Full wwPDB EM Validation Report ⓘ

Mar 4, 2024 – 04:08 AM EST

PDB ID	:	8DTB
EMDB ID	:	EMD-27695
Title	:	Focus/local refined map in C1 of signal subtracted RyR1 particles in complex with ImperaCalcin
Authors	:	Haji-Ghassemi, O.; Van Petegm, F.
Deposited on	:	2022-07-25
Resolution	:	3.14 Å(reported)
Based on initial model	:	6M2W

This is a Full wwPDB EM Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

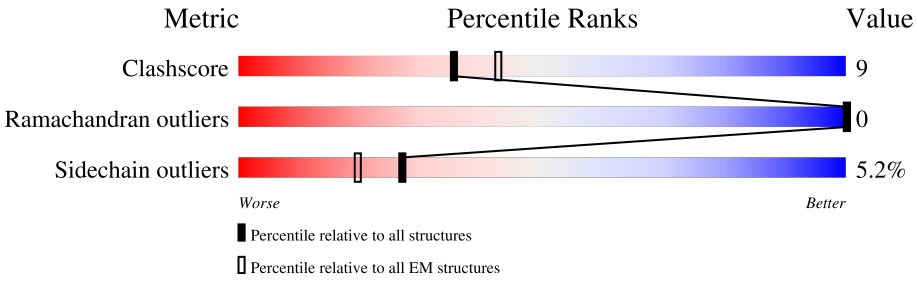
EMDB validation analysis	:	0.0.1.dev70
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.14 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	B	33	24% 52% 39% 9%
2	A	5037	7% 92%
2	D	5037	7% 91%
2	G	5037	7% 91%
2	J	5037	7% 91%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 13724 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.

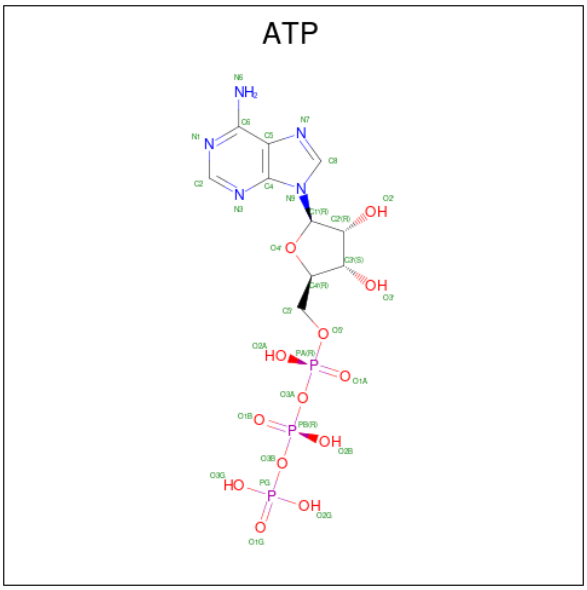
- Molecule 1 is a protein called Imperacalcin.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	33	Total	C	N	O	S	0	0
			257	148	58	45	6		

- Molecule 2 is a protein called Ryanodine receptor 1.

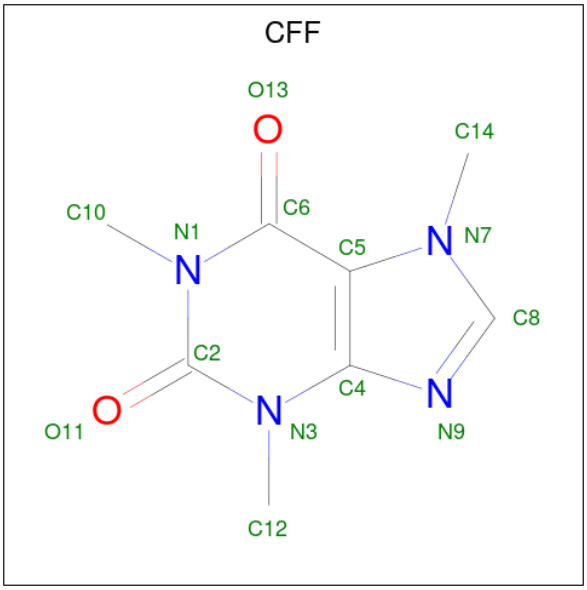
Mol	Chain	Residues	Atoms					AltConf	Trace
2	G	437	Total	C	N	O	S	0	0
			3344	2222	539	562	21		
2	A	426	Total	C	N	O	S	0	0
			3267	2176	519	552	20		
2	D	436	Total	C	N	O	S	0	0
			3360	2232	539	568	21		
2	J	433	Total	C	N	O	S	0	0
			3330	2211	532	567	20		

- Molecule 3 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms					AltConf
3	G	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	A	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	D	1	Total	C	N	O	P	0
			31	10	5	13	3	
3	J	1	Total	C	N	O	P	0
			31	10	5	13	3	

- Molecule 4 is CAFFEINE (three-letter code: CFF) (formula: $C_8H_{10}N_4O_2$).



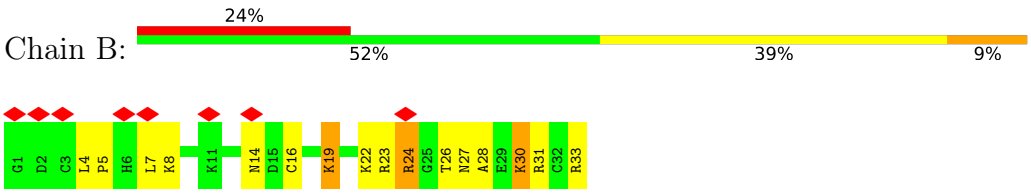
Mol	Chain	Residues	Atoms				AltConf
4	A	1	Total	C	N	O	0
			14	8	4	2	
4	D	1	Total	C	N	O	0
			14	8	4	2	
4	J	1	Total	C	N	O	0
			14	8	4	2	

3 Residue-property plots (i)

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.

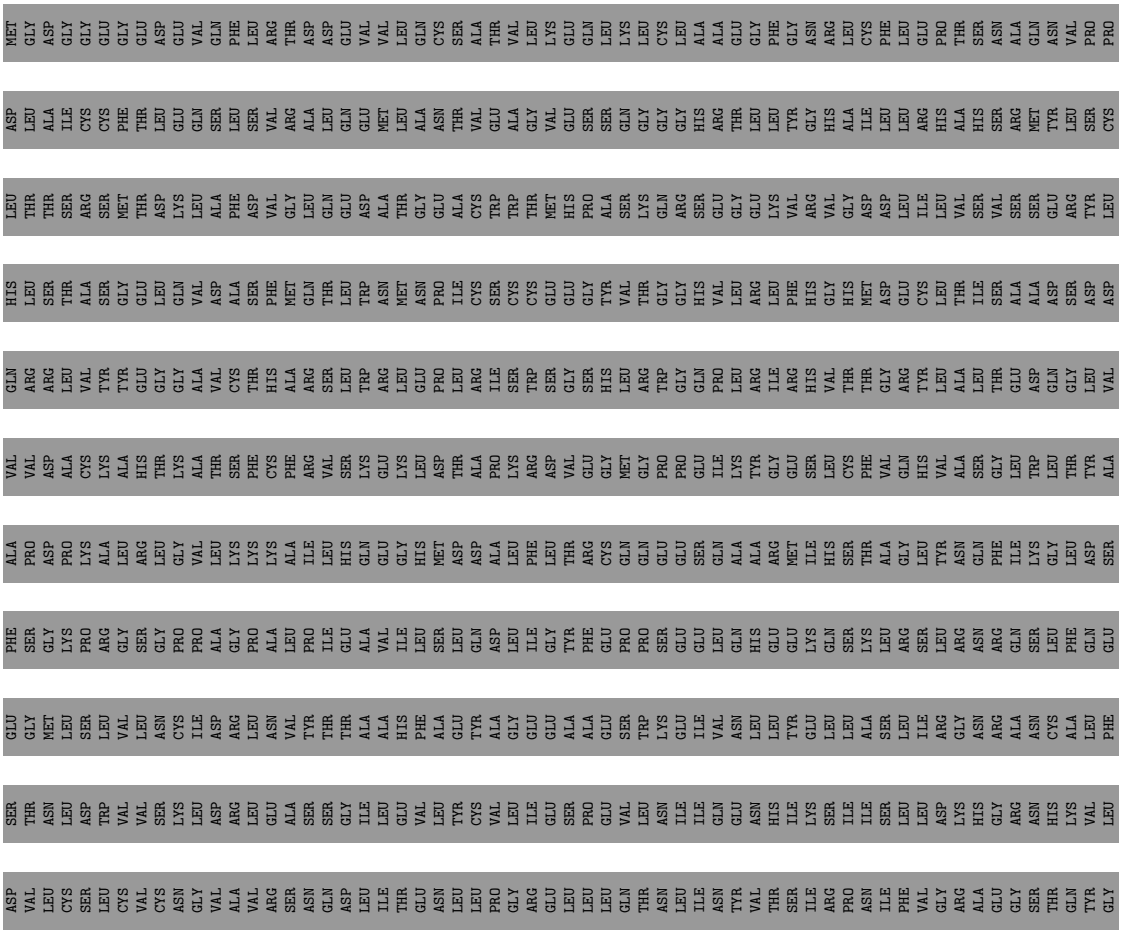
• Molecule 1: Imperacalcin

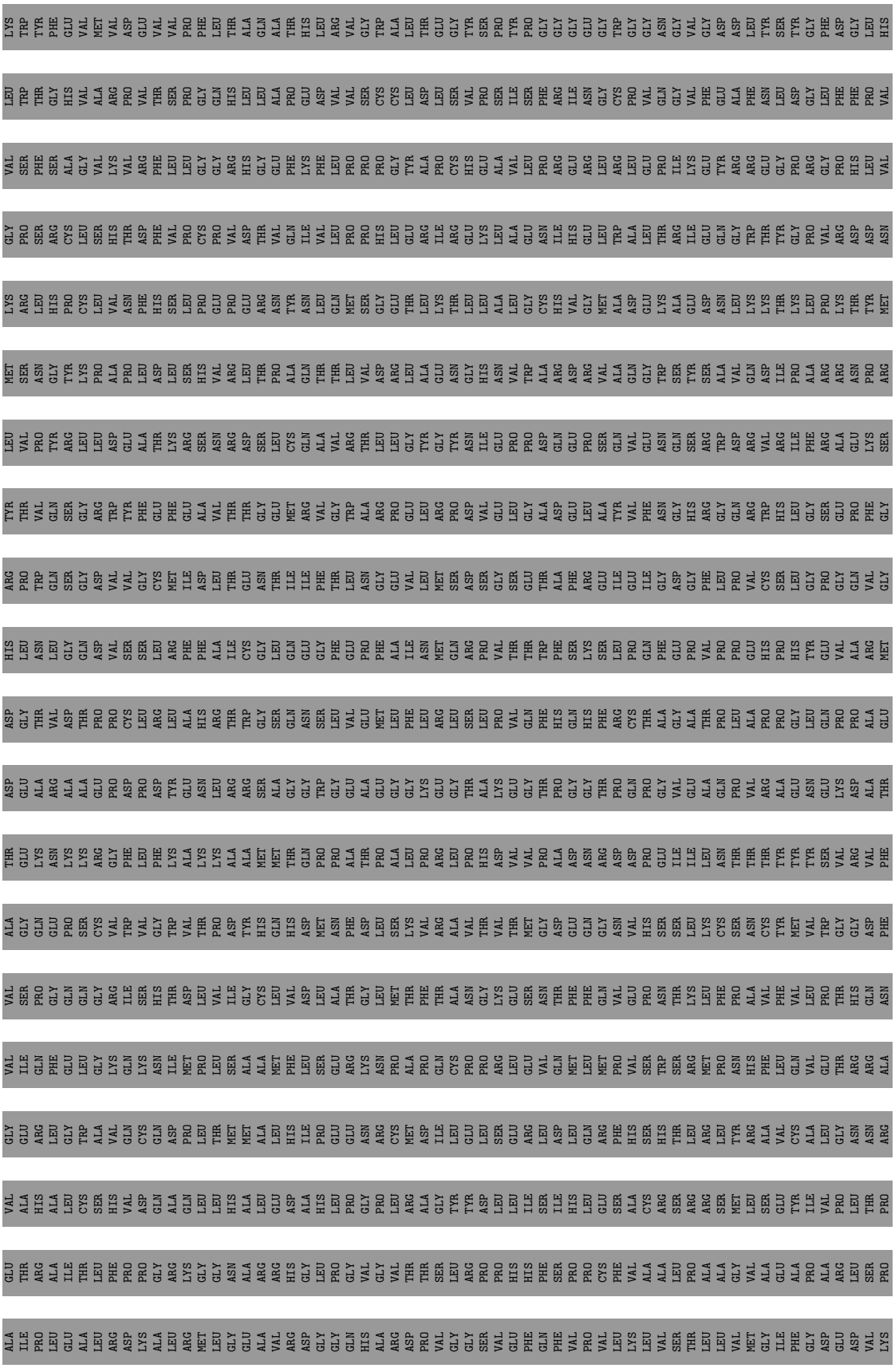
Chain B:



• Molecule 2: Ryanodine receptor 1

Chain G:

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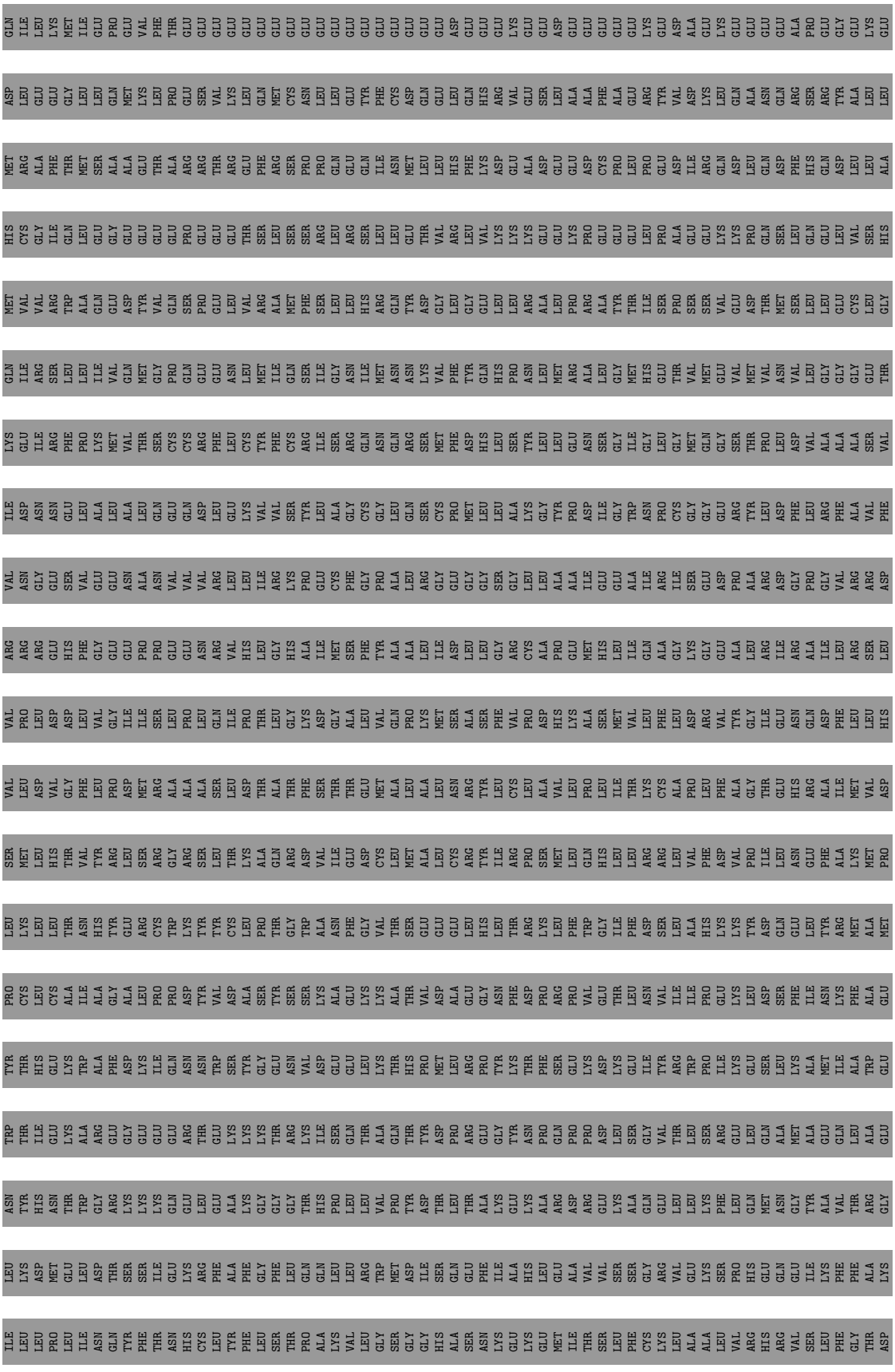
LEU TRP THR GLY HIS VAL ALA ARG PRO VAL THR SER PRO GLY GLN HIS LEU LEU ALA PRO GLU ASP VAL VAL SER CYS CYS LEU ASP LEU SER VAL PRO SER ILE SER PHE ARG ILE ASN GLY CYS PRO VAL GLN GLY VAL PHE GLU ALA PHE ASN LEU ASP GLY LEU PHE PHE PRO VAL
VAL SER PHE SER ALA GLY VAL LYS VAL ARG PHE LEU LEU GLY GLY ARG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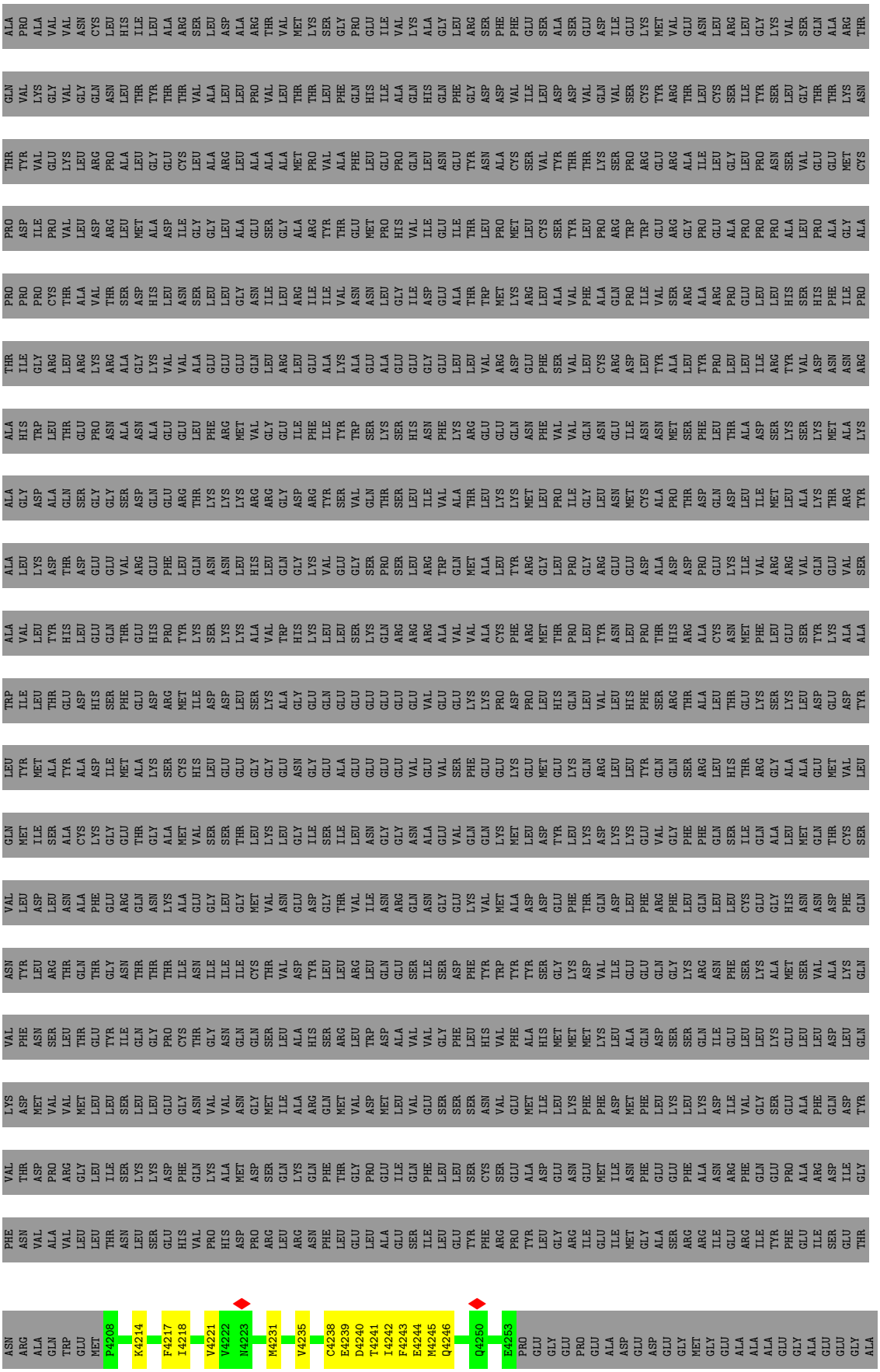
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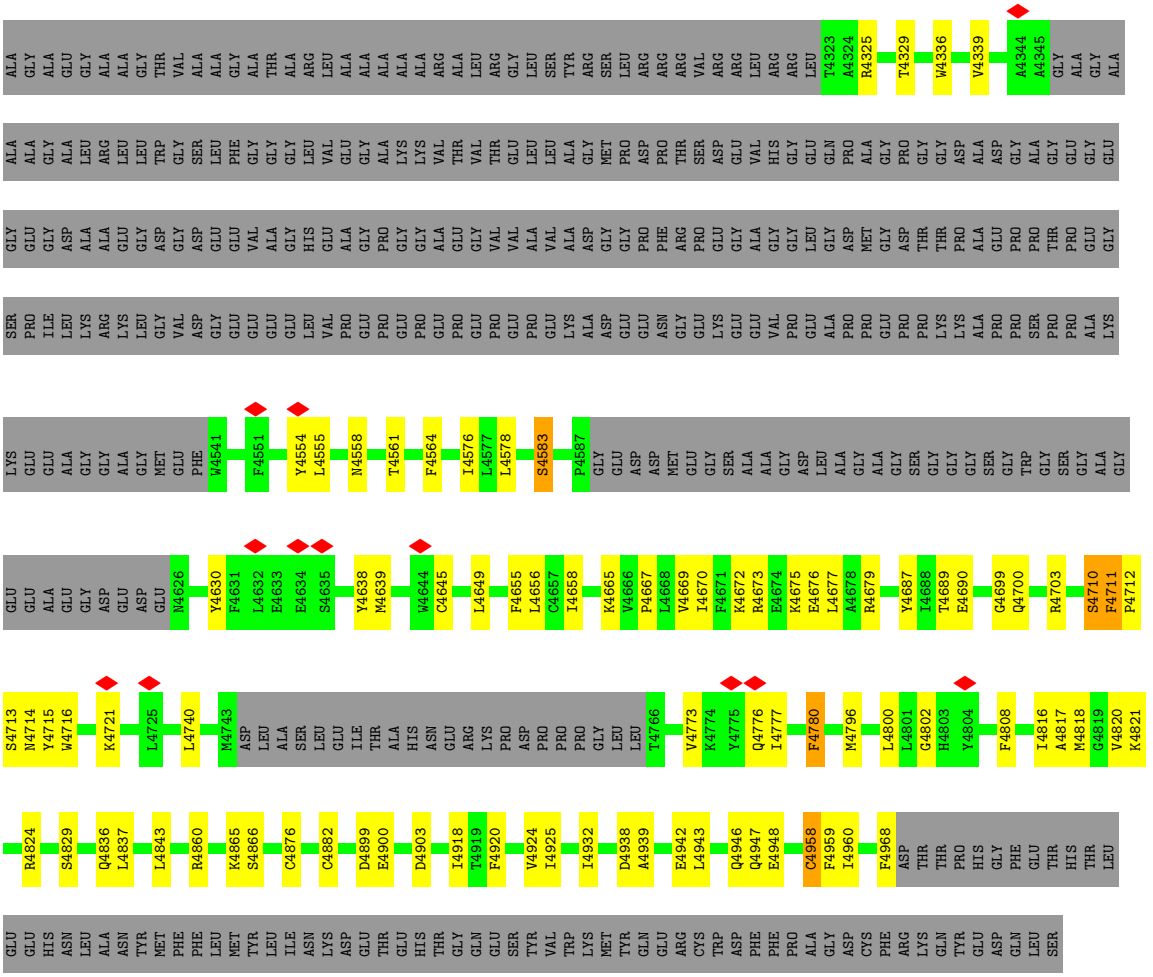
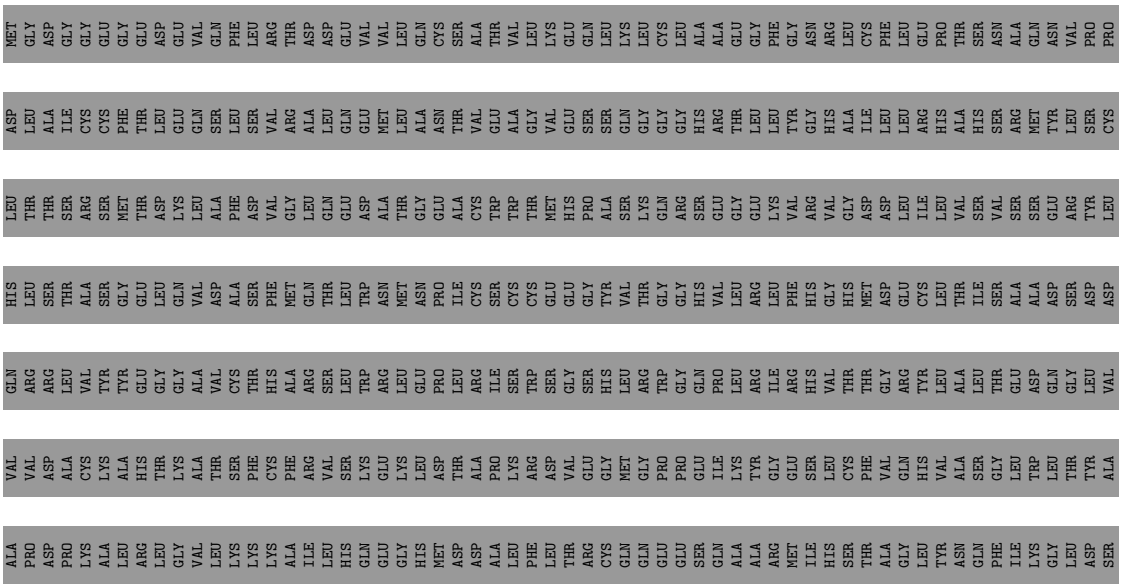


• Molecule 2: Ryanodine receptor 1

Chain A: 7% 92%



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

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

SER THR ASN LEU ASP TRP VAL VAL SER LYS LEU ASP ARG LEU GLU ALA SER SER GLY ILE LEU GLU VAL LEU TYR CYS VAL LEU ILE GLU SER PRO GLU VAL LEU ASN HIS ILE LYS SER ILE ILE SER LEU LEU ASP LYS HIS GLY ARG ASN HIS LYS VAL LEU

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

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

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

VAL SER PHE SER ALA GLY VAL LYS VAL ARG PHE LEU LEU GLY GLY ARG HIS GLY GLU PHE LYS PHE LEU PRO PRO PRO GLY TYR ALA PRO CYS HIS GLU ALA VAL LEU PRO ARG GLU ARG LEU GLU GLY GLU ARG ARG GLU LEU ARG GLU LYS GLU TYR ARG ARG GLU GLY PRO ARG GLY PRO HIS LEU VAL

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

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

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

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

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

ARG PRO TRP GLN SER GLY ASP VAL VAL GLY LEU MET SER ASP SER GLY SER LEU ILE GLU ILE GLY ASP GLY PHE LEU PRO VAL PRO PRO VAL CYS SER LEU GLY PRO GLY VAL GLY

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

ASP GLY THR VAL ASP THR PRO PRO CYS LEU ARG LEU ALA HIS ARG THR TRP GLY SER GLN ASN SER LEU PHE LEU ARG LEU SER LEU PRO VAL THR THR TRP PHE ARG CYS THR ALA GLY ALA THR PRO LEU PRO PRO GLY LEU GLN ALA PRO PRO GLY ALA GLU

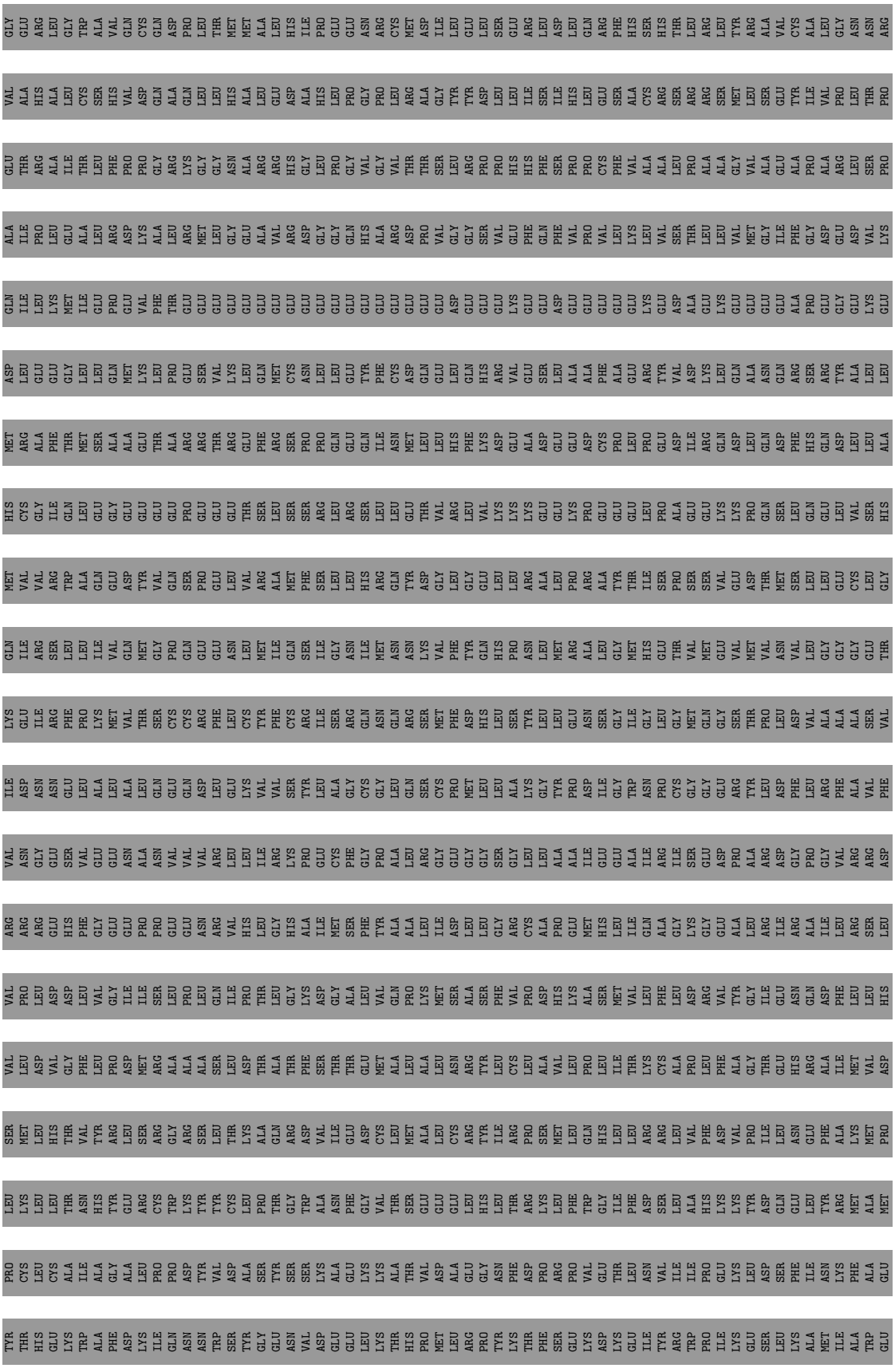
ASP GLU ALA ARG ALA PRO ASP TYR GLU ASN LEU ARG GLY SER ALA GLY GLY TRP GLY GLU ALA GLU GLY THR ALA LYS GLU GLU GLY THR PRO GLY GLY THR PRO GLN PRO GLY VAL GLU GLU ALA GLN PRO VAL PRO GLY LYS ASP ALA THR

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

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

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

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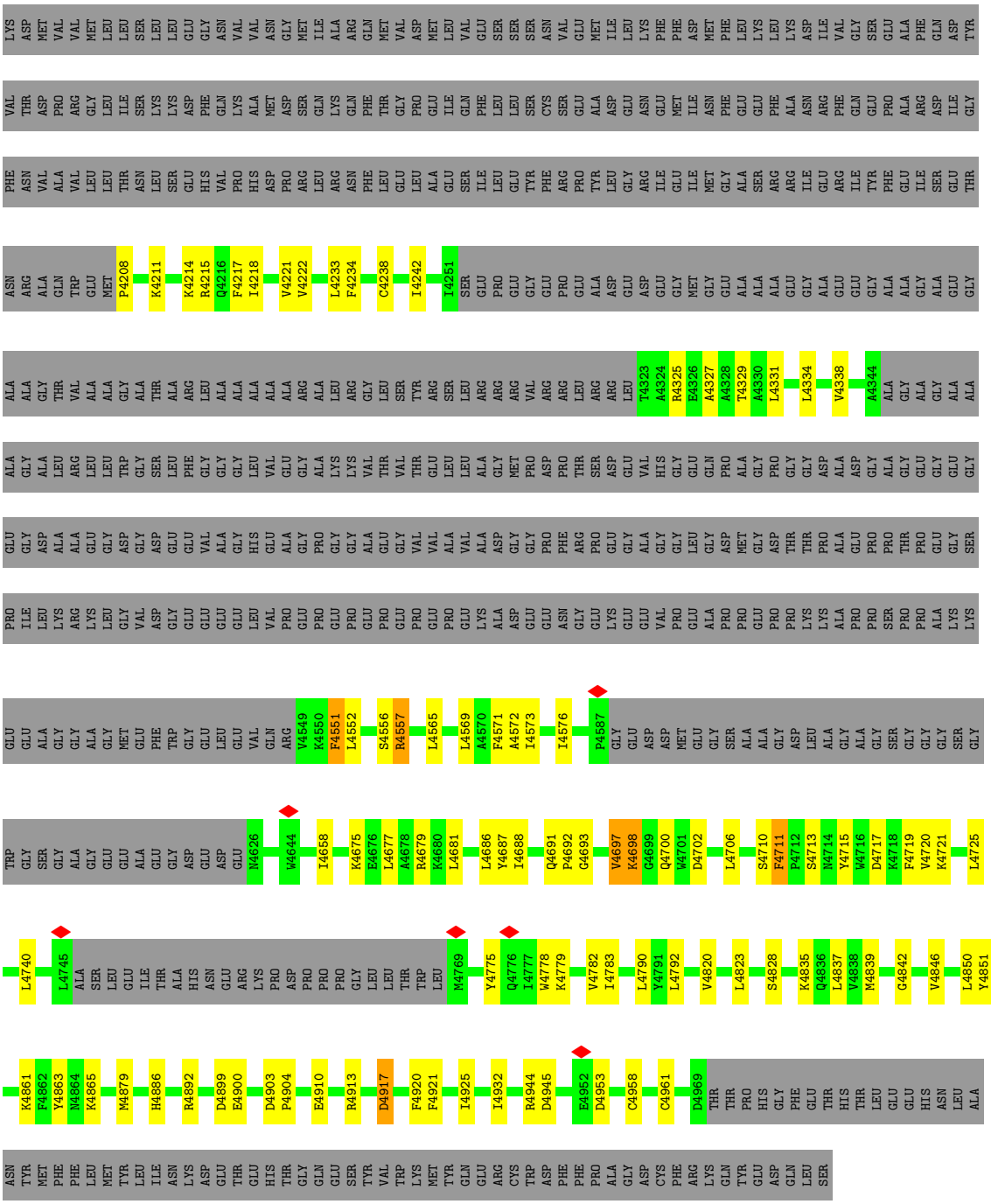
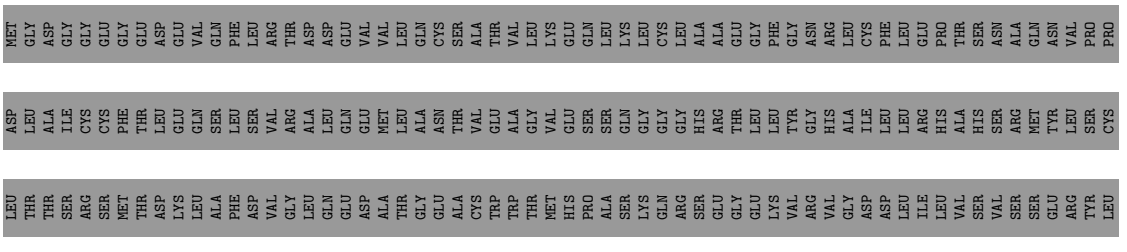
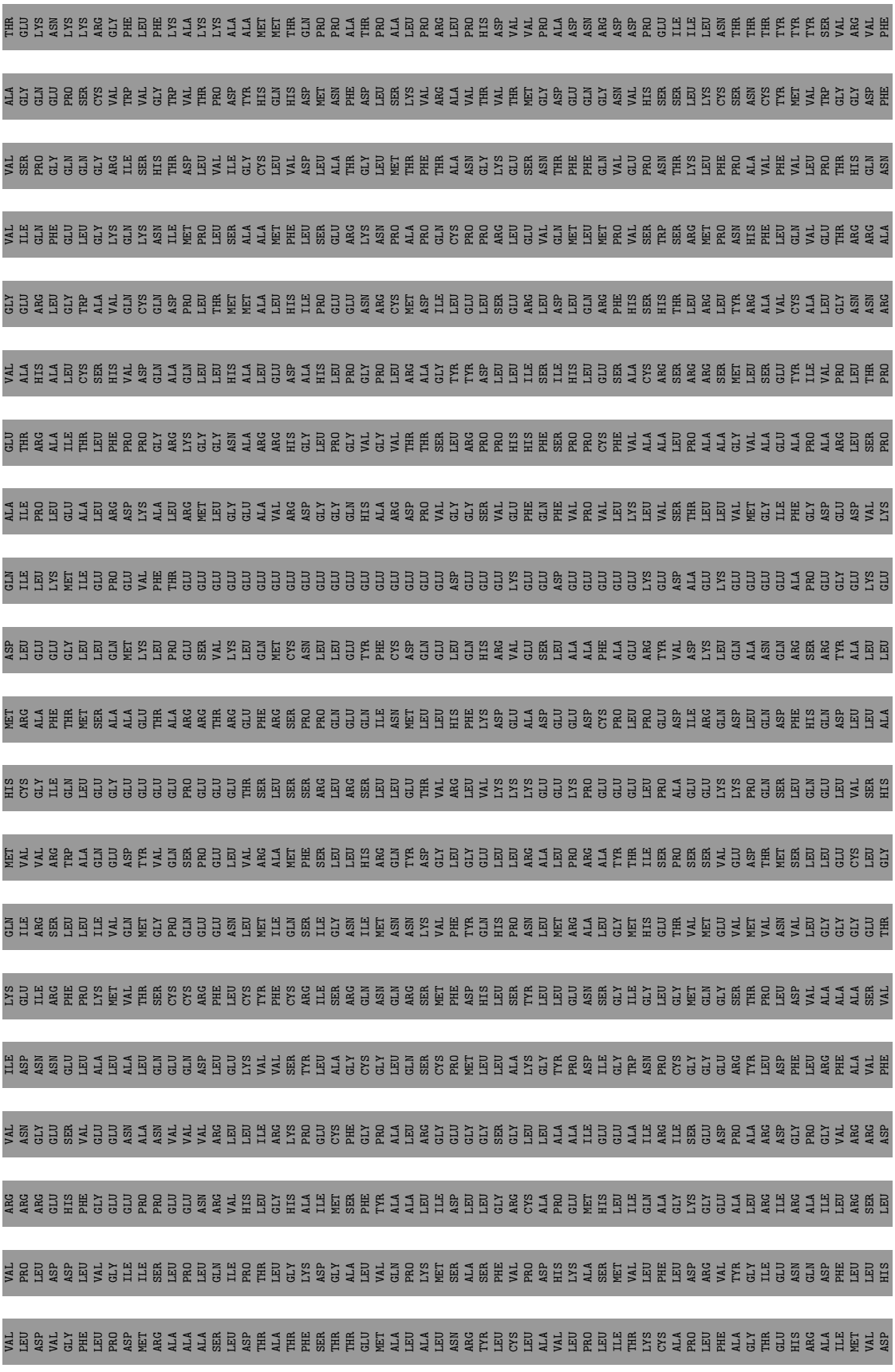
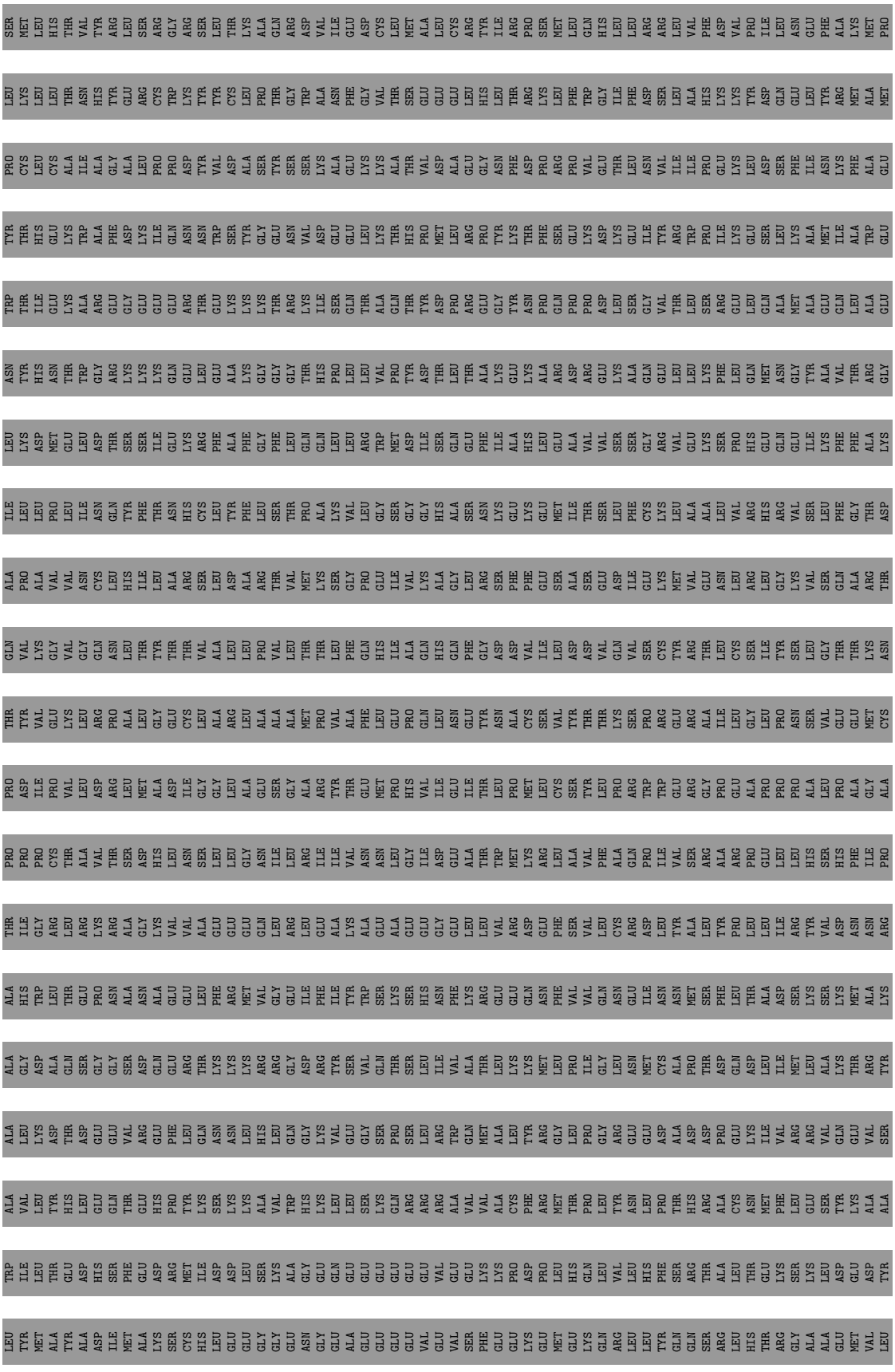


• Molecule 2: Ryanodine receptor 1

Chain D: 7% 91%



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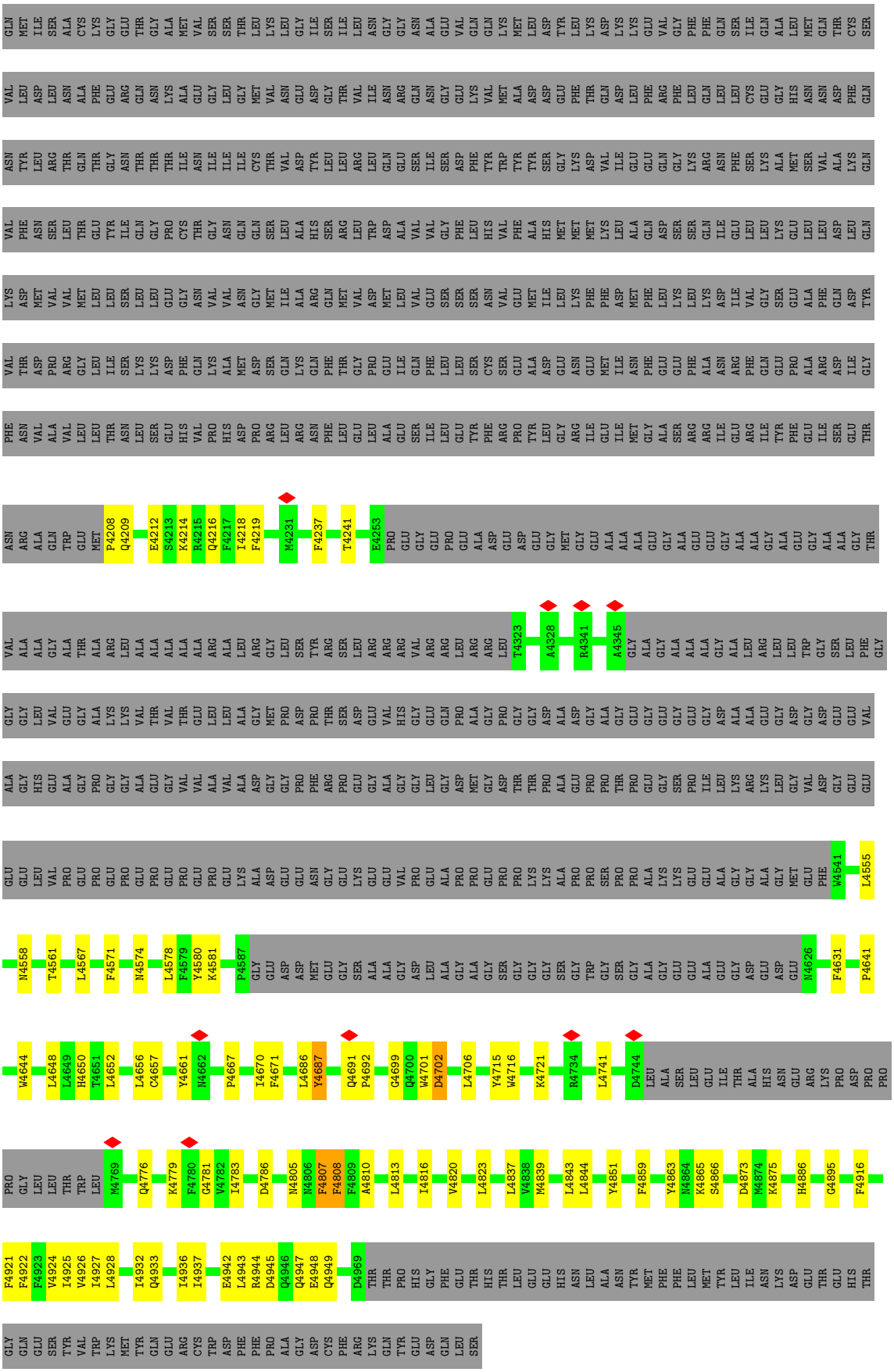
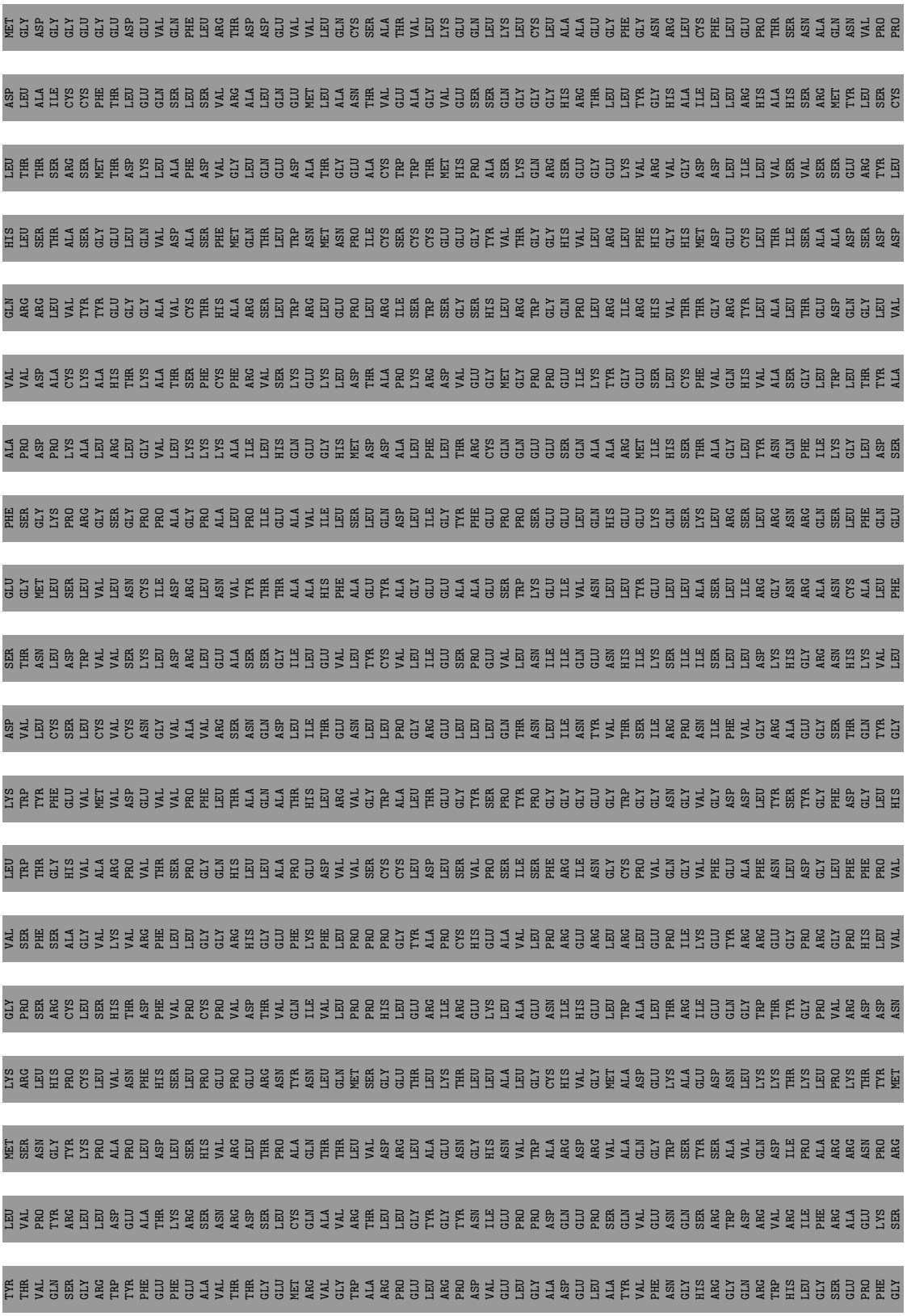
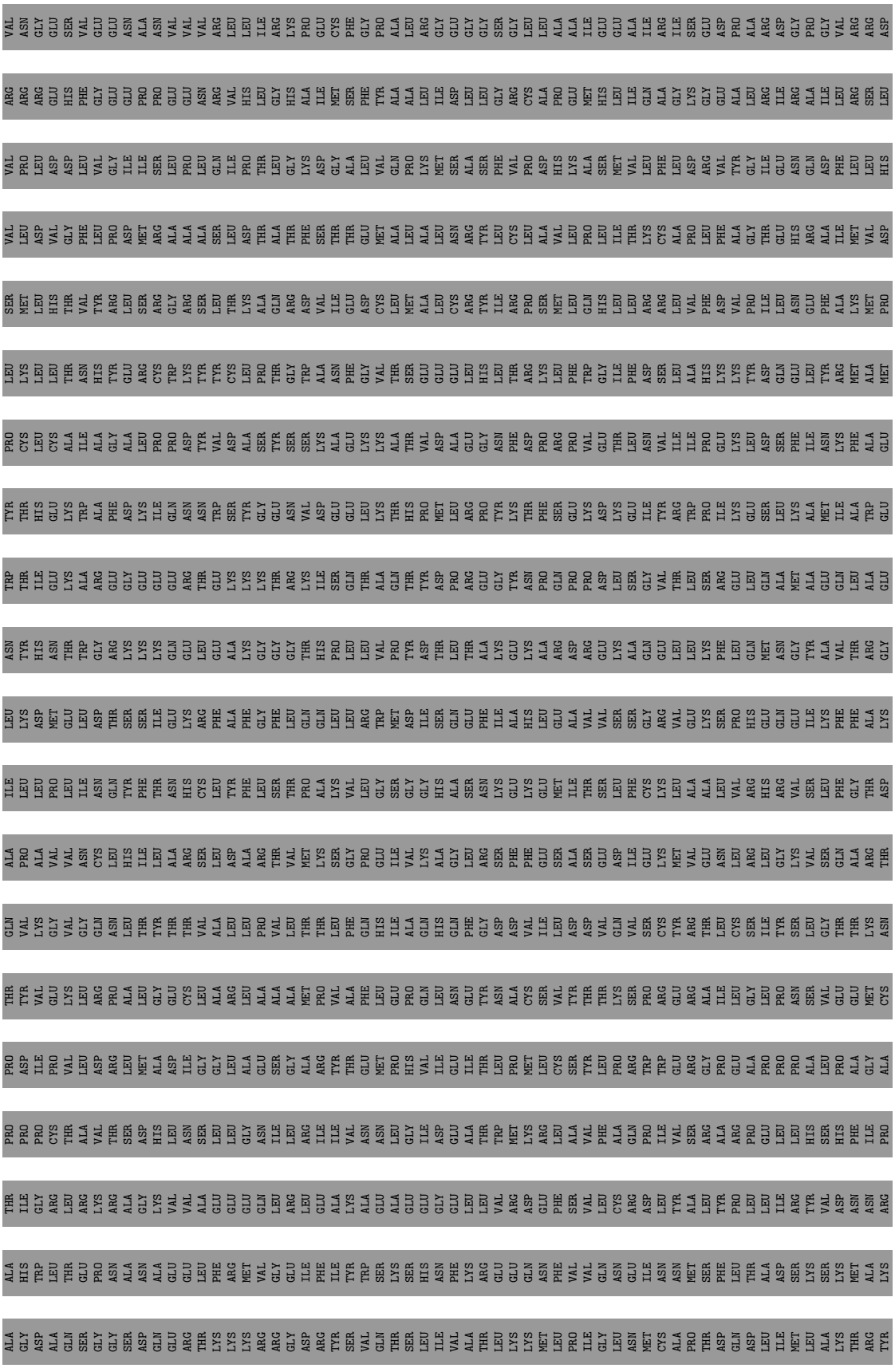
LEU LYS LEU LEU THR ASN HIS TYR GLU ARG CYS TRP LYS TYR TYR CYS LEU PRO THR GLY TRP ALA ASN PHE GLY VAL THR SER GLU GLU GLU LEU HIS LEU THR ARG LYS LEU PHE TRP GLY ILE PHE ASP SER LEU ALA HIS LYS LYS TYR ASP LEU GLN GLU LEU TYR ARG MET ALA
PRO CYS LEU CYS ALA ILE ALA GLY ALA LEU PRO PRO ASP TYR VAL ASP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



• Molecule 2: Ryanodine receptor 1

Chain J: 7% 91%

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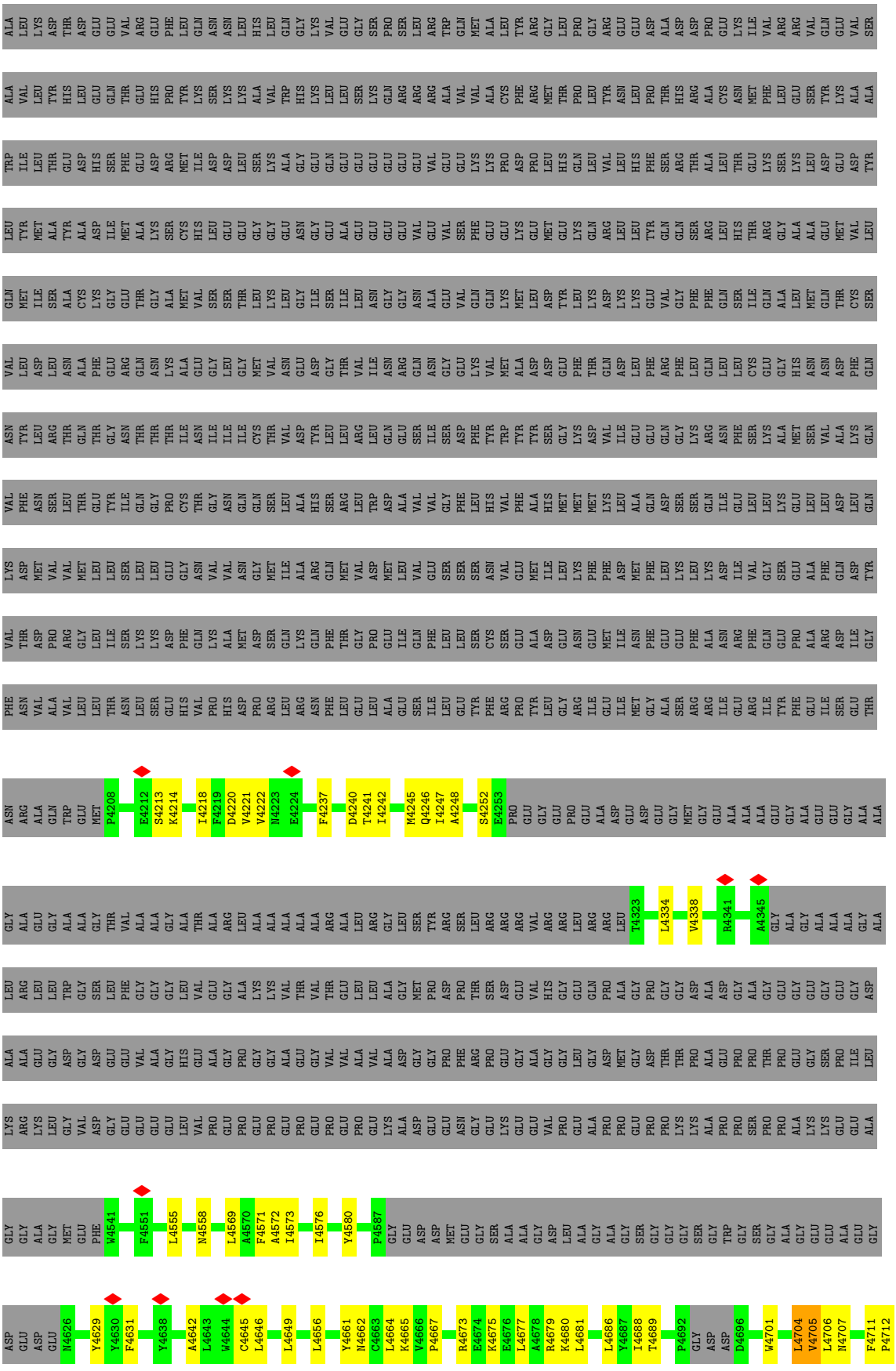
ARG ARG ARG GLU HIS PHE GLY GLU GLU PRO PRO GLU GLU ASN ARG VAL HIS LEU GLY HIS ALA ILE MET SER PHE TYR ALA ALA LEU ILE ASP LEU LEU GLY ARG CYS ALA PRO GLU MET HIS LEU ILE GLN ALA GLY LYS GLY GLU ALA LEU ARG ILE ARG ALA ILE LEU ARG SER LEU
VAL PRO LEU ASP ASP LEU VAL GLY ILE ILE SER LEU PRO LEU GLN ILE PRO THR LEU GLY LYS ASP GLY ALA LEU VAL GLN PRO LYS MET SER ALA SER PHE VAL PRO ASP HIS LYS ALA SER MET VAL LEU PHE LEU ASP ARG VAL TYR ASN GLN ASP LEU HIS
VAL LEU ASP VAL GLY PHE LEU PRO ASP MET ARG ALA ALA ALA SER LEU ASP THR ALA THR THR GLU MET ALA LEU ASN LEU ALA LEU ASN ARG TYR LEU CYS LEU ALA VAL LEU PRO LEU ILE THR LEU ALA SER PHE GLU GLU HIS ARG ALA ILE MET VAL ASP
SER MET LEU HIS THR VAL TYR ARG LEU SER ARG GLY ARG SER LEU THR LYS ALA GLN ARG ASP VAL ILE GLU ASP CYS LEU MET LEU GLN HIS LEU LEU ARG ARG LEU ARG ILE LEU GLU ASN GLU PHE ALA LYS MET PRO
LEU LYS LEU LEU THR TYR GLU ARG CYS TRP LYS TYR TYR CYS LEU PRO THR GLY TRP ALA ASN PHE GLY VAL THR SER GLU GLU LEU HIS LEU ARG ILE PHE ASP SER LEU ALA ALA HIS LYS LYS TYR ASP GLN GLU LEU PHE ARG MET ALA MET
PRO CYS LEU CYS ALA ILE ALA GLY ALA LEU PRO PRO ASP TYR VAL ASP ALA SER TYR SER SER LYS ALA GLU LYS LYS ALA THR VAL ASP ALA GLU LEU LYS THR ASP PRO ARG PRO VAL GLU THR LEU ASN VAL ILE ILE PRO GLU LYS LEU ASP PRO ALA ALA GLU
TYR THR HIS GLU LYS TRP ALA PHE ASP LYS ILE GLN ASN ASN TRP SER TYR GLY GLU ASN VAL ASP GLU GLU LEU LYS THR HIS PRO MET LEU ARG PRO TYR LYS THR PHE SER GLU LYS ASP LYS GLU ILE TYR ARG TRP PRO GLU ILE LYS GLU LEU SER LEU LYS ALA MET ILE ALA TRP GLU
TRP THR ILE GLU LYS ALA ARG GLU GLU GLU ARG THR GLU LYS LYS LYS THR ARG LYS ILE SER GLN THR ALA GLN THR THR TYR ASP PRO ARG GLU GLY TYR ASN PRO GLN PRO PRO ASP LEU SER GLY VAL THR LEU SER ARG GLU LEU GLN ALA MET ASN GLY TYR ALA GLU GLN LEU ALA GLU
ASN TYR HIS ASN THR TRP GLY ARG LYS LYS LYS GLN GLU LEU GLU ALA LYS GLY GLY GLY THR HIS PRO LEU LEU VAL PRO TYR ASP THR LEU THR ALA LYS GLU LYS ALA ARG ASP ARG GLU LYS ALA GLN GLU LEU LEU LYS PHE LEU GLN MET ASN GLY TYR ALA VAL THR ARG GLY
LEU LYS ASP MET GLU LEU ASP THR SER SER ILE GLU LYS ARG PHE ALA PHE GLY PHE LEU GLN GLN LEU LEU ARG TRP MET ASP ILE SER GLN GLU PHE ILE ALA HIS LEU GLU GLU LYS SER GLY ARG VAL GLU LYS SER PRO HIS GLU GLN GLU ILE LYS PHE PHE ALA LYS
ILE LEU LEU PRO LEU ILE ASN GLN TYR PHE THR ASN HIS CYS LEU TYR PHE LEU SER THR PRO ALA LYS VAL LEU GLY SER GLY GLY HIS ALA SER ASN LYS GLU LYS LEU ASP GLU MET ILE THR SER LEU PHE CYS LYS LEU ALA ALA LEU VAL GLU ASN LEU ARG HIS ARG VAL SER LEU GLY THR THR ASP
ALA PRO ALA VAL VAL ASN CYS LEU HIS ILE LEU ALA ARG SER LEU ASP ALA ARG THR VAL MET LYS SER GLY PRO GLU ILE VAL LYS ALA GLY LEU ARG SER ASP PHE PHE GLU ASP ILE GLU ASP VAL GLN VAL SER CYS TYR ARG THR LEU CYS SER LEU GLY LYS VAL SER GLU ILE
GLN VAL LYS GLY VAL GLY GLN ASN LEU THR THR TYR THR THR LEU PHE GLN HIS ILE ALA GLN HIS GLN PHE GLY ASP VAL ILE LEU ASP ASP VAL GLN VAL SER CYS TYR ARG THR LEU CYS SER ILE TYR SER LEU GLY THR THR LYS ASN
THR TYR VAL GLU LYS LEU ARG PRO ALA LEU GLY GLU CYS LEU ALA ALA MET PRO VAL ALA PHE LEU GLU PRO GLN LEU ASN GLU TYR ASN ALA CYS SER ALA VAL TYR THR THR LYS SER PRO ARG GLU ARG ALA ILE GLU GLY LEU PRO ASN SER LEU GLY LYS VAL GLU GLU MET
PRO ASP ILE PRO VAL LEU MET ALA ASP ILE GLY GLY LEU ALA GLU SER GLY ALA ARG TYR THR GLU MET PRO HIS VAL ILE GLU GLU ILE THR LEU PRO MET LEU CYS SER TYR LEU PRO ARG TRP TRP GLU ARG GLY PRO GLU ALA PRO PRO PRO ALA LEU PRO GLY ALA
PRO PRO PRO CYS THR ALA VAL THR SER ASP HIS LEU LEU LEU ILE ILE VAL ASN ASN SER LEU LEU GLY ILE ASP GLU GLU ALA THR TRP MET LYS ARG LEU ALA VAL PHE ALA GLN PRO ILE VAL SER ARG ALA GLU PRO PRO GLU LEU LEU LEU HIS SER HIS PHE ILE PRO
THR ILE GLY ARG LEU THR GLY LYS VAL VAL ALA GLU GLU GLY GLU GLU LEU LEU VAL ARG ASP GLU PHE SER VAL LEU CYS ARG ASP LEU TYR ALA ALA LEU TYR PRO LEU LEU ILE ARG TYR VAL ASP ASN ARG
ALA HIS TRP LEU THR GLU PRO ASN ALA GLU GLU ASN PHE LYS ARG GLU GLN ASN PHE VAL VAL GLN ASN GLU ILE ASN ASN MET SER PHE LEU THR ALA ASP SER LYS SER ARG
ALA GLY ASP ALA GLN SER GLY SER ASP GLN GLU ARG ARG GLY ASP ARG TYR SER VAL GLN THR SER LEU ILE VAL ALA THR LEU LYS LYS MET LEU PRO ILE GLY LEU ASN MET CYS ALA PRO THR ASP GLN ASP LEU ILE LEU ARG ILE VAL THR ARG TYR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S4213
K4214
I4218
F4219
D4220
V4221
V4222
N4223
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D4240
T4241
I4242
M4245
Q4246
I4247
A4248
S4252
E4253
T4323
L4334
V4338
R4341
A4345
W4541
F4551
L4555
N4558
L4569
A4570
F4571
A4572
I4573
I4576
Y4580
P4587
N4626
Y4629
Y4630
F4631
Y4638
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L4643
W4644
C4645
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L4656
Y4661
N4662
C4663
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K4665
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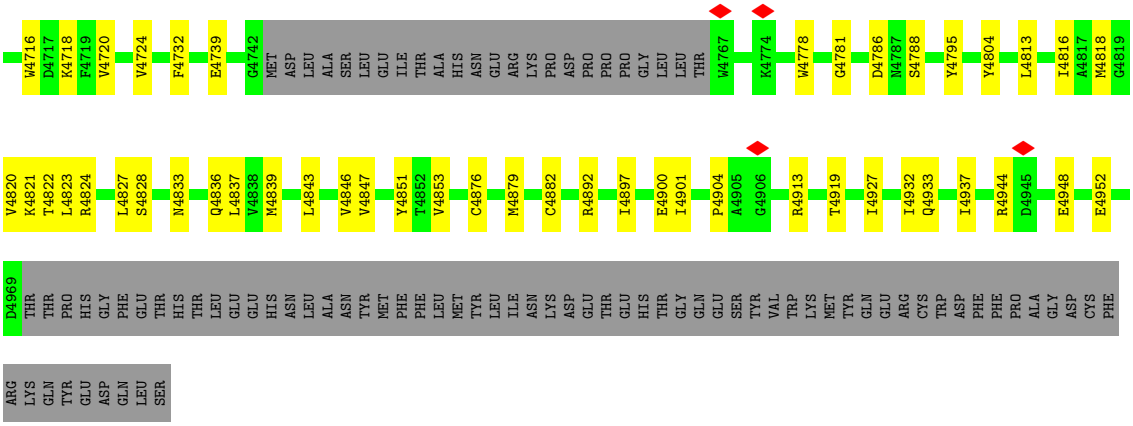
W4716 D4717 K4718 F4719 V4720 V4724 F4732 E4739 G4742 MET ASP LEU ALA SER LEU GLU ILE THR ALA HIS ASN GLU ARG LYS PRO ASP PRO PRO PRO GLY LEU LEU THR W4767 K4774 W4778 G4781 D4786 N4787 S4788 Y4795 Y4804 L4813 I4816 A4817 M4818 G4819
V4820 K4821 T4822 L4823 R4824 L4827 S4828 N4833 Q4836 L4837 V4838 M4839 L4843 V4846 V4847 Y4851 T4852 V4853 C4876 M4879 C4882 R4892 I4897 E4900 I4901 P4904 A4905 G4906 R4913 T4919 I4927 I4932 Q4933 I4937 R4944 D4945 E4948 E4952
D4969 THR THR PRO HIS GLY PHE GLU THR HIS THR LEU GLU GLU HIS ASN LEU ALA ASN TYR MET PHE PHE LEU MET TYR LEU ILE ASN LYS ASP GLU THR GLU HIS THR GLY GLN GLU SER TYR VAL TRP LYS MET TYR GLN GLU ARG CYS TRP ASP PHE PHE PRO ALA GLY ASP CYS PHE
ARG LYS GLN TYR GLU ASP GLN LEU SER

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	307078	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 ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	3000	Depositor
Magnification	Not provided	
Image detector	FEI FALCON III (4k x 4k)	Depositor
Maximum map value	6.438	Depositor
Minimum map value	-4.180	Depositor
Average map value	-0.005	Depositor
Map value standard deviation	0.072	Depositor
Recommended contour level	0.5	Depositor
Map size (Å)	479.36002, 479.36002, 479.36002	wwPDB
Map dimensions	448, 448, 448	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.07, 1.07, 1.07	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ATP, CFF

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	B	0.38	0/258	0.76	0/336
2	A	0.27	0/3349	0.46	0/4550
2	D	0.26	0/3442	0.46	0/4669
2	G	0.27	0/3426	0.45	0/4651
2	J	0.27	0/3411	0.46	0/4629
All	All	0.27	0/13886	0.46	0/18835

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	B	257	0	261	19	0
2	A	3267	0	3135	67	0
2	D	3360	0	3248	52	0
2	G	3344	0	3213	56	0
2	J	3330	0	3195	58	0
3	A	31	0	12	2	0
3	D	31	0	12	0	0
3	G	31	0	12	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	J	31	0	12	0	0
4	A	14	0	10	0	0
4	D	14	0	10	0	0
4	J	14	0	10	0	0
All	All	13724	0	13130	230	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 9.

All (230) 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)
2:G:4837:LEU:HD11	2:G:4932:ILE:HG23	1.63	0.80
2:J:4673:ARG:HH12	2:J:4701:TRP:HD1	1.34	0.75
2:J:4681:LEU:HD11	2:J:4706:LEU:HD11	1.70	0.74
1:B:26:THR:O	2:A:4944:ARG:NH1	2.25	0.69
2:J:4900:GLU:N	2:J:4900:GLU:OE2	2.26	0.69
2:D:4574:ASN:HD21	2:D:4810:ALA:HA	1.56	0.69
2:D:4555:LEU:HD11	2:D:4656:LEU:HB3	1.75	0.68
2:A:4215:ARG:NH1	3:A:5103:ATP:O2A	2.27	0.66
2:D:4687:TYR:HD2	2:D:4706:LEU:HD11	1.61	0.66
2:G:4818:MET:O	2:G:4824:ARG:NH1	2.29	0.65
2:J:4933:GLN:O	2:J:4937:ILE:HG12	1.97	0.65
2:J:4555:LEU:HD21	2:J:4656:LEU:HD22	1.79	0.65
2:J:4642:ALA:O	2:J:4646:LEU:HD12	1.97	0.65
2:G:4943:LEU:O	2:G:4947:GLN:HG3	1.97	0.64
2:D:4779:LYS:O	2:D:4783:ILE:HG12	1.97	0.64
1:B:22:LYS:HG3	1:B:33:ARG:CG	2.27	0.64
2:J:4701:TRP:CZ2	2:J:4781:GLY:HA3	2.33	0.64
2:G:4900:GLU:OE2	2:G:4900:GLU:N	2.31	0.64
2:J:4701:TRP:CZ2	2:J:4778:TRP:HA	2.33	0.63
2:J:4704:LEU:HD11	2:J:4778:TRP:HB2	1.81	0.63
2:G:4796:MET:O	2:G:4800:LEU:HD12	2.00	0.62
2:G:4689:THR:OG1	2:G:4690:GLU:OE1	2.17	0.62
2:D:4928:LEU:O	2:D:4932:ILE:HG13	2.00	0.61
2:A:4218:ILE:O	2:A:4222:VAL:HG23	2.01	0.61
2:A:4211:LYS:O	2:A:4215:ARG:HG2	2.02	0.60
2:A:4572:ALA:O	2:A:4576:ILE:HG13	2.01	0.60
2:G:4235:VAL:O	2:G:4239:GLU:HG2	2.02	0.60
2:D:4863:TYR:HH	2:D:4886:HIS:HE2	1.49	0.60
2:G:4241:THR:O	2:G:4245:MET:HG2	2.01	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:4904:PRO:HB3	2:A:4913:ARG:HD3	1.82	0.60
2:D:4721:LYS:HD3	2:D:4741:LEU:HD22	1.84	0.60
1:B:23:ARG:NH2	2:A:4945:ASP:OD2	2.35	0.60
2:G:4325:ARG:NH1	2:G:4329:THR:OG1	2.35	0.60
2:G:4876:CYS:HA	2:G:4882:CYS:HB2	1.84	0.60
2:A:4238:CYS:O	2:A:4242:ILE:HG13	2.02	0.59
2:A:4900:GLU:N	2:A:4900:GLU:OE1	2.35	0.59
2:A:4214:LYS:O	2:A:4218:ILE:HG22	2.03	0.59
2:A:4904:PRO:HD3	2:A:4913:ARG:HE	1.68	0.59
2:G:4217:PHE:O	2:G:4221:VAL:HG12	2.02	0.59
2:G:4214:LYS:O	2:G:4218:ILE:HG12	2.03	0.59
1:B:24:ARG:O	1:B:27:ASN:HB2	2.03	0.58
2:G:4231:MET:O	2:G:4235:VAL:HG23	2.04	0.58
2:A:4675:LYS:O	2:A:4679:ARG:HG2	2.04	0.57
2:G:4836:GLN:OE1	2:J:4944:ARG:NH1	2.37	0.57
2:A:4325:ARG:NH1	2:A:4329:THR:OG1	2.38	0.56
2:J:4645:CYS:O	2:J:4649:LEU:HG	2.05	0.56
2:J:4897:ILE:HG13	2:J:4901:ILE:HD11	1.87	0.56
2:D:4921:PHE:HD1	2:D:4925:ILE:HD12	1.71	0.56
2:A:4820:VAL:HG13	2:A:4823:LEU:HB2	1.88	0.56
2:D:4652:LEU:O	2:D:4656:LEU:HG	2.06	0.56
2:D:4844:LEU:HD11	2:D:4924:VAL:HG13	1.88	0.55
1:B:5:PRO:HD2	1:B:8:LYS:HD2	1.88	0.55
1:B:31:ARG:NH1	2:D:4949:GLN:OE1	2.39	0.55
2:G:4578:LEU:HA	2:A:4879:MET:HG2	1.88	0.55
2:J:4241:THR:O	2:J:4245:MET:HG2	2.06	0.55
2:A:4913:ARG:NH1	2:A:4917:ASP:OD2	2.40	0.55
2:G:4939:ALA:O	2:G:4943:LEU:HG	2.07	0.55
2:A:4721:LYS:O	2:A:4725:LEU:HD13	2.08	0.54
2:D:4944:ARG:HH22	2:J:4836:GLN:HE22	1.55	0.54
2:J:4569:LEU:O	2:J:4573:ILE:HG23	2.08	0.54
1:B:23:ARG:HB3	1:B:30:LYS:HG3	1.90	0.54
2:D:4667:PRO:HA	2:D:4670:ILE:HD12	1.90	0.54
2:J:4948:GLU:O	2:J:4952:GLU:HG2	2.08	0.54
1:B:24:ARG:HD2	1:B:33:ARG:HH12	1.71	0.54
2:G:4920:PHE:O	2:G:4924:VAL:HG22	2.08	0.54
2:D:4691:GLN:OE1	2:D:4692:PRO:HD2	2.08	0.54
2:A:4892:ARG:NH1	2:D:4895:GLY:O	2.39	0.53
1:B:14:ASN:HA	1:B:19:LYS:HA	1.89	0.53
2:G:4645:CYS:O	2:G:4649:LEU:HG	2.08	0.53
2:J:4904:PRO:HD3	2:J:4913:ARG:HH21	1.74	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:7:LEU:O	1:B:31:ARG:NH1	2.37	0.53
2:A:4835:LYS:H	2:A:4835:LYS:HD2	1.73	0.52
2:A:4842:GLY:O	2:A:4846:VAL:HG13	2.08	0.52
2:G:4238:CYS:O	2:G:4242:ILE:HG13	2.08	0.52
2:G:4773:VAL:O	2:G:4777:ILE:HG13	2.09	0.52
2:J:4218:ILE:O	2:J:4222:VAL:HG23	2.09	0.52
2:G:4821:LYS:HE2	2:G:4824:ARG:HH21	1.75	0.51
2:G:4942:GLU:O	2:G:4946:GLN:HG3	2.11	0.51
2:A:4697:VAL:HG13	2:A:4698:LYS:HZ2	1.75	0.51
2:A:4779:LYS:O	2:A:4783:ILE:HG23	2.11	0.51
2:J:4248:ALA:O	2:J:4252:SER:OG	2.23	0.51
2:A:4221:VAL:HG12	2:A:4233:LEU:HD13	1.92	0.51
2:A:4686:LEU:O	2:A:4691:GLN:N	2.35	0.51
2:D:4807:PHE:CE2	2:J:4853:VAL:HG23	2.46	0.51
2:J:4661:TYR:OH	2:J:4786:ASP:OD2	2.26	0.51
1:B:22:LYS:CG	1:B:33:ARG:HB2	2.41	0.51
2:D:4218:ILE:HG13	2:D:4219:PHE:N	2.26	0.51
2:G:4583:SER:HB2	2:G:4630:TYR:HE1	1.76	0.51
2:J:4688:ILE:HG13	2:J:4689:THR:HG23	1.93	0.51
2:A:4327:ALA:O	2:A:4331:LEU:HD22	2.11	0.50
2:J:4720:VAL:O	2:J:4724:VAL:HG23	2.11	0.50
1:B:4:LEU:HB2	1:B:16:CYS:HB2	1.94	0.49
2:D:4687:TYR:OH	2:D:4699:GLY:O	2.20	0.49
2:J:4242:ILE:O	2:J:4246:GLN:HG2	2.12	0.49
2:G:4700:GLN:OE1	2:G:4703:ARG:NH1	2.46	0.49
2:J:4569:LEU:HD22	2:J:4646:LEU:HD23	1.94	0.49
2:D:4661:TYR:OH	2:D:4786:ASP:OD2	2.29	0.49
2:D:4936:ILE:HD13	2:J:4927:ILE:HD11	1.94	0.49
2:A:4904:PRO:HB2	2:A:4910:GLU:HA	1.95	0.49
2:J:4876:CYS:HA	2:J:4882:CYS:HB2	1.95	0.49
2:D:4212:GLU:O	2:D:4216:GLN:HG3	2.13	0.49
2:D:4687:TYR:CD2	2:D:4706:LEU:HD11	2.44	0.49
2:D:4813:LEU:HD23	2:J:4846:VAL:HG13	1.94	0.49
2:G:4820:VAL:HG21	2:A:4839:MET:SD	2.53	0.49
2:D:4558:ASN:HB2	2:D:4561:THR:OG1	2.13	0.49
2:A:4903:ASP:OD1	2:A:4904:PRO:HD2	2.13	0.49
2:G:4243:PHE:O	2:G:4246:GLN:HG2	2.13	0.48
2:G:4670:ILE:HG13	2:G:4714:ASN:HD21	1.78	0.48
2:G:4843:LEU:HD22	2:J:4823:LEU:HD22	1.95	0.48
2:A:4681:LEU:HD11	2:A:4687:TYR:CD2	2.49	0.48
2:D:4944:ARG:O	2:D:4948:GLU:HG2	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:G:4655:PHE:O	2:G:4658:ILE:HG22	2.14	0.48
2:D:4922:PHE:O	2:D:4926:VAL:HB	2.14	0.48
2:G:4558:ASN:HB2	2:G:4561:THR:HB	1.96	0.48
2:G:4860:ARG:NH2	2:J:4629:TYR:OH	2.45	0.48
2:G:4240:ASP:O	2:G:4244:GLU:HG3	2.14	0.48
2:A:4846:VAL:O	2:A:4850:LEU:HG	2.14	0.48
2:D:4933:GLN:O	2:D:4937:ILE:HG12	2.14	0.47
2:J:4218:ILE:HA	2:J:4221:VAL:HG12	1.96	0.47
2:J:4851:TYR:OH	2:J:4919:THR:HG22	2.14	0.47
2:J:4214:LYS:HA	2:J:4237:PHE:CE2	2.49	0.47
2:J:4818:MET:HA	2:J:4824:ARG:HG3	1.96	0.47
2:G:4958:CYS:O	2:G:4960:ILE:HD12	2.15	0.47
2:G:4710:SER:O	2:G:4710:SER:OG	2.27	0.47
2:A:4658:ILE:HD13	2:A:4792:LEU:HB3	1.96	0.47
2:J:4247:ILE:HD11	2:J:4667:PRO:HB2	1.97	0.47
2:A:4691:GLN:N	2:A:4692:PRO:HD3	2.29	0.47
2:D:4866:SER:HB2	2:D:4873:ASP:HB2	1.96	0.47
2:A:4215:ARG:NH2	3:A:5103:ATP:O2B	2.37	0.47
2:D:4820:VAL:HG21	2:J:4839:MET:HG3	1.97	0.47
2:G:4924:VAL:HG23	2:G:4925:ILE:N	2.30	0.47
2:A:4823:LEU:HG	2:D:4843:LEU:HD22	1.97	0.46
2:J:4240:ASP:OD1	2:J:4675:LYS:NZ	2.46	0.46
2:J:4680:LYS:HG2	2:J:4686:LEU:HB2	1.97	0.46
1:B:22:LYS:HG3	1:B:33:ARG:HG2	1.97	0.46
2:D:4578:LEU:HA	2:J:4879:MET:HG2	1.97	0.46
2:G:4918:ILE:HD13	2:J:4892:ARG:HD3	1.96	0.46
1:B:28:ALA:HB1	2:A:4945:ASP:HA	1.96	0.46
2:J:4705:VAL:HG12	2:J:4706:LEU:HD22	1.98	0.46
2:D:4214:LYS:O	2:D:4218:ILE:HG23	2.16	0.45
2:D:4823:LEU:HD22	2:J:4843:LEU:HD22	1.99	0.45
2:A:4837:LEU:HD11	2:A:4932:ILE:HG23	1.97	0.45
2:J:4847:VAL:O	2:J:4851:TYR:HD1	1.99	0.45
2:G:4721:LYS:H	2:G:4721:LYS:HG2	1.56	0.45
2:J:4833:ASN:OD1	2:J:4836:GLN:NE2	2.41	0.45
2:G:4776:GLN:HB3	2:G:4780:PHE:CZ	2.52	0.45
2:A:4698:LYS:H	2:A:4698:LYS:HZ3	1.63	0.45
2:G:4711:PHE:HB3	2:G:4712:PRO:HD3	1.98	0.45
2:A:4551:PHE:HD1	2:A:4552:LEU:HG	1.81	0.45
2:G:4239:GLU:OE1	2:G:4675:LYS:HD2	2.16	0.45
2:G:4687:TYR:OH	2:G:4699:GLY:O	2.34	0.45
2:A:4778:TRP:O	2:A:4782:VAL:HG12	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:4702:ASP:OD1	2:D:4702:ASP:N	2.50	0.45
2:D:4943:LEU:O	2:D:4947:GLN:HG3	2.18	0.44
2:D:4865:LYS:HG3	2:D:4875:LYS:HG3	1.99	0.44
1:B:27:ASN:HD21	2:D:4942:GLU:HB2	1.82	0.44
2:A:4565:LEU:HD12	2:A:4569:LEU:HD13	1.99	0.44
2:D:4701:TRP:CZ2	2:D:4781:GLY:HA3	2.53	0.44
2:G:4802:GLY:HA2	2:G:4808:PHE:HB2	2.00	0.44
2:A:4693:GLY:O	2:A:4700:GLN:HG2	2.18	0.44
2:A:4790:LEU:HD23	2:A:4790:LEU:HA	1.88	0.44
2:A:4865:LYS:NZ	2:A:4900:GLU:HB3	2.33	0.44
2:D:4237:PHE:O	2:D:4241:THR:OG1	2.31	0.43
2:A:4218:ILE:HA	2:A:4221:VAL:HG22	1.99	0.43
2:A:4711:PHE:HB3	2:A:4721:LYS:HZ1	1.82	0.43
1:B:22:LYS:HG3	1:B:33:ARG:HG3	2.00	0.43
2:A:4557:ARG:H	2:A:4557:ARG:HG2	1.56	0.43
2:D:4805:ASN:HD21	2:D:4808:PHE:HD1	1.66	0.43
2:J:4334:LEU:O	2:J:4338:VAL:HG12	2.17	0.43
2:G:4958:CYS:O	3:G:5301:ATP:N6	2.50	0.43
2:J:4661:TYR:OH	2:J:4788:SER:HB2	2.18	0.43
2:A:4835:LYS:HD2	2:A:4835:LYS:N	2.34	0.43
2:D:4776:GLN:OE1	2:D:4776:GLN:HA	2.18	0.43
1:B:22:LYS:HG2	1:B:33:ARG:HB2	2.01	0.43
2:A:4958:CYS:HB3	2:A:4961:CYS:HB2	1.99	0.43
2:J:4664:LEU:HD12	2:J:4665:LYS:HG2	2.01	0.43
2:A:4334:LEU:O	2:A:4338:VAL:HG23	2.18	0.43
1:B:33:ARG:NH2	2:D:4945:ASP:OD2	2.51	0.43
2:A:4687:TYR:CD2	2:A:4706:LEU:HD11	2.53	0.43
2:A:4717:ASP:HB3	2:A:4720:VAL:HG13	2.00	0.43
2:D:4581:LYS:HB2	2:D:4581:LYS:HE2	1.78	0.42
1:B:33:ARG:N	1:B:33:ARG:HD2	2.35	0.42
2:A:4713:SER:OG	2:A:4775:TYR:OH	2.32	0.42
2:D:4567:LEU:HD11	2:D:4816:ILE:HG23	2.01	0.42
2:G:4667:PRO:HA	2:G:4670:ILE:HG12	2.00	0.42
2:A:4698:LYS:HB2	2:A:4698:LYS:HE2	1.39	0.42
2:G:4672:LYS:HE3	2:G:4672:LYS:HB2	1.73	0.42
2:J:4572:ALA:O	2:J:4576:ILE:HG12	2.19	0.42
2:J:4821:LYS:HA	2:J:4821:LYS:HD3	1.85	0.42
2:D:4851:TYR:HD1	2:D:4916:PHE:CE1	2.38	0.42
2:J:4712:PRO:HG2	2:J:4718:LYS:HA	2.01	0.42
2:J:4901:ILE:H	2:J:4901:ILE:HG13	1.64	0.42
2:G:4673:ARG:HA	2:G:4676:GLU:OE2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:4217:PHE:O	2:A:4221:VAL:HG22	2.20	0.42
2:A:4675:LYS:HG2	2:A:4715:TYR:CE1	2.54	0.42
2:J:4237:PHE:CD1	2:J:4237:PHE:C	2.92	0.42
2:J:4707:ASN:ND2	2:J:4739:GLU:O	2.52	0.42
2:A:4569:LEU:O	2:A:4573:ILE:HG23	2.20	0.42
2:D:4687:TYR:HE1	2:D:4692:PRO:HG3	1.85	0.42
2:G:4665:LYS:O	2:G:4669:VAL:HG23	2.20	0.41
2:D:4926:VAL:HG12	2:D:4927:ILE:HD13	2.02	0.41
2:J:4820:VAL:HG22	2:J:4822:THR:HG22	2.02	0.41
2:G:4677:LEU:HD12	2:G:4677:LEU:HA	1.93	0.41
2:G:4816:ILE:HG13	2:G:4817:ALA:N	2.35	0.41
2:A:4820:VAL:HG21	2:D:4839:MET:SD	2.60	0.41
2:A:4953:ASP:OD1	2:A:4953:ASP:N	2.53	0.41
2:D:4208:PRO:HB2	2:D:4209:GLN:H	1.66	0.41
2:J:4837:LEU:HD11	2:J:4932:ILE:HG23	2.02	0.41
2:A:4677:LEU:HD12	2:A:4677:LEU:HA	1.84	0.41
2:G:4576:ILE:HG23	2:G:4639:MET:HG2	2.03	0.41
2:G:4336:TRP:O	2:G:4339:VAL:HG12	2.20	0.41
2:G:4555:LEU:HD21	2:G:4656:LEU:O	2.19	0.41
2:D:4216:GLN:HG3	2:D:4216:GLN:H	1.76	0.41
2:A:4658:ILE:HD12	2:A:4658:ILE:HA	1.91	0.41
2:A:4675:LYS:HG2	2:A:4715:TYR:HE1	1.85	0.41
2:J:4827:LEU:HD23	2:J:4827:LEU:HA	1.88	0.41
2:G:4948:GLU:OE2	2:G:4948:GLU:HA	2.21	0.41
2:A:4211:LYS:HA	2:A:4211:LYS:HD3	1.94	0.41
2:A:4917:ASP:N	2:A:4917:ASP:OD1	2.53	0.41
2:A:4921:PHE:HD1	2:A:4925:ILE:HD13	1.86	0.41
2:J:4813:LEU:O	2:J:4816:ILE:HG12	2.21	0.41
2:G:4865:LYS:HA	2:G:4865:LYS:HD2	1.94	0.40
2:A:4677:LEU:HD21	2:A:4702:ASP:HB3	2.03	0.40
2:G:4221:VAL:HG11	2:G:4959:PHE:HZ	1.86	0.40
2:D:4837:LEU:HD21	2:D:4936:ILE:HD11	2.02	0.40
2:J:4677:LEU:HD22	2:J:4711:PHE:CZ	2.57	0.40
2:D:4644:TRP:CE2	2:D:4648:LEU:HD11	2.56	0.40
2:G:4554:TYR:O	2:G:4558:ASN:ND2	2.54	0.40
2:A:4851:TYR:CG	2:A:4920:PHE:HD2	2.40	0.40
2:A:4863:TYR:HH	2:A:4886:HIS:HE2	1.69	0.40

There are no symmetry-related clashes.

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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	B	31/33 (94%)	27 (87%)	4 (13%)	0	100	100
2	A	416/5037 (8%)	412 (99%)	4 (1%)	0	100	100
2	D	426/5037 (8%)	419 (98%)	7 (2%)	0	100	100
2	G	427/5037 (8%)	416 (97%)	11 (3%)	0	100	100
2	J	421/5037 (8%)	415 (99%)	6 (1%)	0	100	100
All	All	1721/20181 (8%)	1689 (98%)	32 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

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	B	28/28 (100%)	25 (89%)	3 (11%)	6	24
2	A	317/4276 (7%)	300 (95%)	17 (5%)	22	51
2	D	328/4276 (8%)	313 (95%)	15 (5%)	27	58
2	G	322/4276 (8%)	304 (94%)	18 (6%)	21	50
2	J	324/4276 (8%)	309 (95%)	15 (5%)	27	58
All	All	1319/17132 (8%)	1251 (95%)	68 (5%)	27	53

All (68) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	19	LYS
1	B	24	ARG
1	B	30	LYS
2	G	4564	PHE
2	G	4583	SER
2	G	4638	TYR
2	G	4679	ARG
2	G	4710	SER
2	G	4711	PHE
2	G	4713	SER
2	G	4715	TYR
2	G	4716	TRP
2	G	4740	LEU
2	G	4780	PHE
2	G	4829	SER
2	G	4866	SER
2	G	4899	ASP
2	G	4903	ASP
2	G	4938	ASP
2	G	4958	CYS
2	G	4968	PHE
2	A	4208	PRO
2	A	4234	PHE
2	A	4551	PHE
2	A	4556	SER
2	A	4557	ARG
2	A	4571	PHE
2	A	4688	ILE
2	A	4697	VAL
2	A	4698	LYS
2	A	4710	SER
2	A	4711	PHE
2	A	4719	PHE
2	A	4740	LEU
2	A	4828	SER
2	A	4861	LYS
2	A	4899	ASP
2	A	4917	ASP
2	D	4571	PHE
2	D	4580	TYR
2	D	4631	PHE
2	D	4641	PRO
2	D	4650	HIS

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Mol	Chain	Res	Type
2	D	4657	CYS
2	D	4671	PHE
2	D	4686	LEU
2	D	4687	TYR
2	D	4702	ASP
2	D	4715	TYR
2	D	4716	TRP
2	D	4807	PHE
2	D	4808	PHE
2	D	4859	PHE
2	J	4213	SER
2	J	4220	ASP
2	J	4558	ASN
2	J	4571	PHE
2	J	4580	TYR
2	J	4631	PHE
2	J	4662	ASN
2	J	4679	ARG
2	J	4704	LEU
2	J	4705	VAL
2	J	4716	TRP
2	J	4732	PHE
2	J	4795	TYR
2	J	4804	TYR
2	J	4828	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
2	D	4574	ASN
2	J	4707	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

7 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	ATP	J	5105	-	26,33,33	0.58	0	31,52,52	0.75	2 (6%)
3	ATP	A	5103	-	26,33,33	0.59	0	31,52,52	0.74	2 (6%)
4	CFF	A	5102	-	8,15,15	1.23	1 (12%)	8,23,23	2.68	3 (37%)
4	CFF	D	5103	-	8,15,15	1.24	1 (12%)	8,23,23	2.69	3 (37%)
3	ATP	D	5104	-	26,33,33	0.59	0	31,52,52	0.74	2 (6%)
4	CFF	J	5101	-	8,15,15	1.25	1 (12%)	8,23,23	2.71	3 (37%)
3	ATP	G	5301	-	26,33,33	0.60	0	31,52,52	0.74	2 (6%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	ATP	J	5105	-	-	7/18/38/38	0/3/3/3
3	ATP	A	5103	-	-	9/18/38/38	0/3/3/3
4	CFF	A	5102	-	-	-	0/2/2/2
4	CFF	D	5103	-	-	-	0/2/2/2
3	ATP	D	5104	-	-	8/18/38/38	0/3/3/3
4	CFF	J	5101	-	-	-	0/2/2/2
3	ATP	G	5301	-	-	5/18/38/38	0/3/3/3

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	J	5101	CFF	C6-N1	3.06	1.42	1.38
4	A	5102	CFF	C6-N1	3.06	1.42	1.38
4	D	5103	CFF	C6-N1	3.05	1.42	1.38

All (17) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	J	5101	CFF	C5-C6-N1	-5.33	112.52	118.20
4	D	5103	CFF	C5-C6-N1	-5.28	112.57	118.20
4	A	5102	CFF	C5-C6-N1	-5.23	112.63	118.20
4	J	5101	CFF	C4-C5-C6	4.57	122.89	119.96
4	A	5102	CFF	C4-C5-C6	4.52	122.86	119.96
4	D	5103	CFF	C4-C5-C6	4.51	122.86	119.96
4	D	5103	CFF	C12-N3-C4	2.53	121.84	118.25
4	A	5102	CFF	C12-N3-C4	2.48	121.76	118.25
4	J	5101	CFF	C12-N3-C4	2.45	121.72	118.25
3	D	5104	ATP	C5-C6-N6	2.32	123.88	120.35
3	G	5301	ATP	C5-C6-N6	2.30	123.85	120.35
3	A	5103	ATP	C5-C6-N6	2.29	123.83	120.35
3	J	5105	ATP	C5-C6-N6	2.29	123.83	120.35
3	J	5105	ATP	PB-O3B-PG	2.05	139.87	132.83
3	G	5301	ATP	PB-O3B-PG	2.05	139.87	132.83
3	D	5104	ATP	PB-O3B-PG	2.05	139.86	132.83
3	A	5103	ATP	PB-O3B-PG	2.05	139.86	132.83

There are no chirality outliers.

All (29) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	G	5301	ATP	C5'-O5'-PA-O2A
3	A	5103	ATP	C5'-O5'-PA-O1A
3	A	5103	ATP	C3'-C4'-C5'-O5'
3	D	5104	ATP	C5'-O5'-PA-O1A
3	D	5104	ATP	O4'-C4'-C5'-O5'
3	D	5104	ATP	C3'-C4'-C5'-O5'
3	J	5105	ATP	C5'-O5'-PA-O3A
3	J	5105	ATP	C4'-C5'-O5'-PA
3	G	5301	ATP	O4'-C4'-C5'-O5'
3	G	5301	ATP	C3'-C4'-C5'-O5'
3	A	5103	ATP	O4'-C4'-C5'-O5'
3	D	5104	ATP	PB-O3A-PA-O1A
3	J	5105	ATP	PG-O3B-PB-O3A

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Mol	Chain	Res	Type	Atoms
3	D	5104	ATP	PB-O3A-PA-O5'
3	J	5105	ATP	PB-O3A-PA-O5'
3	G	5301	ATP	C5'-O5'-PA-O3A
3	D	5104	ATP	C5'-O5'-PA-O3A
3	A	5103	ATP	PG-O3B-PB-O2B
3	G	5301	ATP	C5'-O5'-PA-O1A
3	A	5103	ATP	C5'-O5'-PA-O2A
3	D	5104	ATP	C5'-O5'-PA-O2A
3	J	5105	ATP	C5'-O5'-PA-O2A
3	D	5104	ATP	PB-O3B-PG-O1G
3	A	5103	ATP	PB-O3A-PA-O2A
3	J	5105	ATP	O4'-C4'-C5'-O5'
3	A	5103	ATP	PB-O3A-PA-O1A
3	A	5103	ATP	C5'-O5'-PA-O3A
3	A	5103	ATP	PG-O3B-PB-O1B
3	J	5105	ATP	PB-O3A-PA-O1A

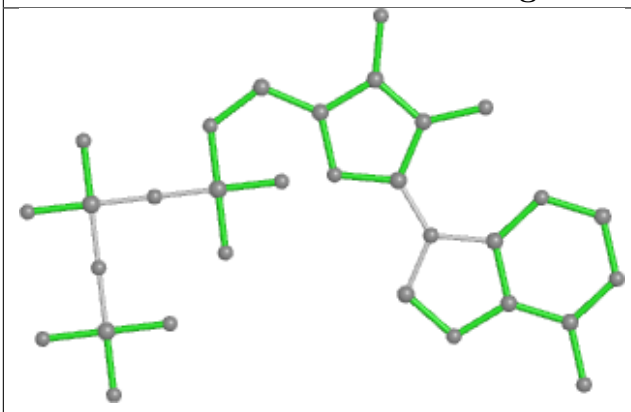
There are no ring outliers.

2 monomers are involved in 3 short contacts:

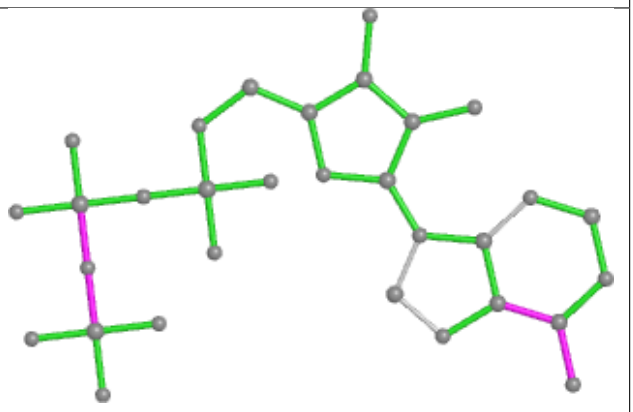
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	5103	ATP	2	0
3	G	5301	ATP	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

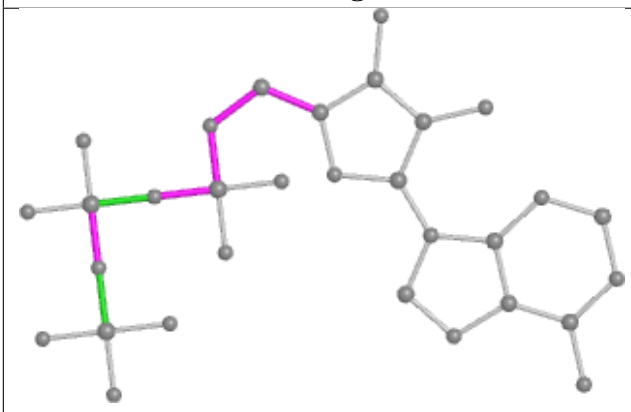
Ligand ATP J 5105



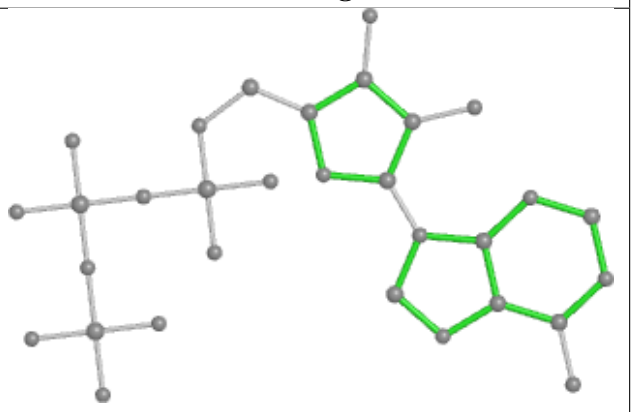
Bond lengths



Bond angles

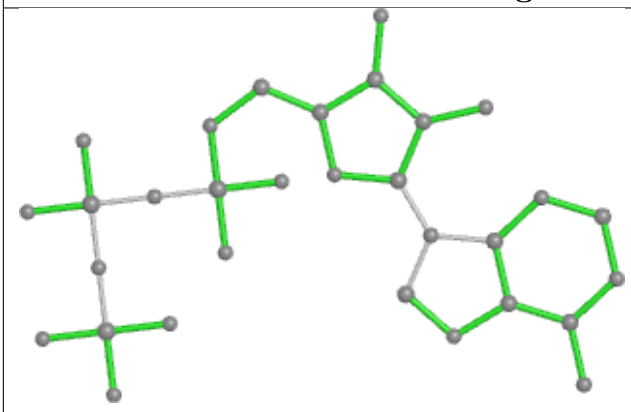


Torsions

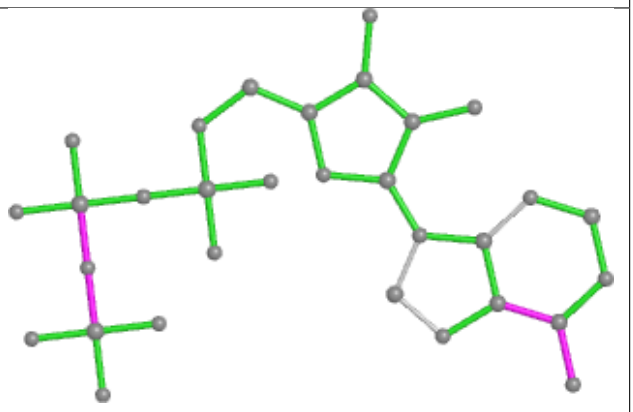


Rings

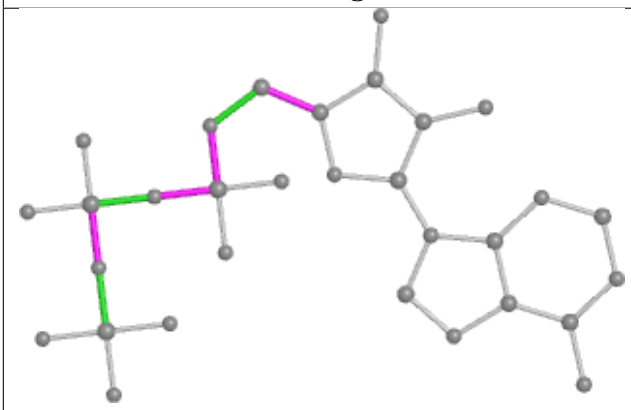
Ligand ATP A 5103



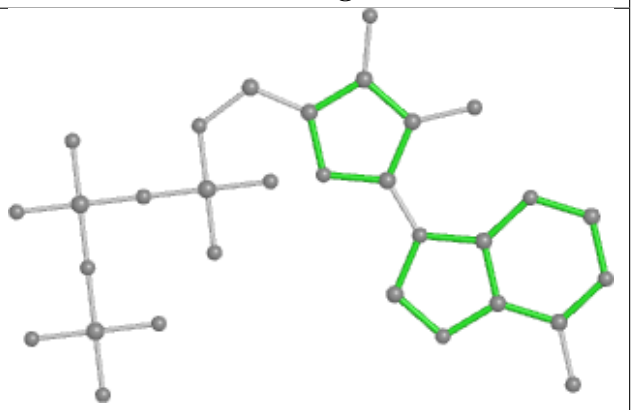
Bond lengths



Bond angles

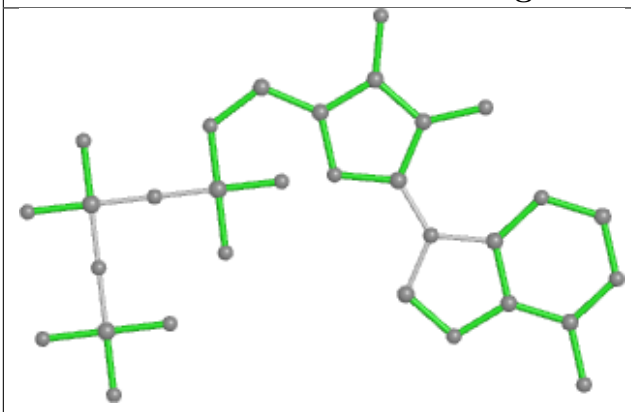


Torsions

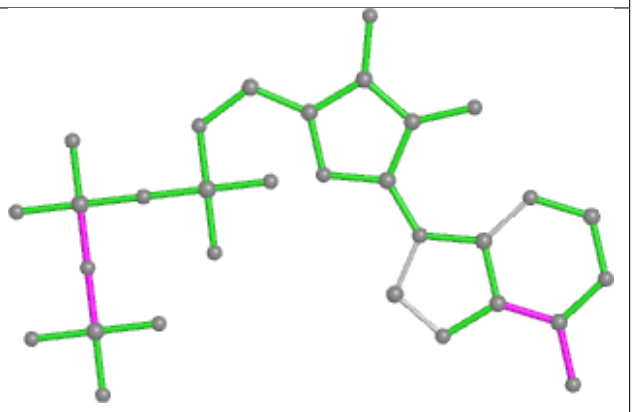


Rings

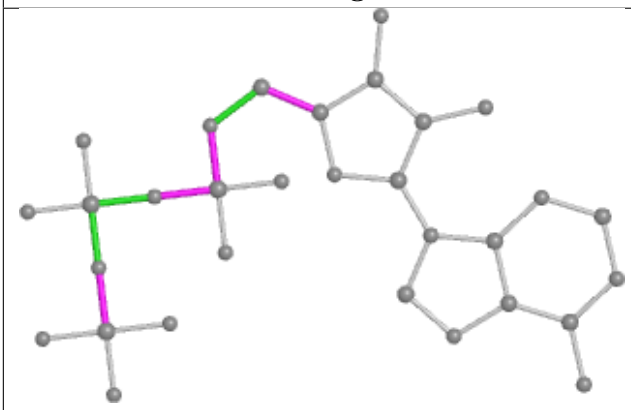
Ligand ATP D 5104



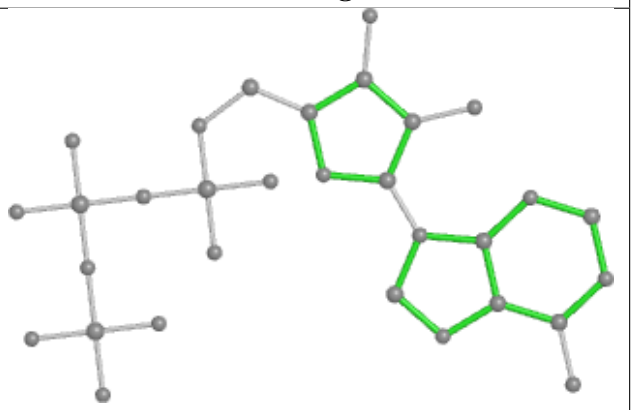
Bond lengths



Bond angles

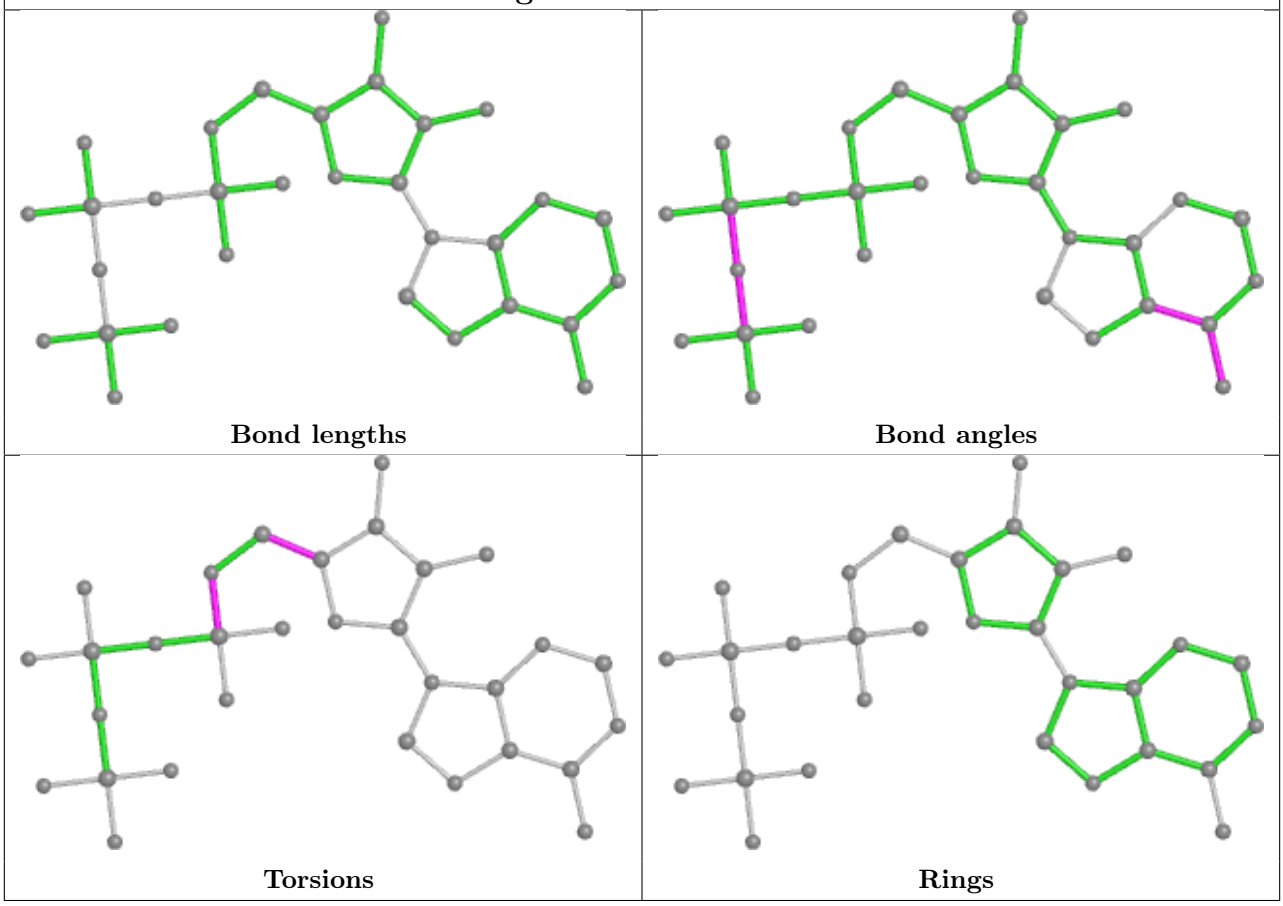


Torsions



Rings

Ligand ATP G 5301



5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

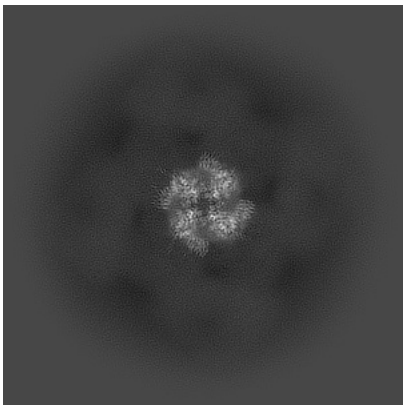
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-27695. These allow visual inspection of the internal detail of the map and identification of artifacts.

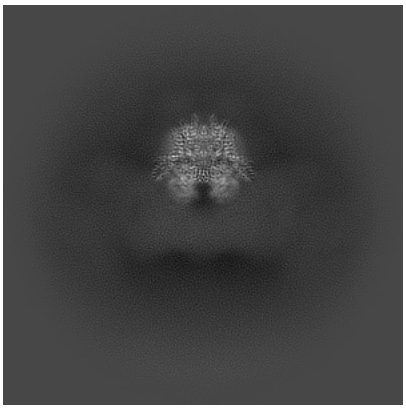
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

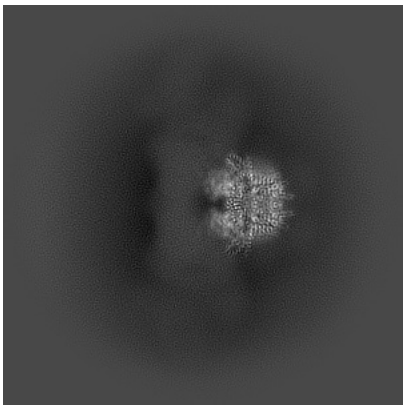
6.1.1 Primary map



X

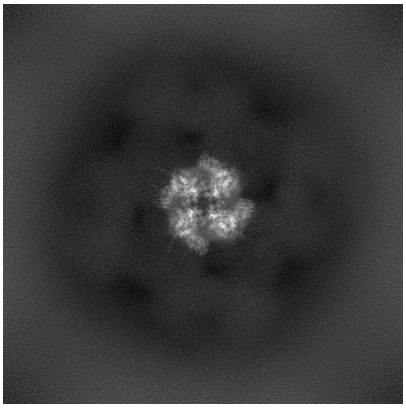


Y

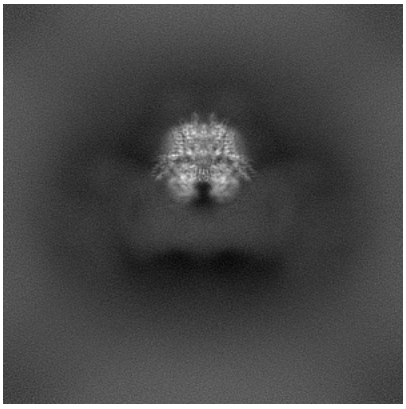


Z

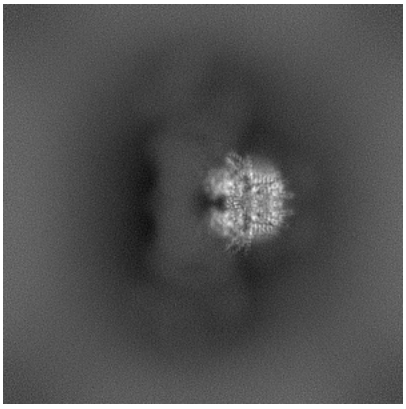
6.1.2 Raw map



X



Y

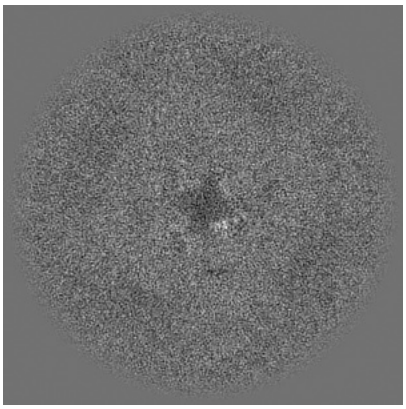


Z

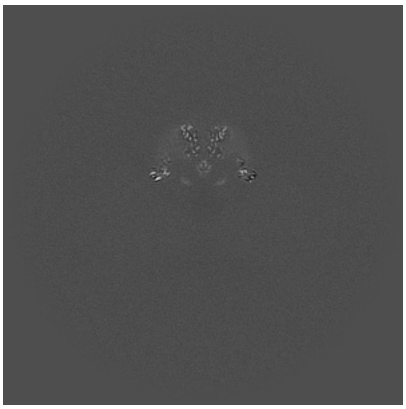
The images above show the map projected in three orthogonal directions.

6.2 Central slices (i)

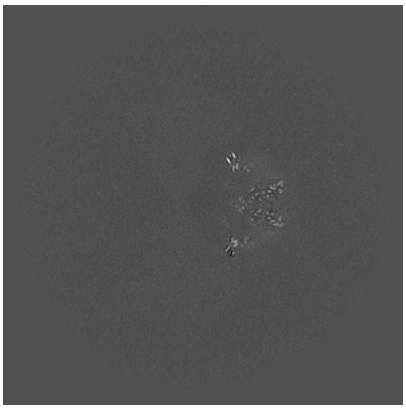
6.2.1 Primary map



X Index: 224

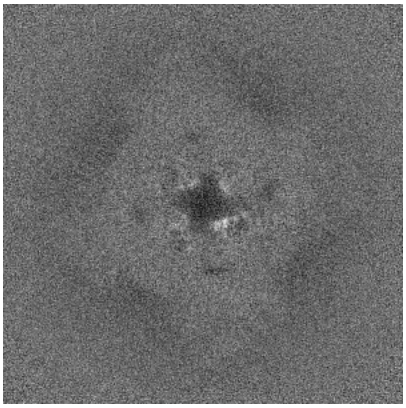


Y Index: 224

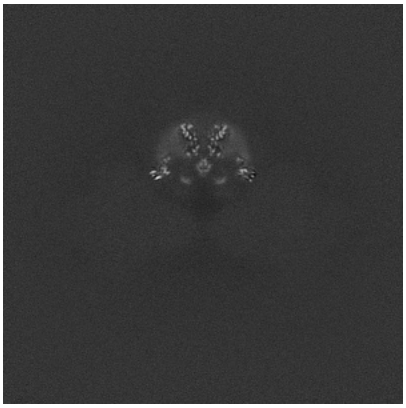


Z Index: 224

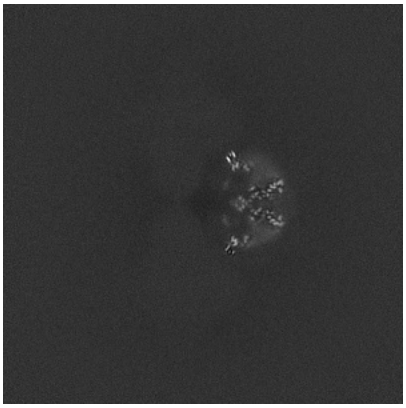
6.2.2 Raw map



X Index: 224



Y Index: 224

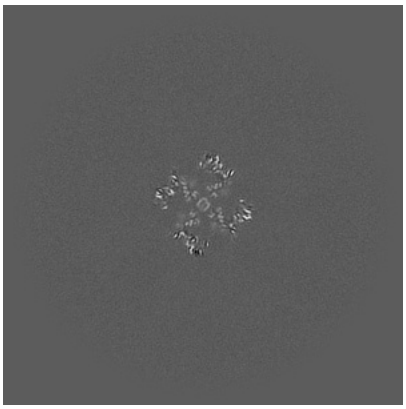


Z Index: 224

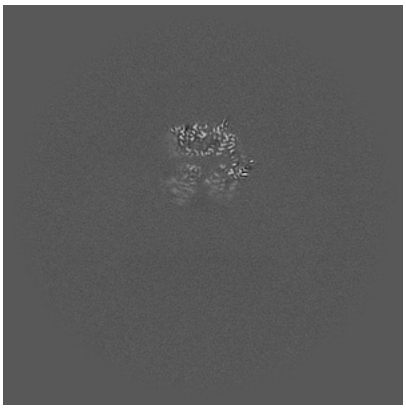
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

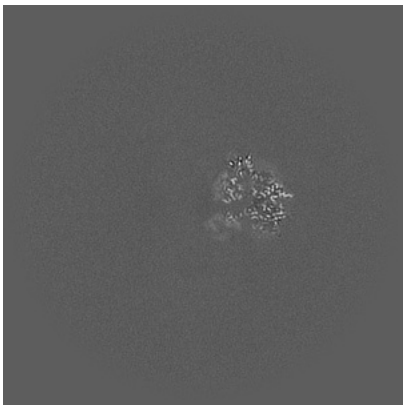
6.3.1 Primary map



X Index: 265

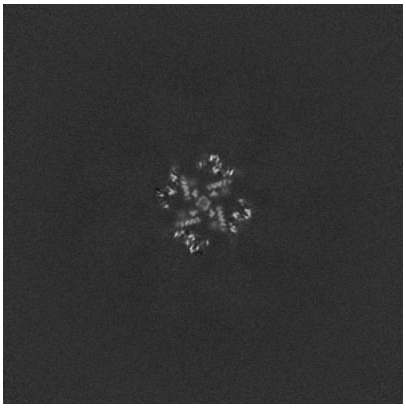


Y Index: 242

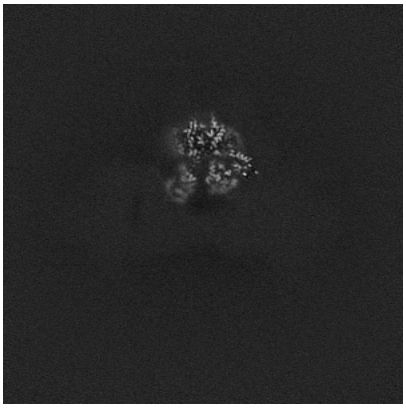


Z Index: 211

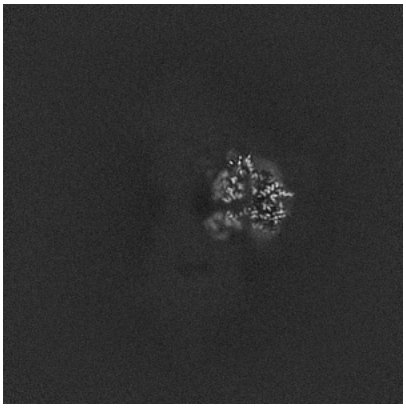
6.3.2 Raw map



X Index: 266



Y Index: 237

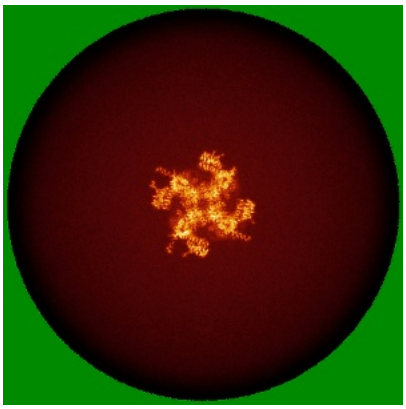


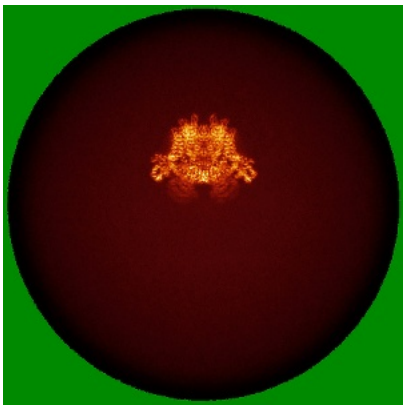
Z Index: 211

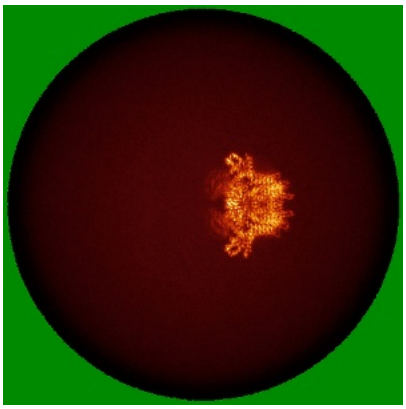
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) (i)

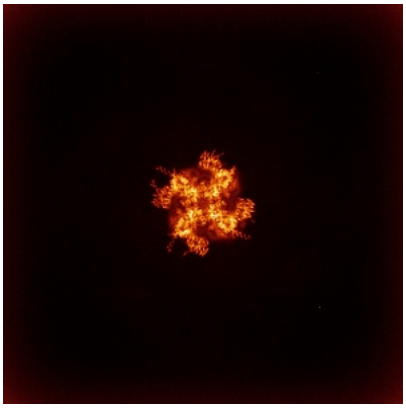
6.4.1 Primary map


X

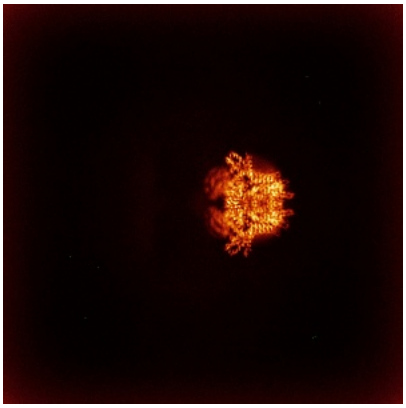

Y


Z

6.4.2 Raw map


X

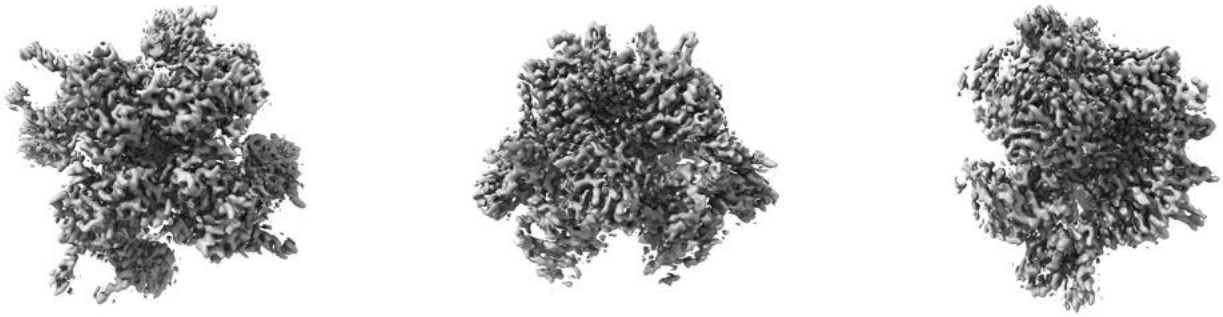
Y


Z

The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X Y Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

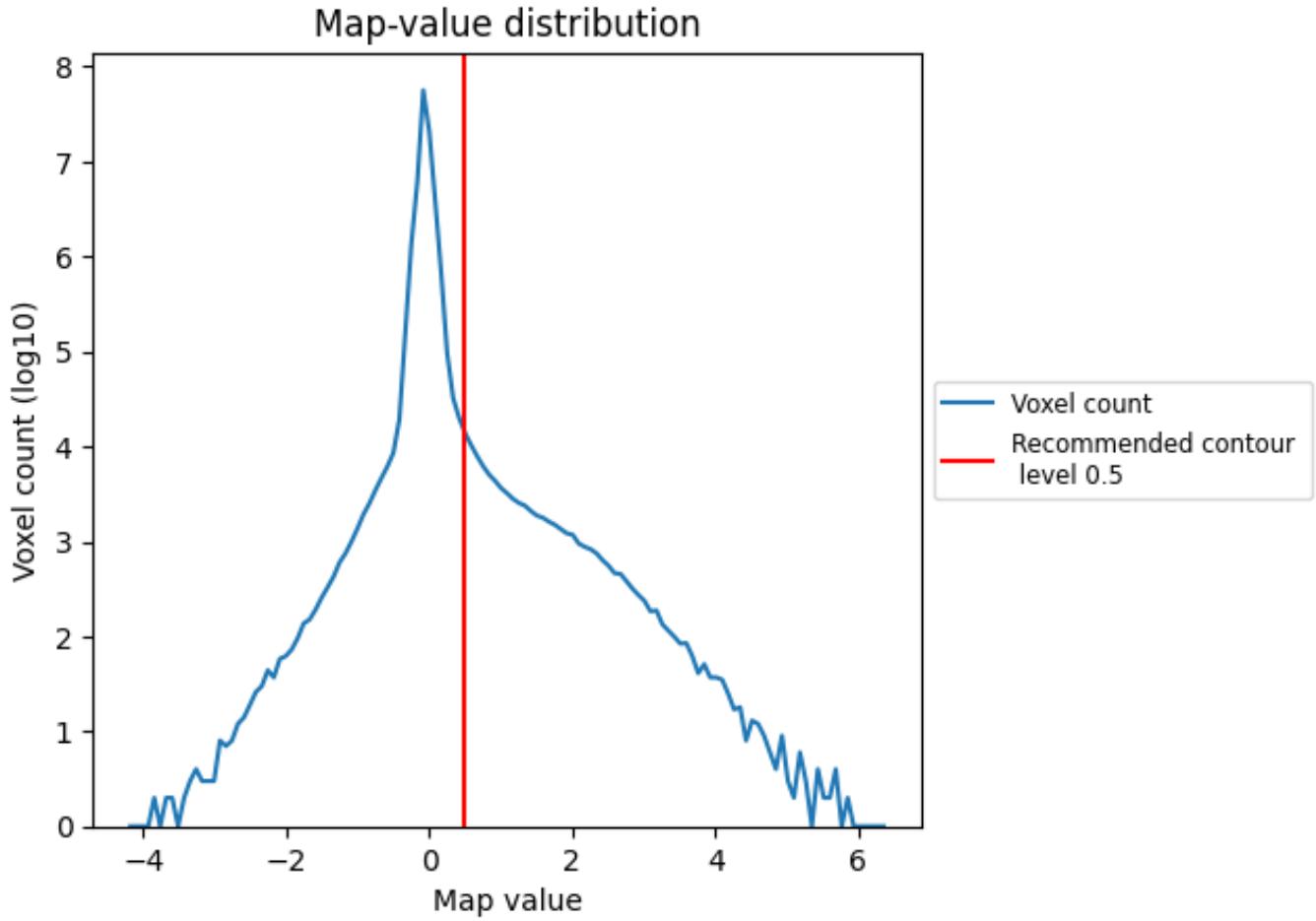
6.6 Mask visualisation (i)

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

7 Map analysis

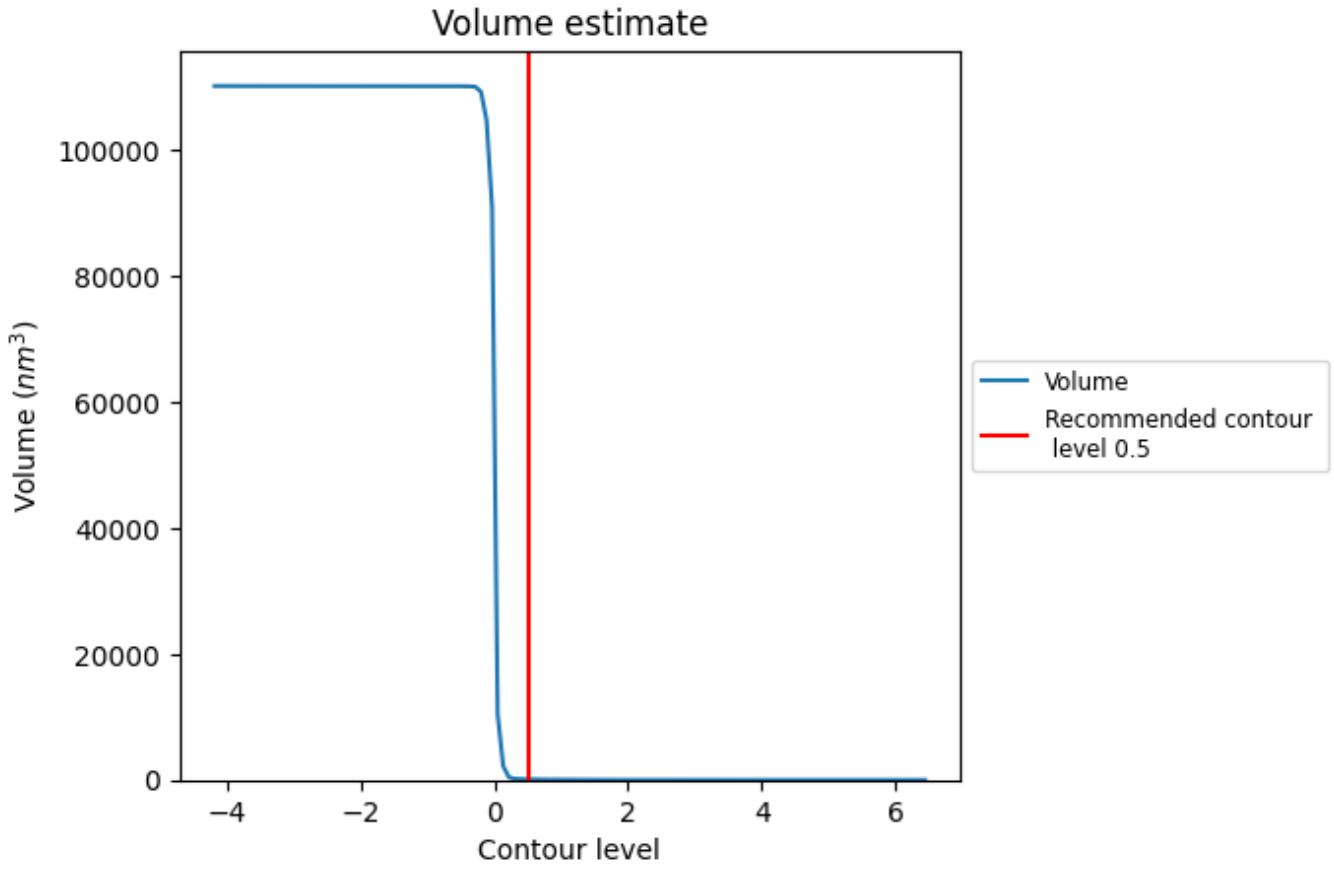
This section contains the results of statistical analysis of the map.

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.

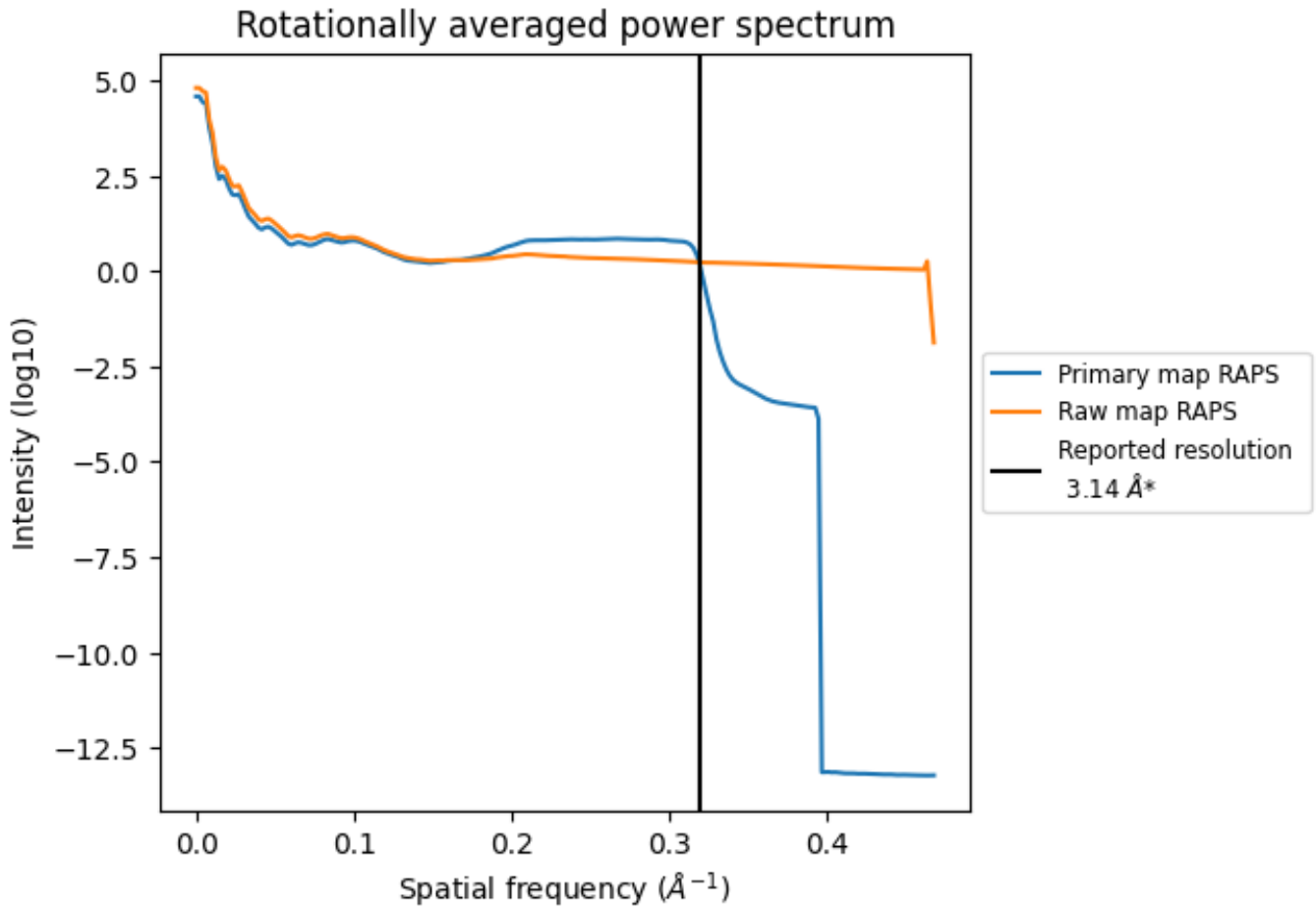
7.2 Volume estimate



The volume at the recommended contour level is 103 nm^3; this corresponds to an approximate mass of 93 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 (i)

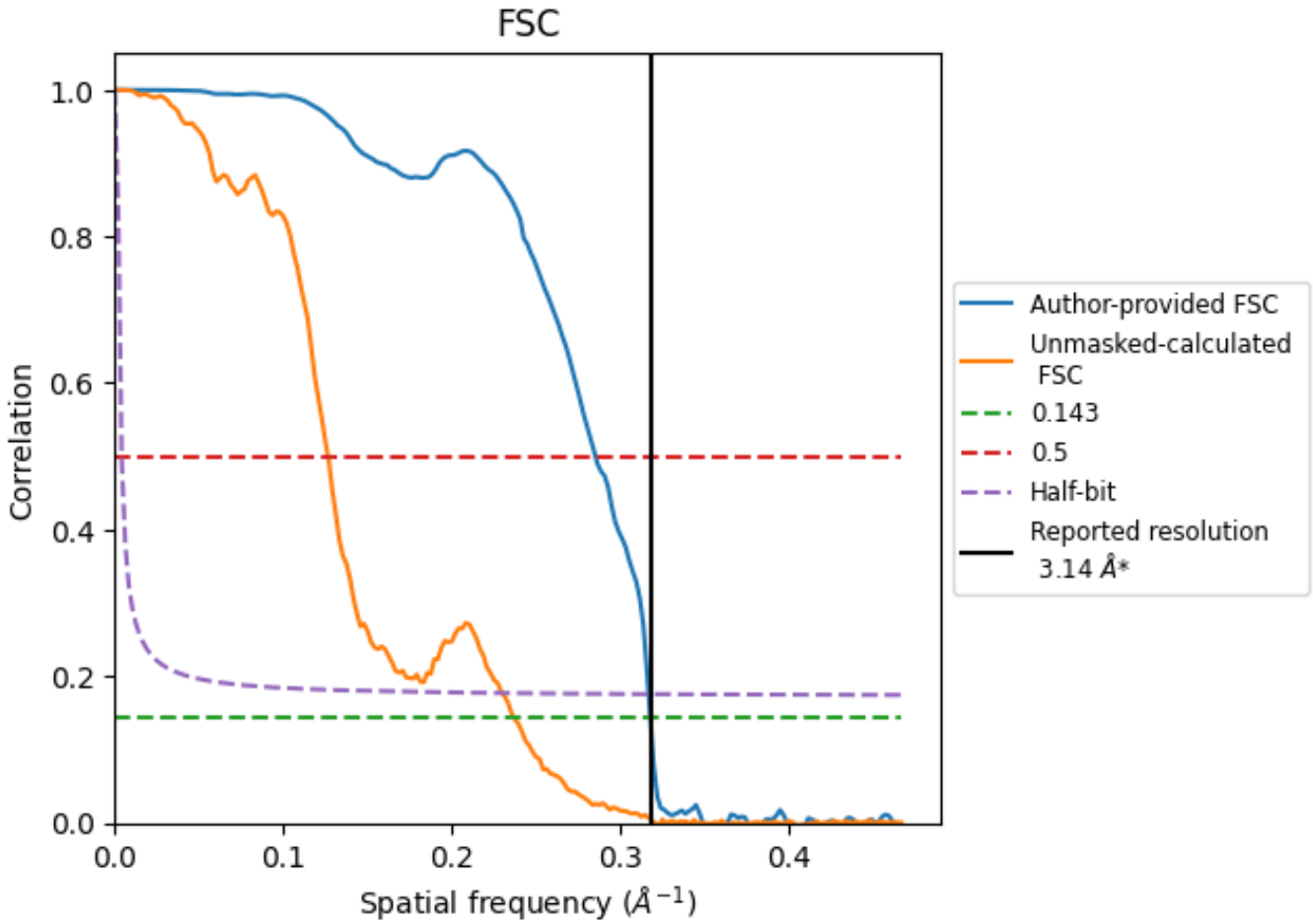


*Reported resolution corresponds to spatial frequency of 0.318 $Å^{-1}$

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 0.318 Å^{-1}

8.2 Resolution estimates (i)

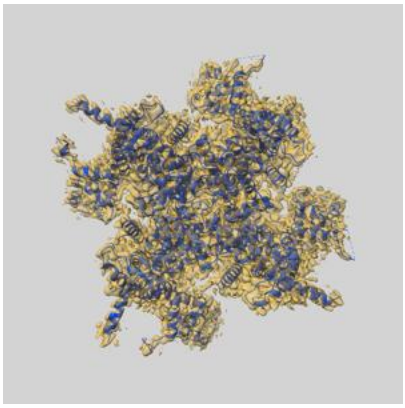
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.14	-	-
Author-provided FSC curve	3.14	3.50	3.15
Unmasked-calculated*	4.21	7.90	4.34

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 4.21 differs from the reported value 3.14 by more than 10 %

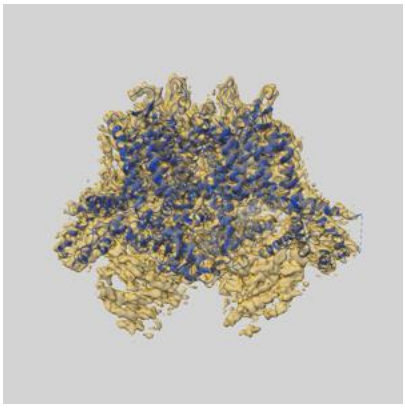
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-27695 and PDB model 8DTB. Per-residue inclusion information can be found in section 3 on page 5.

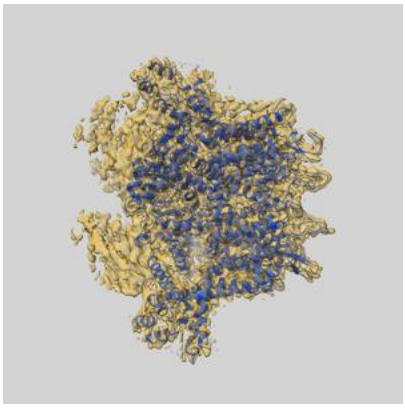
9.1 Map-model overlay



X



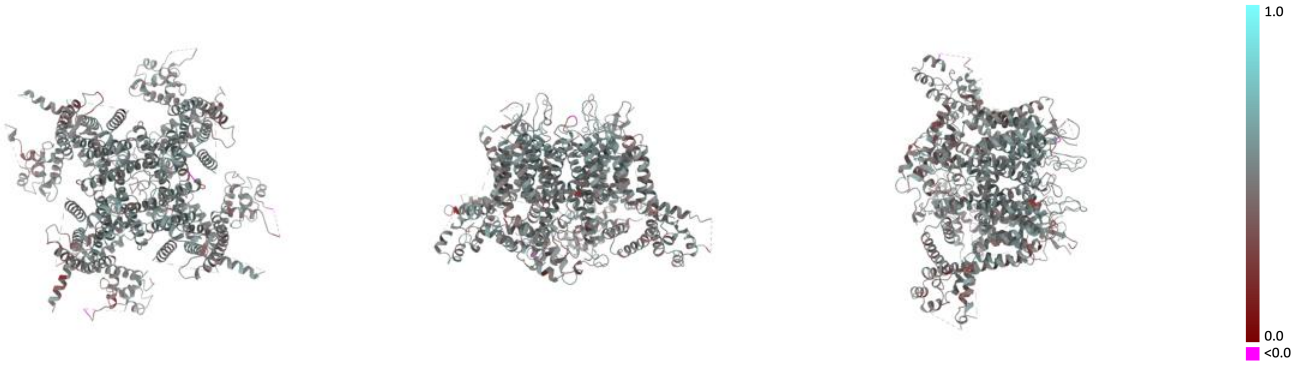
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.5 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.

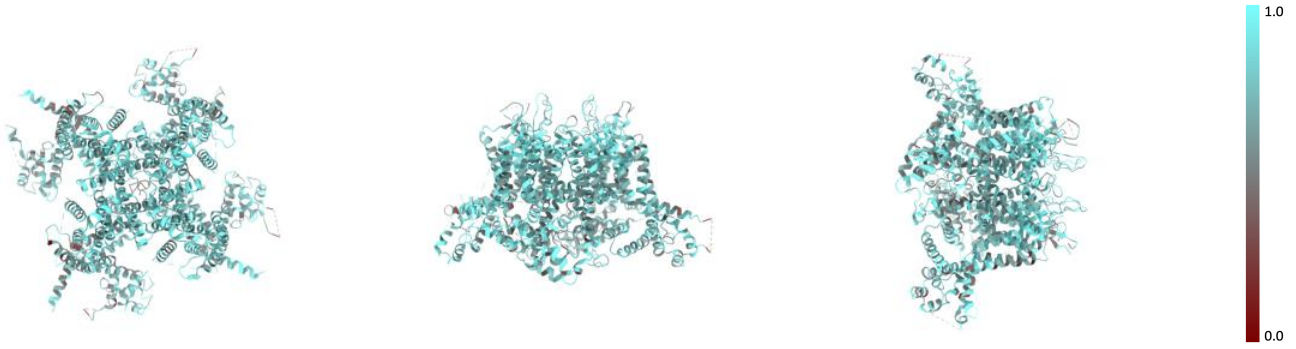
9.2 Q-score mapped to coordinate model (i)



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.

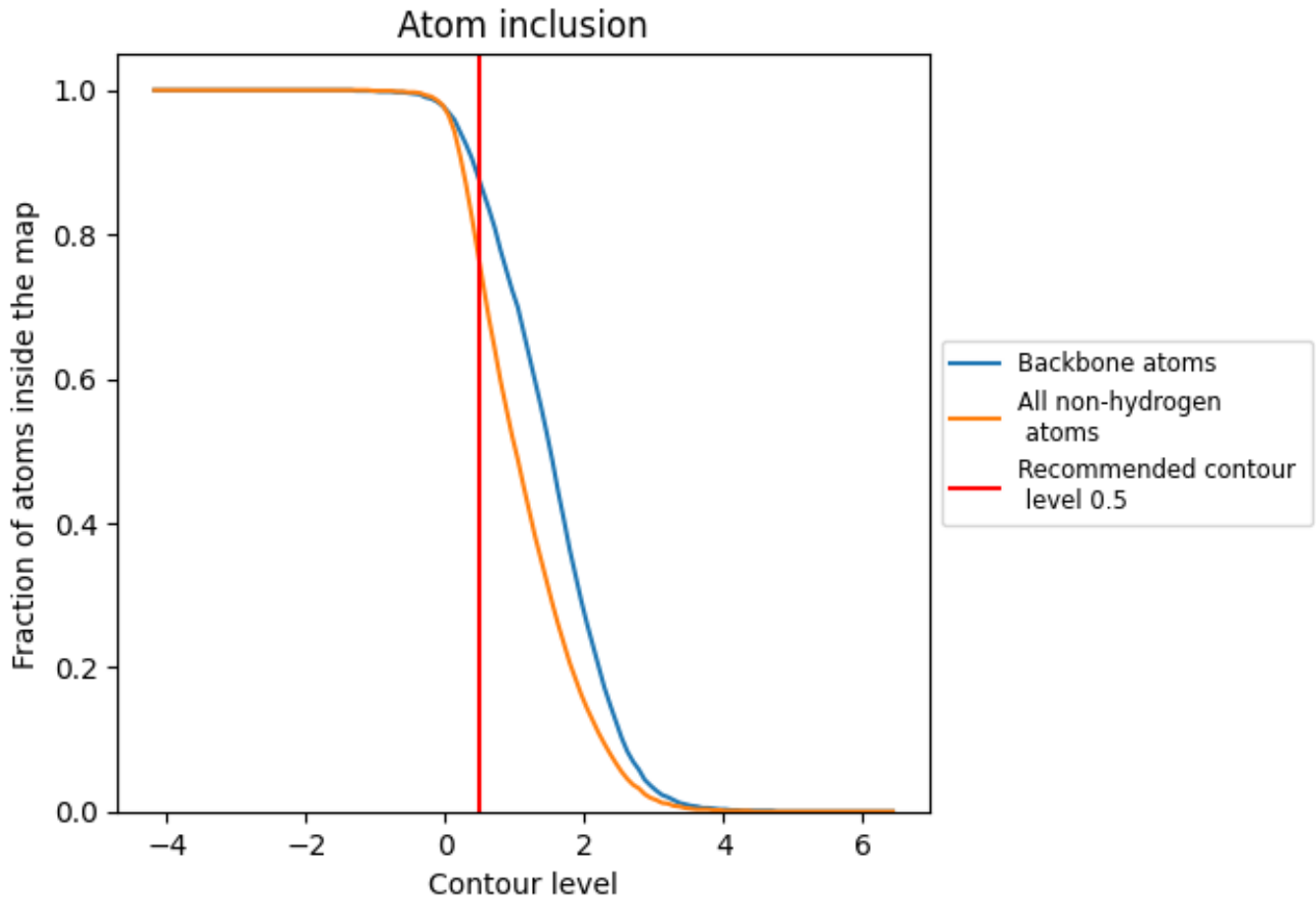
9.3 Atom inclusion mapped to coordinate model (i)



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 (0.5).

9.4 Atom inclusion (i)



At the recommended contour level, 87% of all backbone atoms, 76% 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 (0.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7580	0.4860
A	0.7660	0.4920
B	0.5870	0.4500
D	0.7720	0.4930
G	0.7530	0.4840
J	0.7530	0.4770