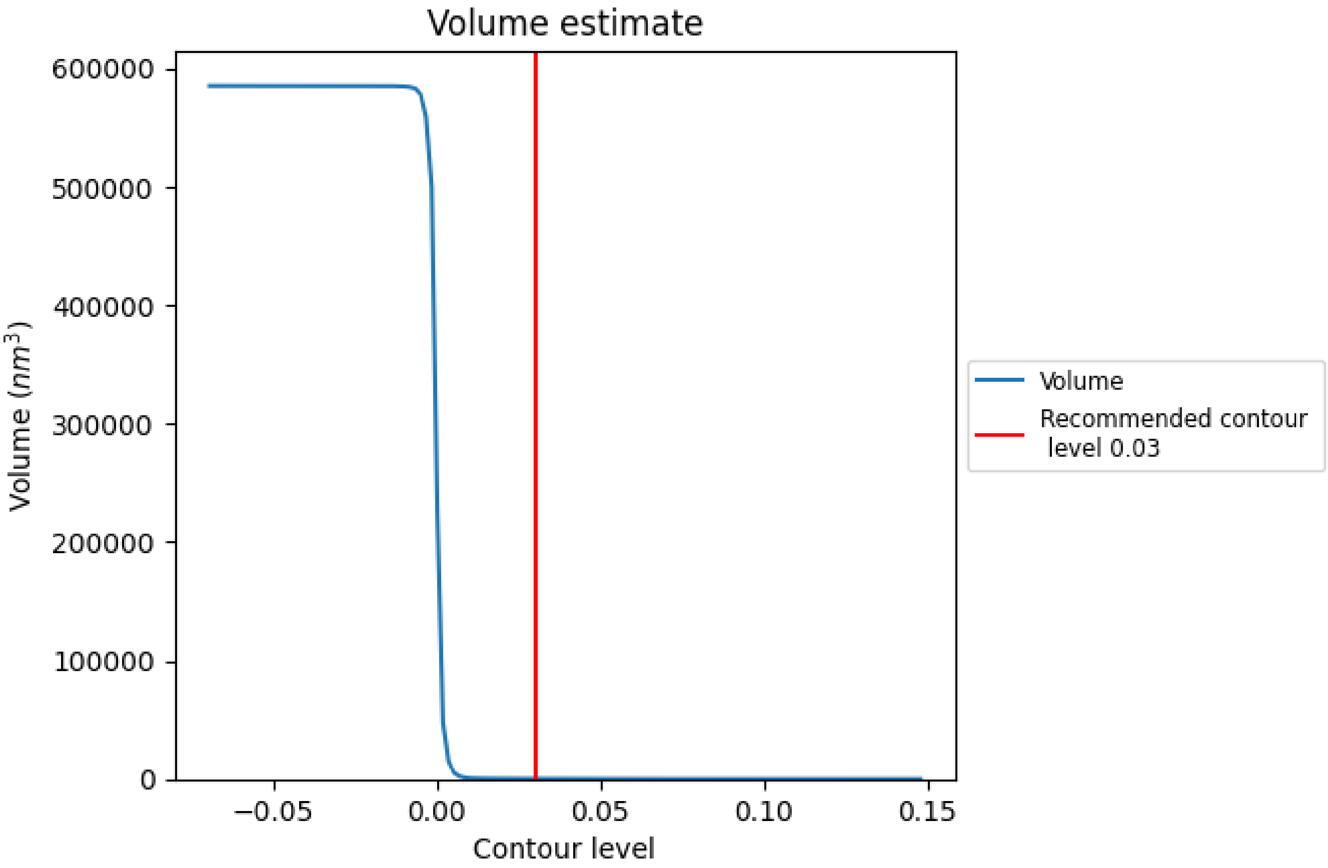
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution ⓘ



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

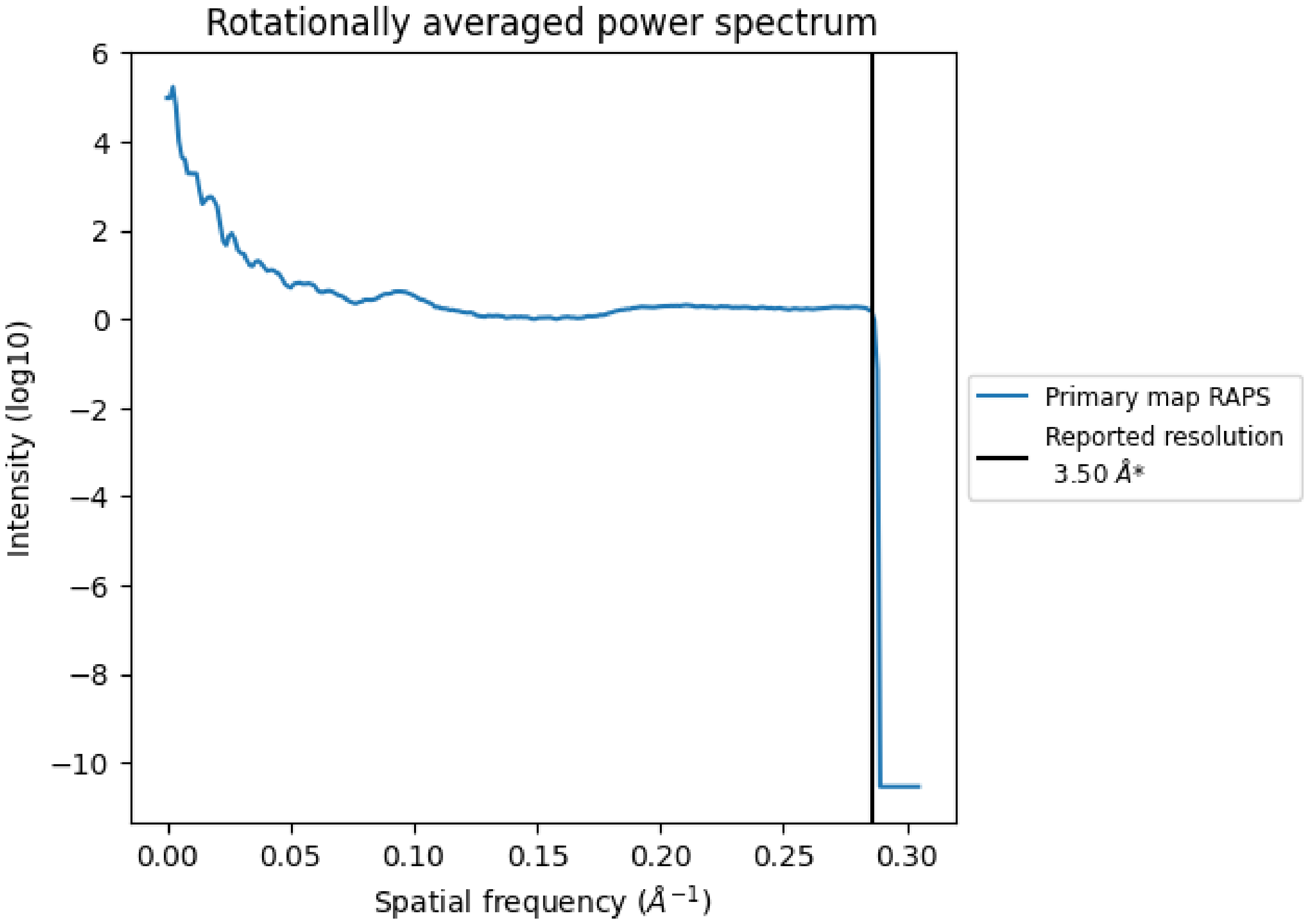
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 244 nm^3; this corresponds to an approximate mass of 220 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

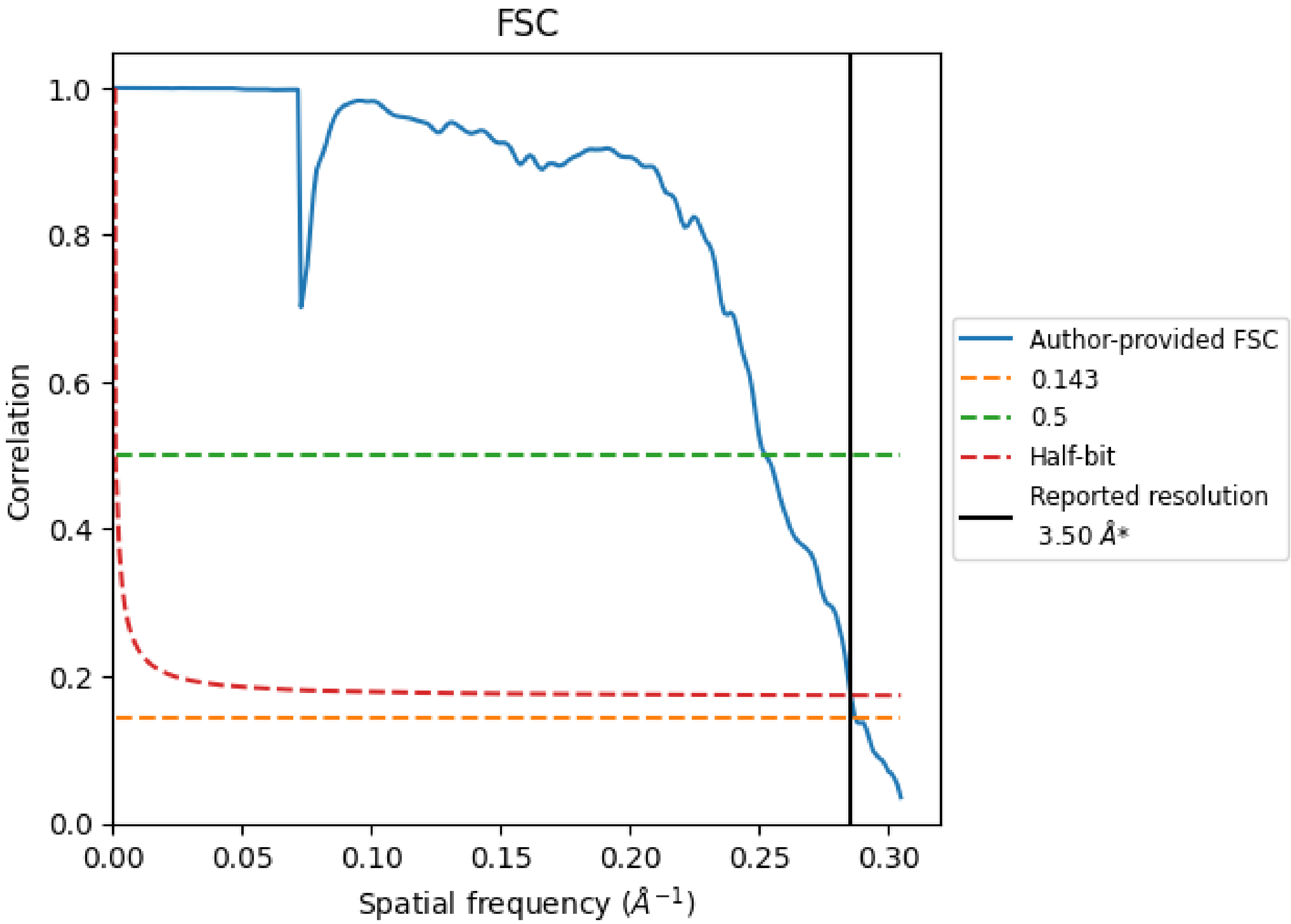


*Reported resolution corresponds to spatial frequency of 0.286 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.286 $Å^{-1}$

8.2 Resolution estimates ⓘ

Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	3.50	-	-
Author-provided FSC curve	3.48	3.96	3.50
Unmasked-calculated*	-	-	-

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps.

9 Map-model fit ⓘ

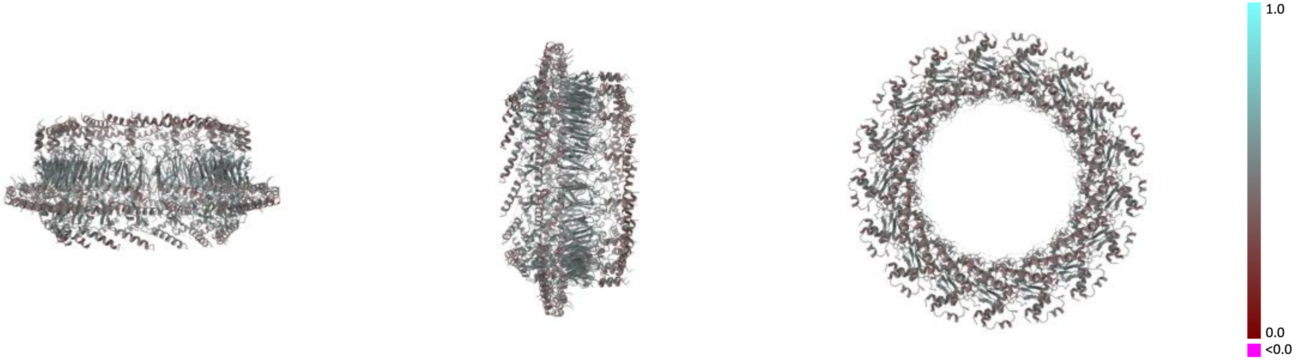
This section contains information regarding the fit between EMDB map EMD-20021 and PDB model 6X6J. Per-residue inclusion information can be found in section 3 on page 8.

9.1 Map-model overlay ⓘ

X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.03 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

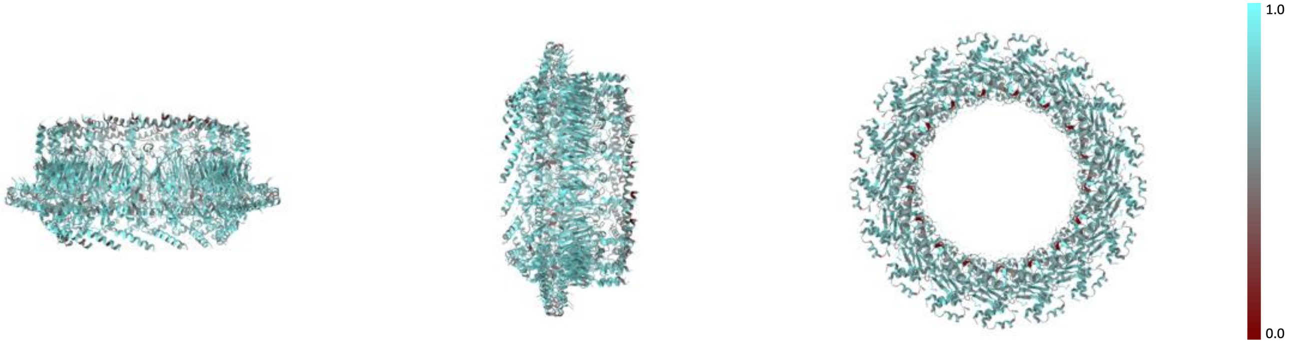
9.2 Q-score mapped to coordinate model ⓘ



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

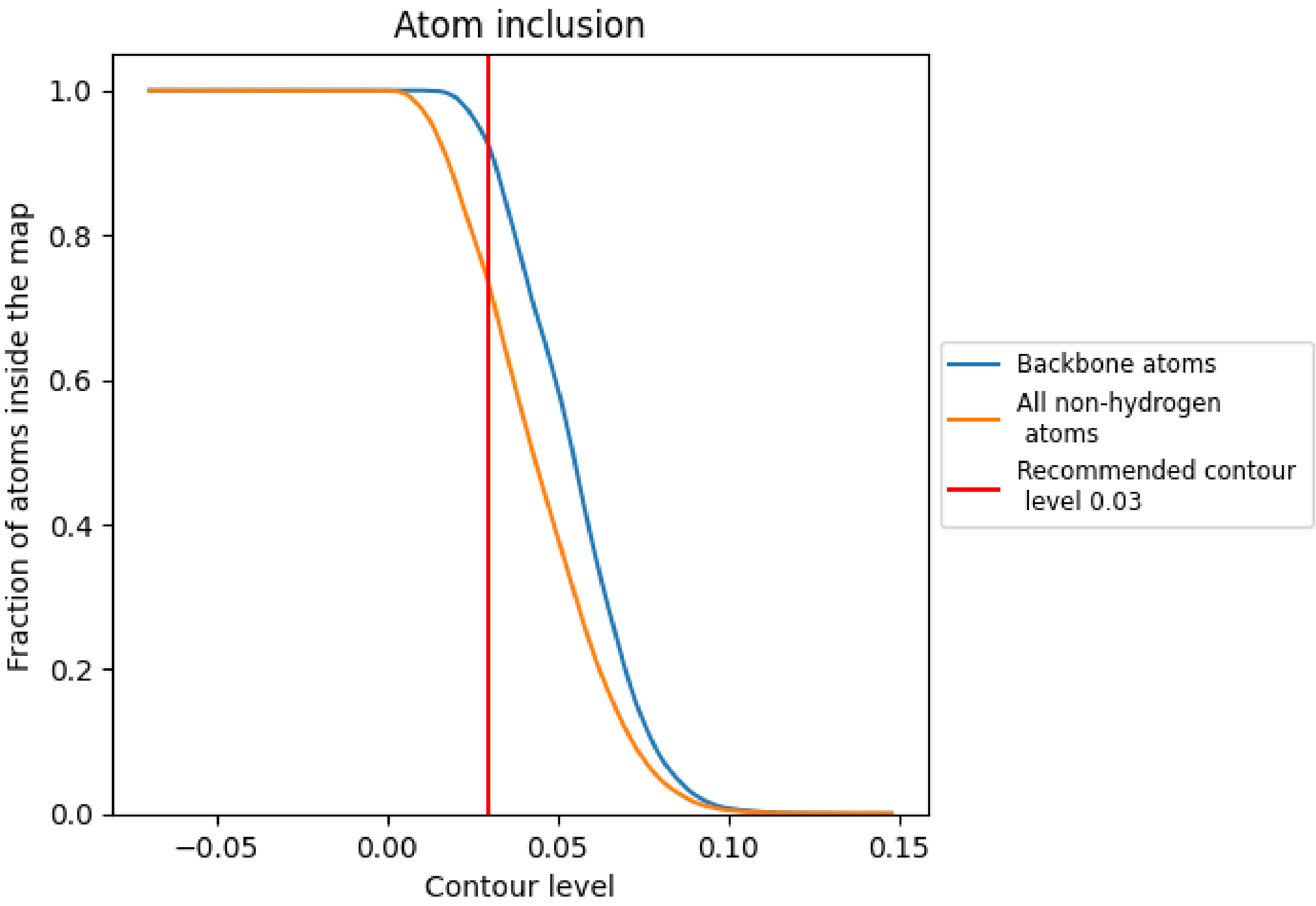
9.3 Atom inclusion mapped to coordinate model ⓘ



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.03).

9.4 Atom inclusion ⓘ



At the recommended contour level, 92% of all backbone atoms, 73% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.03) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7301	0.4730
AX	0.7667	0.4910
AY	0.6670	0.4470
BX	0.7720	0.4910
BY	0.6815	0.4480
CX	0.7720	0.4910
CY	0.6718	0.4460
DX	0.7736	0.4930
DY	0.6728	0.4530
EX	0.7796	0.4950
EY	0.6737	0.4500
FX	0.7789	0.4930
FY	0.6737	0.4470
GX	0.7804	0.4950
GY	0.6776	0.4480
HX	0.7743	0.4920
HY	0.6757	0.4460
IX	0.7720	0.4950
IY	0.6795	0.4450
JX	0.7698	0.4880
JY	0.6602	0.4430
KX	0.7804	0.4920
KY	0.6699	0.4480
LX	0.7743	0.4920
LY	0.6834	0.4470
MX	0.7690	0.4930
MY	0.6728	0.4470
NX	0.7667	0.4920
NY	0.6757	0.4470
OX	0.7758	0.4930
OY	0.6680	0.4470
PX	0.7736	0.4910
PY	0.6786	0.4490
QX	0.7774	0.4960
QY	0.6824	0.4500