Full wwPDB X-ray Structure Validation Report ⓘ

Feb 26, 2025 – 04:11 PM EST

PDB ID	:	9EJN
Title	:	Crystal structure of magnesium-transporting ATPase MgtA in an E1-like magnesium-bound state
Authors	:	Khan, M.B.; Primeau, J.O.; Basu, P.C.; Morth, J.P.; Lemieux, M.J.; Young, H.S.
Deposited on	:	2024-11-28
Resolution	:	3.55 Å(reported)

This is a Full wwPDB X-ray Structure 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/XrayValidationReportHelp
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:

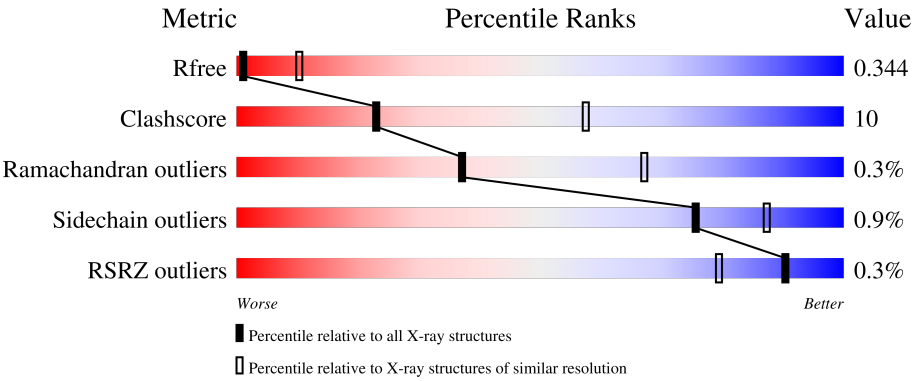
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.21
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.004 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.41.4

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 3.55 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)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1261 (3.62-3.50)
Clashscore	180529	1351 (3.62-3.50)
Ramachandran outliers	177936	1336 (3.62-3.50)
Sidechain outliers	177891	1337 (3.62-3.50)
RSRZ outliers	164620	1260 (3.62-3.50)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower 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 electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	921	73% 23% .
1	B	921	71% 25% . .
1	C	921	73% 23% .
1	D	921	72% 25% .

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 27352 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 Magnesium-transporting ATPase, P-type 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	889	Total	C	N	O	S	0	0	0
			6837	4403	1106	1286	42			
1	C	889	Total	C	N	O	S	0	0	0
			6837	4403	1106	1286	42			
1	B	889	Total	C	N	O	S	0	0	0
			6837	4403	1106	1286	42			
1	D	889	Total	C	N	O	S	0	0	0
			6837	4403	1106	1286	42			

There are 76 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-10	MET	-	initiating methionine	UNP A0A1V0NGB6
A	-9	HIS	-	expression tag	UNP A0A1V0NGB6
A	-8	HIS	-	expression tag	UNP A0A1V0NGB6
A	-7	HIS	-	expression tag	UNP A0A1V0NGB6
A	-6	HIS	-	expression tag	UNP A0A1V0NGB6
A	-5	HIS	-	expression tag	UNP A0A1V0NGB6
A	-4	HIS	-	expression tag	UNP A0A1V0NGB6
A	-3	HIS	-	expression tag	UNP A0A1V0NGB6
A	-2	HIS	-	expression tag	UNP A0A1V0NGB6
A	-1	LEU	-	expression tag	UNP A0A1V0NGB6
A	0	GLU	-	expression tag	UNP A0A1V0NGB6
A	216	ALA	ASP	conflict	UNP A0A1V0NGB6
A	217	ALA	GLU	conflict	UNP A0A1V0NGB6
A	218	ALA	LYS	conflict	UNP A0A1V0NGB6
A	219	ALA	ASP	conflict	UNP A0A1V0NGB6
A	220	ALA	ASP	conflict	UNP A0A1V0NGB6
A	603	ALA	LYS	conflict	UNP A0A1V0NGB6
A	606	ALA	LYS	conflict	UNP A0A1V0NGB6
A	607	ALA	GLU	conflict	UNP A0A1V0NGB6
C	-10	MET	-	initiating methionine	UNP A0A1V0NGB6
C	-9	HIS	-	expression tag	UNP A0A1V0NGB6

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Chain	Residue	Modelled	Actual	Comment	Reference
C	-8	HIS	-	expression tag	UNP A0A1V0NGB6
C	-7	HIS	-	expression tag	UNP A0A1V0NGB6
C	-6	HIS	-	expression tag	UNP A0A1V0NGB6
C	-5	HIS	-	expression tag	UNP A0A1V0NGB6
C	-4	HIS	-	expression tag	UNP A0A1V0NGB6
C	-3	HIS	-	expression tag	UNP A0A1V0NGB6
C	-2	HIS	-	expression tag	UNP A0A1V0NGB6
C	-1	LEU	-	expression tag	UNP A0A1V0NGB6
C	0	GLU	-	expression tag	UNP A0A1V0NGB6
C	216	ALA	ASP	conflict	UNP A0A1V0NGB6
C	217	ALA	GLU	conflict	UNP A0A1V0NGB6
C	218	ALA	LYS	conflict	UNP A0A1V0NGB6
C	219	ALA	ASP	conflict	UNP A0A1V0NGB6
C	220	ALA	ASP	conflict	UNP A0A1V0NGB6
C	603	ALA	LYS	conflict	UNP A0A1V0NGB6
C	606	ALA	LYS	conflict	UNP A0A1V0NGB6
C	607	ALA	GLU	conflict	UNP A0A1V0NGB6
B	-10	MET	-	initiating methionine	UNP A0A1V0NGB6
B	-9	HIS	-	expression tag	UNP A0A1V0NGB6
B	-8	HIS	-	expression tag	UNP A0A1V0NGB6
B	-7	HIS	-	expression tag	UNP A0A1V0NGB6
B	-6	HIS	-	expression tag	UNP A0A1V0NGB6
B	-5	HIS	-	expression tag	UNP A0A1V0NGB6
B	-4	HIS	-	expression tag	UNP A0A1V0NGB6
B	-3	HIS	-	expression tag	UNP A0A1V0NGB6
B	-2	HIS	-	expression tag	UNP A0A1V0NGB6
B	-1	LEU	-	expression tag	UNP A0A1V0NGB6
B	0	GLU	-	expression tag	UNP A0A1V0NGB6
B	216	ALA	ASP	conflict	UNP A0A1V0NGB6
B	217	ALA	GLU	conflict	UNP A0A1V0NGB6
B	218	ALA	LYS	conflict	UNP A0A1V0NGB6
B	219	ALA	ASP	conflict	UNP A0A1V0NGB6
B	220	ALA	ASP	conflict	UNP A0A1V0NGB6
B	603	ALA	LYS	conflict	UNP A0A1V0NGB6
B	606	ALA	LYS	conflict	UNP A0A1V0NGB6
B	607	ALA	GLU	conflict	UNP A0A1V0NGB6
D	-10	MET	-	initiating methionine	UNP A0A1V0NGB6
D	-9	HIS	-	expression tag	UNP A0A1V0NGB6
D	-8	HIS	-	expression tag	UNP A0A1V0NGB6
D	-7	HIS	-	expression tag	UNP A0A1V0NGB6
D	-6	HIS	-	expression tag	UNP A0A1V0NGB6
D	-5	HIS	-	expression tag	UNP A0A1V0NGB6

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-4	HIS	-	expression tag	UNP A0A1V0NGB6
D	-3	HIS	-	expression tag	UNP A0A1V0NGB6
D	-2	HIS	-	expression tag	UNP A0A1V0NGB6
D	-1	LEU	-	expression tag	UNP A0A1V0NGB6
D	0	GLU	-	expression tag	UNP A0A1V0NGB6
D	216	ALA	ASP	conflict	UNP A0A1V0NGB6
D	217	ALA	GLU	conflict	UNP A0A1V0NGB6
D	218	ALA	LYS	conflict	UNP A0A1V0NGB6
D	219	ALA	ASP	conflict	UNP A0A1V0NGB6
D	220	ALA	ASP	conflict	UNP A0A1V0NGB6
D	603	ALA	LYS	conflict	UNP A0A1V0NGB6
D	606	ALA	LYS	conflict	UNP A0A1V0NGB6
D	607	ALA	GLU	conflict	UNP A0A1V0NGB6

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

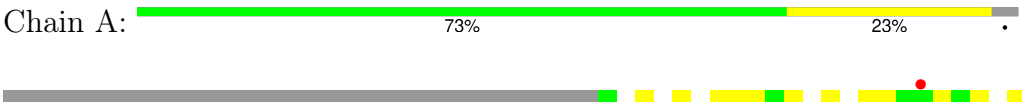
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Mg 1 1	0	0
2	C	1	Total Mg 1 1	0	0
2	B	1	Total Mg 1 1	0	0
2	D	1	Total Mg 1 1	0	0

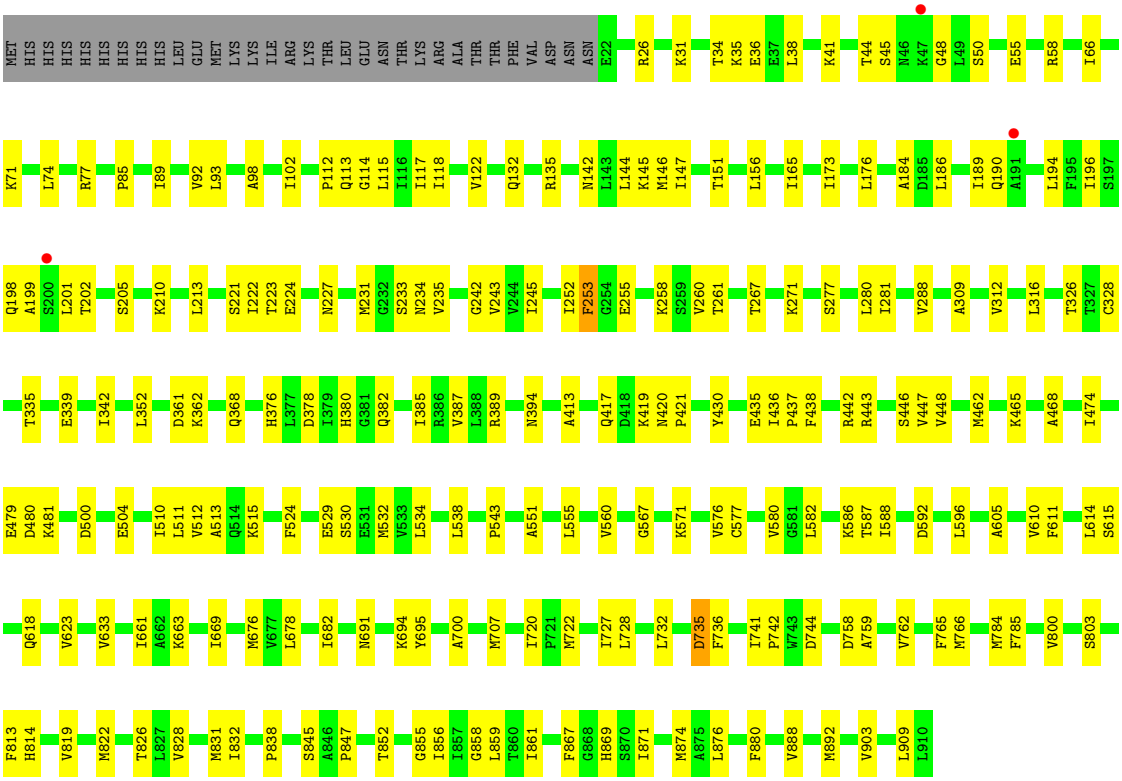
3 Residue-property plots (i)

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 electron 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 dot above a residue indicates a poor fit to the electron density (RSRZ > 2). 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: Magnesium-transporting ATPase, P-type 1

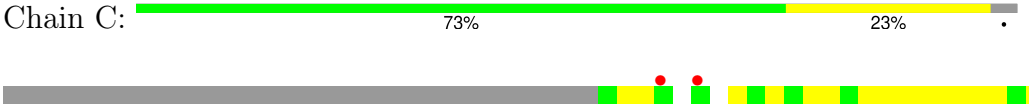
Chain A:

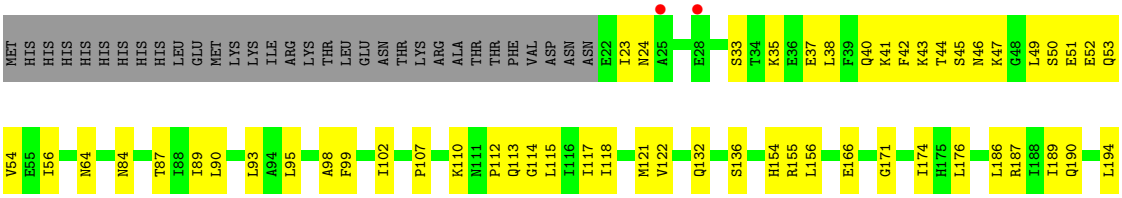


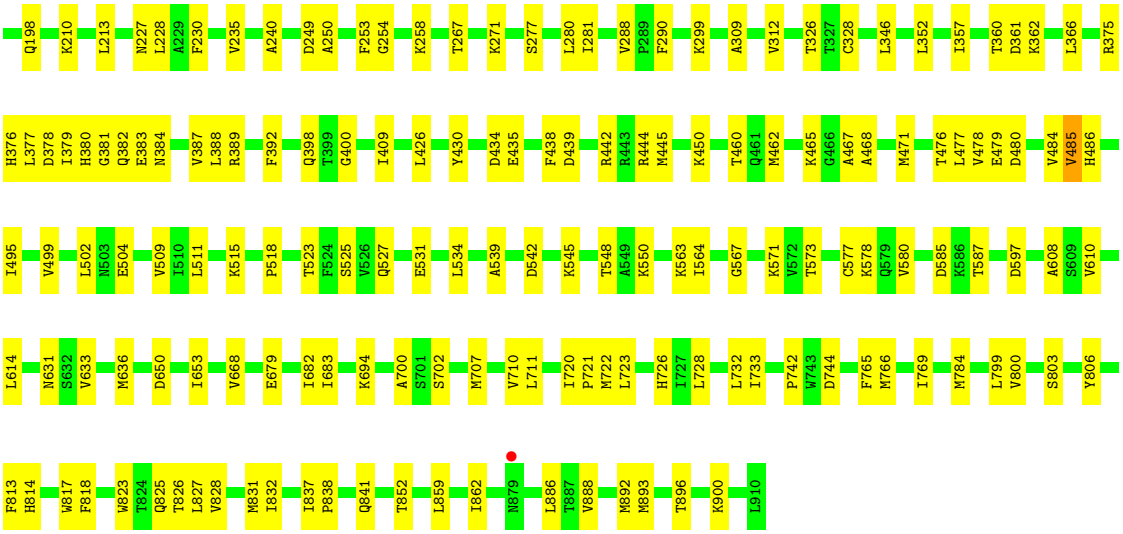


• Molecule 1: Magnesium-transporting ATPase, P-type 1

Chain C:

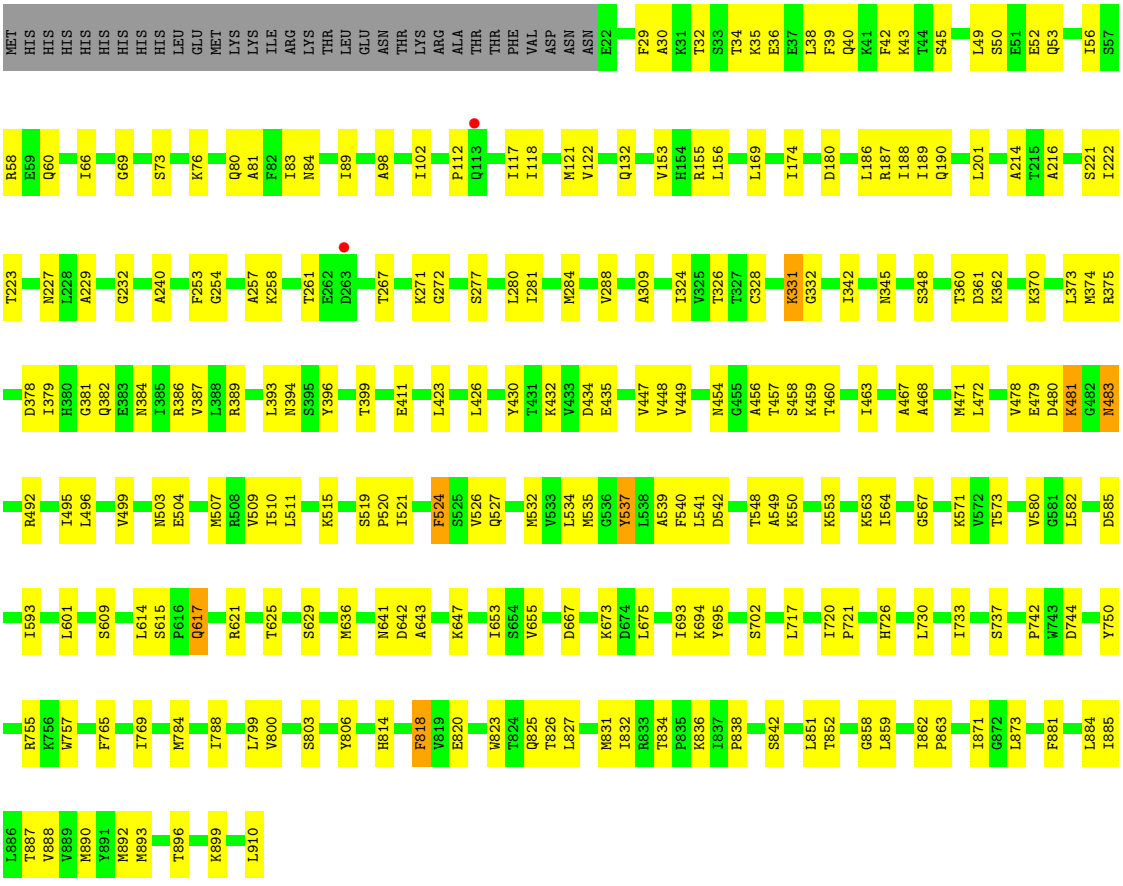






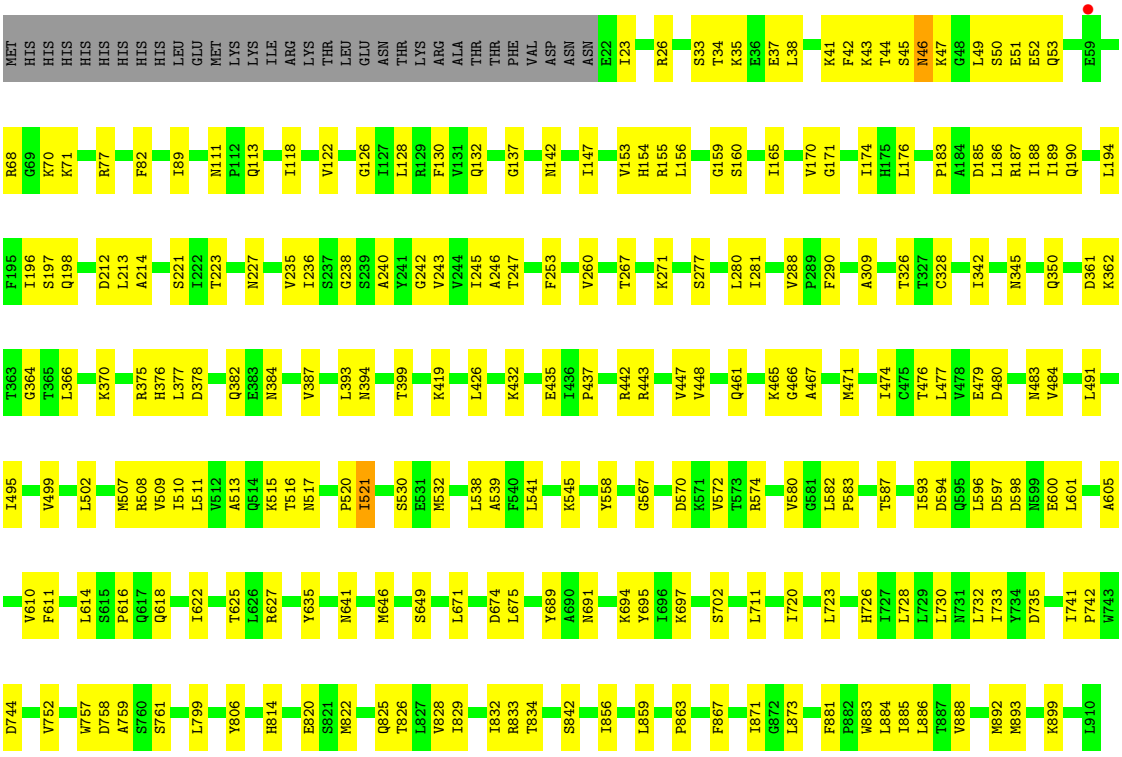
• Molecule 1: Magnesium-transporting ATPase, P-type 1

Chain B:



• Molecule 1: Magnesium-transporting ATPase, P-type 1

Chain D:


MET HIS HIS HIS HIS HIS HIS HIS LEU GLU MET LYS LYS ILE ARG LYS THR LEU GLU ASN THR LYS ARG ALA THR THR PHE VAL ASP ASN E22 I23 R26 S33 T34 K35 E36 E37 L38 K41 F42 K43 T44 S45 M46 K47 G48 L49 S50 E51 E52 Q53 E59
R68 G69 K70 K71 R77 F82 I89 N111 P112 Q113 I118 V122 G126 I127 L128 R129 F130 V131 Q132 G137 N142 I147 V153 H154 R155 L156 G159 S160 I165 V170 G171 I174 H175 L176 P183 A184 D185 L186 R187 I188 I189 Q190 L194
F195 I196 S197 Q198 D212 L213 A214 S221 I222 T223 N227 V235 I236 S237 G238 S239 A240 Y241 G242 V243 V244 I245 A246 T247 F253 V260 T267 K271 S277 L280 I281 V288 P289 F290 A309 T326 T327 C328 I342 N345 Q350 D361 K362
T363 G364 T365 L366 K370 R375 H376 L377 D378 Q382 E383 N384 V387 L393 N394 T399 K419 L426 K432 E435 I436 P437 R442 R443 V447 V448 Q461 K465 G466 A467 M471 I474 C475 T476 L477 V478 E479 D480 N483 V484 L491
I495 V499 L502 M507 R508 V509 I510 L511 V512 A513 Q514 K515 T516 N517 P520 I521 S530 E531 M532 L538 A539 F540 L541 K545 Y558 G567 D570 K571 V572 T573 R574 V580 G581 L582 P583 T587 I593 D594 Q595 L596 D597 D598 N599 E600 L601 A605
V610 F611 L614 S615 P616 Q617 Q618 I622 T625 L626 R627 Y635 N641 M646 S649 L671 D674 L675 Y689 A690 N691 K694 Y695 I696 K697 S702 L711 I720 L723 H726 I727 L728 L729 L730 N731 L732 I733 Y734 D735 I741 P742 W743
D744 V752 W757 D758 A759 S760 S761 L799 Y806 H814 E820 S821 M822 Q825 T826 L827 V828 I829 I832 R833 T834 S842 I856 L859 P863 F867 I871 G872 L873 F881 P882 W883 L884 I885 L886 T887 V888 M892 M893 K899 L910

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	180.40Å 66.59Å 218.67Å 90.00° 90.15° 90.00°	Depositor
Resolution (Å)	24.91 – 3.55 24.91 – 3.55	Depositor EDS
% Data completeness (in resolution range)	98.5 (24.91-3.55) 98.2 (24.91-3.55)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.21 (at 3.18Å)	Xtriage
Refinement program	PHENIX 1.21.2_5419	Depositor
R, R_{free}	0.288 , 0.339 0.293 , 0.344	Depositor DCC
R_{free} test set	3137 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å^2)	76.0	Xtriage
Anisotropy	0.520	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 65.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.38$, $< L^2 > = 0.21$	Xtriage
Estimated twinning fraction	0.348 for h,-k,-l	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	27352	wwPDB-VP
Average B, all atoms (Å^2)	98.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 50.71 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 6.2188e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

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	A	0.25	0/6956	0.45	0/9426
1	B	0.24	0/6956	0.44	0/9426
1	C	0.25	0/6956	0.45	0/9426
1	D	0.25	0/6956	0.44	0/9426
All	All	0.25	0/27824	0.45	0/37704

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	A	6837	0	7054	143	0
1	B	6837	0	7054	144	0
1	C	6837	0	7054	143	0
1	D	6837	0	7054	143	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
All	All	27352	0	28216	567	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 10.

All (567) 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:A:48:GLY:H	1:A:156:LEU:HD21	1.31	0.94
1:A:50:SER:H	1:A:156:LEU:HD22	1.37	0.88
1:A:210:LYS:NZ	1:A:224:GLU:O	2.14	0.79
1:A:826:THR:HG22	1:A:852:THR:HG23	1.62	0.79
1:B:331:LYS:HG2	1:B:742:PRO:HB3	1.64	0.79
1:C:837:ILE:H	1:C:841:GLN:HE21	1.31	0.78
1:A:45:SER:HB2	1:A:173:ILE:HD11	1.66	0.77
1:B:834:THR:HG22	1:B:836:LYS:H	1.48	0.77
1:C:379:ILE:HG23	1:C:495:ILE:HD11	1.67	0.76
1:D:41:LYS:HE3	1:D:45:SER:HB2	1.66	0.75
1:C:49:LEU:HB3	1:C:156:LEU:HD13	1.68	0.75
1:C:50:SER:HA	1:C:53:GLN:HB3	1.68	0.74
1:B:102:ILE:HD12	1:B:112:PRO:HB3	1.69	0.72
1:A:389:ARG:NH2	1:A:430:TYR:OH	2.23	0.72
1:B:362:LYS:HD3	1:B:573:THR:HG22	1.70	0.72
1:B:69:GLY:H	1:B:258:LYS:HA	1.54	0.71
1:C:194:LEU:HD23	1:C:210:LYS:HB2	1.70	0.71
1:C:288:VAL:HG13	1:C:309:ALA:HB1	1.73	0.71
1:D:288:VAL:HG13	1:D:309:ALA:HB1	1.73	0.71
1:D:508:ARG:HG3	1:D:572:VAL:HG11	1.73	0.70
1:A:822:MET:SD	1:A:859:LEU:HD13	2.32	0.70
1:A:385:ILE:HD12	1:A:420:ASN:HD22	1.56	0.69
1:C:35:LYS:HG3	1:C:189:ILE:HD11	1.75	0.69
1:B:189:ILE:HG22	1:B:190:GLN:HG2	1.74	0.69
1:A:421:PRO:HB2	1:B:553:LYS:HB3	1.74	0.69
1:C:438:PHE:HB2	1:C:445:MET:HB3	1.74	0.69
1:B:379:ILE:HD13	1:B:478:VAL:HG13	1.75	0.69
1:B:499:VAL:HG13	1:B:509:VAL:HG21	1.75	0.69
1:D:213:LEU:O	1:D:227:ASN:ND2	2.25	0.69
1:A:48:GLY:N	1:A:156:LEU:HD21	2.06	0.69
1:A:567:GLY:HA2	1:A:614:LEU:H	1.58	0.68
1:A:201:LEU:HG	1:A:202:THR:HG23	1.76	0.68
1:D:155:ARG:H	1:D:159:GLY:HA2	1.57	0.68
1:D:616:PRO:HB3	1:D:641:ASN:HB2	1.77	0.67
1:B:548:THR:HG22	1:B:549:ALA:H	1.59	0.67
1:A:98:ALA:HB2	1:A:115:LEU:HD21	1.76	0.66
1:A:176:LEU:HB3	1:A:235:VAL:HG21	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:174:ILE:HD13	1:D:183:PRO:HG2	1.78	0.66
1:C:375:ARG:HB2	1:C:539:ALA:HB3	1.77	0.66
1:C:112:PRO:O	1:C:114:GLY:N	2.29	0.65
1:D:384:ASN:ND2	1:D:480:ASP:OD2	2.28	0.65
1:C:90:LEU:HB3	1:C:122:VAL:HG22	1.77	0.65
1:D:567:GLY:HA2	1:D:614:LEU:H	1.60	0.65
1:C:567:GLY:HA2	1:C:614:LEU:H	1.61	0.65
1:B:834:THR:HG21	1:B:842:SER:HB3	1.78	0.65
1:D:267:THR:HG23	1:D:271:LYS:HD3	1.77	0.65
1:D:364:GLY:O	1:D:545:LYS:NZ	2.29	0.65
1:C:378:ASP:HB3	1:C:384:ASN:HB2	1.77	0.65
1:B:580:VAL:HG23	1:B:582:LEU:HD13	1.78	0.65
1:C:485:VAL:HG12	1:C:486:HIS:H	1.61	0.64
1:B:435:GLU:HG3	1:B:447:VAL:HG12	1.78	0.64
1:B:288:VAL:HG13	1:B:309:ALA:HB1	1.78	0.64
1:D:822:MET:SD	1:D:826:THR:OG1	2.55	0.64
1:B:730:LEU:HB2	1:B:818:PHE:HE1	1.63	0.64
1:B:378:ASP:OD1	1:B:382:GLN:N	2.27	0.64
1:B:694:LYS:HG2	1:B:910:LEU:HD22	1.79	0.64
1:A:112:PRO:O	1:A:114:GLY:N	2.31	0.64
1:B:733:ILE:HD12	1:B:859:LEU:HD13	1.79	0.63
1:B:456:ALA:HB3	1:B:459:LYS:HE3	1.80	0.63
1:A:368:GLN:HE21	1:A:543:PRO:HB2	1.64	0.63
1:A:474:ILE:HG23	1:A:530:SER:HA	1.80	0.63
1:A:515:LYS:HB2	1:A:532:MET:HG2	1.80	0.63
1:A:663:LYS:HA	1:A:669:ILE:HD11	1.81	0.63
1:B:472:LEU:HD23	1:B:492:ARG:HG3	1.81	0.62
1:A:378:ASP:OD1	1:A:382:GLN:N	2.31	0.62
1:A:189:ILE:HG22	1:A:190:GLN:HE21	1.65	0.62
1:D:44:THR:O	1:D:47:LYS:NZ	2.31	0.62
1:A:888:VAL:O	1:A:892:MET:HG2	2.00	0.62
1:A:448:VAL:HG22	1:A:462:MET:HG3	1.81	0.62
1:D:694:LYS:NZ	1:D:744:ASP:OD2	2.31	0.62
1:A:132:GLN:NE2	1:A:326:THR:OG1	2.33	0.61
1:A:511:LEU:HD22	1:A:534:LEU:HD11	1.82	0.61
1:A:586:LYS:HE3	1:A:588:ILE:HD11	1.83	0.61
1:C:45:SER:HB3	1:C:156:LEU:HD21	1.81	0.61
1:A:695:TYR:OH	1:A:735:ASP:OD2	2.17	0.61
1:B:615:SER:HB2	1:B:617:GLN:HE21	1.65	0.61
1:A:26:ARG:NH1	1:A:245:ILE:O	2.34	0.61
1:B:50:SER:HB3	1:B:53:GLN:HB3	1.83	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:132:GLN:NE2	1:B:326:THR:OG1	2.33	0.60
1:D:35:LYS:HZ2	1:D:189:ILE:HD12	1.67	0.60
1:C:249:ASP:HA	1:C:254:GLY:HA3	1.83	0.60
1:C:733:ILE:HD12	1:C:859:LEU:HD13	1.82	0.60
1:C:174:ILE:HB	1:C:186:LEU:HD21	1.84	0.60
1:B:454:ASN:O	1:B:459:LYS:NZ	2.34	0.60
1:D:520:PRO:O	1:D:521:ILE:HB	2.01	0.60
1:D:188:ILE:HG22	1:D:212:ASP:HB2	1.83	0.60
1:A:867:PHE:CE1	1:A:871:ILE:CG2	2.86	0.59
1:D:375:ARG:HB2	1:D:539:ALA:HB3	1.83	0.59
1:D:437:PRO:O	1:D:442:ARG:NH2	2.35	0.59
1:A:694:LYS:NZ	1:A:744:ASP:OD2	2.36	0.59
1:C:50:SER:HB3	1:C:54:VAL:HG23	1.83	0.59
1:B:526:VAL:HG23	1:B:527:GLN:HE21	1.67	0.59
1:C:720:ILE:O	1:C:814:HIS:NE2	2.35	0.59
1:D:471:MET:HG2	1:D:511:LEU:HB2	1.85	0.59
1:A:186:LEU:HD21	1:A:242:GLY:HA3	1.84	0.59
1:C:478:VAL:HG12	1:C:479:GLU:H	1.67	0.59
1:C:43:LYS:O	1:C:45:SER:N	2.34	0.59
1:D:720:ILE:O	1:D:814:HIS:NE2	2.36	0.59
1:B:267:THR:HA	1:B:271:LYS:HD2	1.85	0.59
1:B:393:LEU:HD21	1:B:426:LEU:HD22	1.84	0.59
1:B:221:SER:O	1:B:223:THR:N	2.36	0.58
1:D:476:THR:HG23	1:D:477:LEU:HD12	1.86	0.58
1:A:436:ILE:HB	1:A:446:SER:HB2	1.85	0.58
1:A:867:PHE:CE1	1:A:871:ILE:HG23	2.38	0.58
1:B:567:GLY:HA2	1:B:614:LEU:H	1.68	0.58
1:C:826:THR:HG22	1:C:852:THR:HG23	1.86	0.58
1:D:23:ILE:HD11	1:D:26:ARG:HH11	1.69	0.58
1:B:38:LEU:HB3	1:B:42:PHE:HB3	1.86	0.58
1:D:153:VAL:HG22	1:D:174:ILE:HG12	1.85	0.58
1:D:888:VAL:O	1:D:892:MET:HG2	2.03	0.58
1:A:361:ASP:OD1	1:A:362:LYS:N	2.34	0.57
1:C:357:ILE:HD11	1:C:631:ASN:HD22	1.69	0.57
1:C:545:LYS:O	1:C:548:THR:HG22	2.04	0.57
1:D:111:ASN:HD21	1:D:113:GLN:HB2	1.69	0.57
1:A:468:ALA:HA	1:A:511:LEU:HD12	1.85	0.57
1:C:398:GLN:HG2	1:C:400:GLY:H	1.69	0.57
1:D:799:LEU:HD23	1:D:806:TYR:HA	1.87	0.57
1:C:511:LEU:HD12	1:C:534:LEU:HD11	1.86	0.57
1:B:563:LYS:HD2	1:B:609:SER:HA	1.87	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:439:ASP:HB2	1:C:442:ARG:HG3	1.86	0.57
1:B:826:THR:HG22	1:B:852:THR:HG23	1.86	0.57
1:D:515:LYS:HB2	1:D:532:MET:HG2	1.86	0.56
1:A:826:THR:CG2	1:A:852:THR:HG23	2.33	0.56
1:C:46:ASN:HB3	1:C:154:HIS:HB3	1.88	0.56
1:D:137:GLY:O	1:D:345:ASN:ND2	2.39	0.55
1:B:702:SER:HB3	1:B:825:GLN:HG2	1.86	0.55
1:B:189:ILE:O	1:B:190:GLN:NE2	2.34	0.55
1:A:720:ILE:O	1:A:814:HIS:NE2	2.39	0.55
1:A:288:VAL:HG13	1:A:309:ALA:HB1	1.87	0.55
1:D:50:SER:H	1:D:156:LEU:HG	1.71	0.55
1:B:503:ASN:HB3	1:B:571:LYS:HB2	1.89	0.55
1:B:888:VAL:O	1:B:892:MET:HG2	2.07	0.55
1:A:277:SER:HA	1:A:280:LEU:HD12	1.89	0.54
1:C:132:GLN:NE2	1:C:326:THR:OG1	2.40	0.54
1:A:437:PRO:O	1:A:442:ARG:NH2	2.36	0.54
1:C:50:SER:O	1:C:52:GLU:N	2.40	0.54
1:C:382:GLN:HE21	1:C:383:GLU:HG2	1.71	0.54
1:D:635:TYR:HD2	1:D:646:MET:HG3	1.72	0.54
1:D:596:LEU:HD22	1:D:600:GLU:HG2	1.90	0.54
1:A:678:LEU:O	1:A:682:ILE:HG13	2.07	0.54
1:D:176:LEU:HB3	1:D:235:VAL:HG21	1.90	0.54
1:B:378:ASP:OD1	1:B:381:GLY:N	2.40	0.54
1:D:187:ARG:HB2	1:D:245:ILE:HD13	1.88	0.54
1:D:516:THR:HG22	1:D:517:ASN:H	1.71	0.54
1:A:74:LEU:HA	1:A:77:ARG:HB2	1.90	0.54
1:A:35:LYS:HD2	1:A:189:ILE:HD12	1.90	0.54
1:C:290:PHE:HD2	1:C:711:LEU:HD11	1.72	0.54
1:B:53:GLN:HA	1:B:56:ILE:HG12	1.89	0.54
1:B:384:ASN:O	1:B:387:VAL:HG12	2.08	0.54
1:B:386:ARG:NH1	1:B:535:MET:SD	2.81	0.54
1:D:378:ASP:N	1:D:382:GLN:O	2.32	0.54
1:C:121:MET:CE	1:C:732:LEU:HD11	2.37	0.53
1:C:442:ARG:NH2	1:C:444:ARG:O	2.42	0.53
1:D:196:ILE:HG22	1:D:235:VAL:HA	1.90	0.53
1:B:720:ILE:O	1:B:814:HIS:NE2	2.41	0.53
1:C:888:VAL:O	1:C:892:MET:HG2	2.08	0.53
1:B:66:ILE:HD13	1:B:254:GLY:HA2	1.90	0.53
1:A:822:MET:HE2	1:A:856:ILE:HA	1.90	0.53
1:C:33:SER:HB2	1:C:37:GLU:HB2	1.91	0.53
1:B:81:ALA:O	1:B:84:ASN:ND2	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:799:LEU:HD23	1:B:806:TYR:HA	1.90	0.53
1:C:38:LEU:HB2	1:C:42:PHE:HB3	1.90	0.52
1:B:345:ASN:ND2	1:B:348:SER:OG	2.42	0.52
1:D:267:THR:O	1:D:350:GLN:NE2	2.37	0.52
1:B:73:SER:H	1:B:76:LYS:HD2	1.75	0.52
1:D:597:ASP:OD1	1:D:598:ASP:N	2.42	0.52
1:A:98:ALA:O	1:A:102:ILE:HG22	2.10	0.52
1:D:45:SER:HB3	1:D:49:LEU:HB2	1.92	0.52
1:D:37:GLU:OE1	1:D:37:GLU:N	2.43	0.52
1:D:881:PHE:O	1:D:885:ILE:HG12	2.10	0.52
1:A:328:CYS:SG	1:A:742:PRO:HG3	2.49	0.52
1:D:189:ILE:HG13	1:D:243:VAL:HG13	1.91	0.52
1:D:384:ASN:O	1:D:387:VAL:HG12	2.10	0.52
1:D:50:SER:HB2	1:D:53:GLN:HB3	1.91	0.51
1:D:89:ILE:HD11	1:D:281:ILE:HG12	1.91	0.51
1:B:117:ILE:O	1:B:121:MET:HG3	2.09	0.51
1:D:605:ALA:HA	1:D:611:PHE:HZ	1.76	0.51
1:A:260:VAL:HG23	1:A:261:THR:H	1.74	0.51
1:C:89:ILE:HG12	1:C:281:ILE:HD11	1.92	0.51
1:C:477:LEU:HB3	1:C:484:VAL:HG22	1.91	0.51
1:D:474:ILE:HG23	1:D:530:SER:HA	1.92	0.51
1:A:500:ASP:HB3	1:A:571:LYS:HE3	1.92	0.51
1:B:174:ILE:HD12	1:B:186:LEU:HD11	1.91	0.51
1:B:430:TYR:HB3	1:B:449:VAL:HG12	1.92	0.51
1:A:194:LEU:HD23	1:A:210:LYS:HB2	1.91	0.51
1:A:819:VAL:HA	1:A:859:LEU:HD21	1.92	0.51
1:C:859:LEU:HD12	1:C:862:ILE:HD12	1.92	0.51
1:D:38:LEU:HD13	1:D:243:VAL:HG21	1.93	0.51
1:D:491:LEU:O	1:D:495:ILE:HG12	2.11	0.51
1:D:558:TYR:HD1	1:D:752:VAL:HA	1.74	0.51
1:A:44:THR:OG1	1:A:45:SER:N	2.43	0.51
1:C:728:LEU:O	1:C:732:LEU:HD13	2.10	0.51
1:C:389:ARG:HH12	1:C:430:TYR:HE2	1.59	0.50
1:C:23:ILE:HD13	1:C:250:ALA:HB1	1.92	0.50
1:C:893:MET:O	1:C:896:THR:HG22	2.11	0.50
1:D:35:LYS:NZ	1:D:189:ILE:HG23	2.26	0.50
1:D:132:GLN:NE2	1:D:326:THR:OG1	2.44	0.50
1:B:52:GLU:O	1:B:56:ILE:HG23	2.12	0.50
1:D:213:LEU:HG	1:D:214:ALA:H	1.76	0.50
1:C:434:ASP:OD1	1:C:435:GLU:N	2.45	0.50
1:D:185:ASP:HB2	1:D:246:ALA:HB3	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:64:ASN:HB3	1:C:166:GLU:HA	1.92	0.50
1:C:95:LEU:O	1:C:99:PHE:N	2.37	0.50
1:C:187:ARG:HD3	1:C:228:LEU:HD23	1.93	0.50
1:C:366:LEU:HD12	1:C:564:ILE:HD11	1.92	0.50
1:B:434:ASP:OD1	1:B:435:GLU:N	2.42	0.50
1:D:38:LEU:O	1:D:42:PHE:HB3	2.11	0.50
1:D:695:TYR:OH	1:D:735:ASP:OD2	2.30	0.50
1:D:730:LEU:HD12	1:D:822:MET:HE2	1.93	0.50
1:A:335:THR:O	1:A:339:GLU:HG2	2.12	0.50
1:D:593:ILE:HD13	1:D:622:ILE:HD11	1.93	0.50
1:D:863:PRO:HG3	1:D:873:LEU:HD13	1.92	0.50
1:D:154:HIS:HA	1:D:160:SER:H	1.75	0.50
1:C:35:LYS:O	1:C:42:PHE:HB2	2.12	0.49
1:C:799:LEU:HD23	1:C:806:TYR:HA	1.93	0.49
1:D:155:ARG:N	1:D:159:GLY:HA2	2.27	0.49
1:A:252:ILE:O	1:A:255:GLU:HG3	2.11	0.49
1:A:576:VAL:O	1:A:580:VAL:HG23	2.12	0.49
1:A:784:MET:HE2	1:A:784:MET:HA	1.92	0.49
1:B:188:ILE:HD11	1:B:229:ALA:HB2	1.94	0.49
1:D:77:ARG:HB3	1:D:130:PHE:HE1	1.76	0.49
1:D:328:CYS:SG	1:D:742:PRO:HG3	2.52	0.49
1:C:41:LYS:HD3	1:C:171:GLY:O	2.12	0.49
1:A:89:ILE:HG12	1:A:281:ILE:HD11	1.93	0.49
1:B:800:VAL:HG13	1:B:803:SER:HB3	1.95	0.49
1:B:887:THR:HA	1:B:890:MET:HE2	1.94	0.49
1:D:46:ASN:HD21	1:D:159:GLY:HA3	1.78	0.49
1:D:728:LEU:O	1:D:732:LEU:HG	2.12	0.49
1:B:32:THR:HG22	1:B:216:ALA:HA	1.95	0.49
1:B:504:GLU:HA	1:B:571:LYS:HB3	1.94	0.49
1:B:542:ASP:OD1	1:B:542:ASP:N	2.46	0.49
1:D:194:LEU:HA	1:D:238:GLY:HA3	1.93	0.49
1:B:345:ASN:ND2	1:B:667:ASP:OD1	2.46	0.48
1:B:394:ASN:ND2	1:B:463:ILE:O	2.46	0.48
1:B:432:LYS:HE2	1:B:435:GLU:HB2	1.95	0.48
1:A:442:ARG:NH1	1:A:529:GLU:OE1	2.46	0.48
1:C:563:LYS:NZ	1:C:608:ALA:O	2.43	0.48
1:C:702:SER:HB3	1:C:825:GLN:HG2	1.96	0.48
1:D:507:MET:HG2	1:D:541:LEU:HB2	1.96	0.48
1:D:41:LYS:HD3	1:D:171:GLY:O	2.14	0.48
1:C:378:ASP:OD1	1:C:380:HIS:N	2.47	0.48
1:B:190:GLN:O	1:B:240:ALA:HA	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:277:SER:HA	1:D:280:LEU:HD12	1.96	0.48
1:A:234:ASN:ND2	1:A:661:ILE:HB	2.28	0.48
1:A:691:ASN:HB3	1:A:741:ILE:HG22	1.95	0.48
1:B:601:LEU:HD23	1:B:625:THR:HG21	1.96	0.48
1:C:478:VAL:HG12	1:C:479:GLU:N	2.28	0.48
1:C:722:MET:HG2	1:C:726:HIS:HB2	1.96	0.48
1:C:723:LEU:HB2	1:C:726:HIS:CD2	2.48	0.48
1:C:900:LYS:HD3	1:D:883:TRP:HZ2	1.79	0.48
1:D:366:LEU:HD13	1:D:580:VAL:HG21	1.96	0.48
1:A:435:GLU:HG3	1:A:447:VAL:HG12	1.96	0.47
1:A:867:PHE:CE1	1:A:871:ILE:HG21	2.49	0.47
1:A:869:HIS:HE1	1:A:874:MET:HG3	1.77	0.47
1:C:107:PRO:HA	1:C:110:LYS:HE3	1.96	0.47
1:A:316:LEU:HG	1:A:707:MET:HG3	1.96	0.47
1:C:213:LEU:C	1:C:227:ASN:HD21	2.17	0.47
1:A:31:LYS:HD2	1:A:227:ASN:HB3	1.95	0.47
1:A:380:HIS:CE1	1:A:481:LYS:HG2	2.50	0.47
1:D:465:LYS:HD2	1:D:510:ILE:HD12	1.97	0.47
1:A:831:MET:SD	1:A:838:PRO:HG2	2.54	0.47
1:D:733:ILE:HD12	1:D:859:LEU:HD12	1.97	0.47
1:C:176:LEU:HB3	1:C:235:VAL:HG21	1.97	0.47
1:C:633:VAL:O	1:C:650:ASP:N	2.44	0.47
1:D:393:LEU:HD21	1:D:426:LEU:HD22	1.95	0.47
1:C:460:THR:HB	1:C:518:PRO:HG2	1.97	0.47
1:C:585:ASP:OD1	1:C:585:ASP:N	2.47	0.47
1:D:829:ILE:O	1:D:833:ARG:HG3	2.13	0.47
1:C:542:ASP:OD1	1:C:542:ASP:N	2.48	0.47
1:B:360:THR:HG23	1:B:564:ILE:HD13	1.96	0.47
1:D:46:ASN:OD1	1:D:154:HIS:ND1	2.48	0.47
1:B:29:PHE:HE2	1:B:39:PHE:HD2	1.62	0.46
1:B:58:ARG:HD3	1:B:169:LEU:HD21	1.97	0.46
1:C:87:THR:HG23	1:C:122:VAL:HG13	1.97	0.46
1:C:548:THR:O	1:C:550:LYS:N	2.49	0.46
1:B:30:ALA:O	1:B:187:ARG:NE	2.48	0.46
1:B:750:TYR:HA	1:B:755:ARG:HH21	1.80	0.46
1:D:691:ASN:HB3	1:D:741:ILE:HG22	1.96	0.46
1:B:153:VAL:HG13	1:B:155:ARG:HG2	1.96	0.46
1:D:377:LEU:HD12	1:D:502:LEU:HD11	1.97	0.46
1:A:446:SER:OG	1:A:529:GLU:OE2	2.33	0.46
1:A:577:CYS:HB3	1:A:582:LEU:HB2	1.98	0.46
1:A:822:MET:HE1	1:A:855:GLY:O	2.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:80:GLN:HA	1:B:83:ILE:HG12	1.98	0.46
1:B:370:LYS:NZ	1:B:411:GLU:OE2	2.44	0.46
1:B:593:ILE:O	1:B:621:ARG:NH1	2.49	0.46
1:D:82:PHE:HE1	1:D:126:GLY:HA3	1.81	0.46
1:A:413:ALA:O	1:A:417:GLN:HG3	2.16	0.46
1:C:366:LEU:HD13	1:C:580:VAL:HG21	1.96	0.46
1:A:800:VAL:HG13	1:A:803:SER:HB3	1.97	0.46
1:B:636:MET:HA	1:B:653:ILE:O	2.16	0.46
1:D:33:SER:OG	1:D:37:GLU:HB2	2.15	0.46
1:D:165:ILE:HG23	1:D:183:PRO:HB3	1.97	0.46
1:D:221:SER:O	1:D:223:THR:N	2.45	0.46
1:A:114:GLY:HA2	1:A:117:ILE:HG22	1.96	0.46
1:A:151:THR:HG23	1:A:165:ILE:HG12	1.98	0.46
1:A:267:THR:HG23	1:A:271:LYS:HD3	1.98	0.46
1:D:867:PHE:CZ	1:D:871:ILE:HD11	2.51	0.46
1:A:231:MET:HE2	1:A:253:PHE:HB3	1.97	0.46
1:C:328:CYS:SG	1:C:742:PRO:HG3	2.56	0.46
1:B:373:LEU:HD21	1:B:375:ARG:HH21	1.80	0.46
1:B:511:LEU:HD12	1:B:534:LEU:HD11	1.98	0.46
1:C:38:LEU:O	1:C:42:PHE:HB3	2.16	0.46
1:D:582:LEU:HG	1:D:583:PRO:HD2	1.98	0.46
1:C:352:LEU:HD13	1:C:668:VAL:HG21	1.97	0.45
1:C:389:ARG:HG3	1:C:426:LEU:HD11	1.99	0.45
1:D:290:PHE:CD2	1:D:711:LEU:HD11	2.51	0.45
1:C:392:PHE:HD2	1:C:426:LEU:HD12	1.80	0.45
1:D:142:ASN:ND2	1:D:147:ILE:O	2.49	0.45
1:D:375:ARG:HH21	1:D:502:LEU:HD21	1.81	0.45
1:A:74:LEU:HD12	1:A:74:LEU:H	1.81	0.45
1:A:199:ALA:HB2	1:A:205:SER:HA	1.98	0.45
1:A:394:ASN:HA	1:A:447:VAL:HG21	1.98	0.45
1:C:277:SER:HA	1:C:280:LEU:HD12	1.97	0.45
1:C:765:PHE:CZ	1:C:769:ILE:HD12	2.51	0.45
1:B:893:MET:O	1:B:896:THR:HG22	2.16	0.45
1:C:392:PHE:CD2	1:C:426:LEU:HD12	2.52	0.45
1:B:35:LYS:HB3	1:B:36:GLU:OE2	2.17	0.45
1:D:399:THR:OG1	1:D:435:GLU:OE1	2.31	0.45
1:D:570:ASP:OD2	1:D:574:ARG:NH1	2.49	0.45
1:A:438:PHE:HE1	1:A:443:ARG:HA	1.81	0.45
1:C:525:SER:HB3	1:C:527:GLN:HE22	1.81	0.45
1:B:34:THR:HA	1:B:214:ALA:HB2	1.98	0.45
1:B:201:LEU:HD11	1:B:232:GLY:HA3	1.98	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:374:MET:HG3	1:B:540:PHE:CE1	2.51	0.45
1:B:510:ILE:HD11	1:B:540:PHE:HE2	1.82	0.45
1:D:50:SER:C	1:D:52:GLU:H	2.20	0.45
1:A:41:LYS:HE3	1:A:44:THR:HB	1.99	0.45
1:A:376:HIS:O	1:A:376:HIS:ND1	2.48	0.45
1:C:44:THR:O	1:C:44:THR:OG1	2.31	0.45
1:C:722:MET:HB2	1:C:817:TRP:HE3	1.81	0.45
1:D:361:ASP:OD1	1:D:362:LYS:N	2.50	0.45
1:A:376:HIS:HA	1:A:538:LEU:HD23	1.99	0.45
1:A:765:PHE:HE2	1:A:909:LEU:HG	1.81	0.45
1:C:49:LEU:H	1:C:156:LEU:HB3	1.81	0.45
1:C:828:VAL:O	1:C:832:ILE:HG12	2.17	0.45
1:B:458:SER:HB2	1:B:460:THR:HG23	1.99	0.45
1:B:361:ASP:OD1	1:B:362:LYS:N	2.50	0.45
1:B:643:ALA:O	1:B:647:LYS:HG3	2.17	0.45
1:D:35:LYS:HG3	1:D:189:ILE:HD12	1.98	0.45
1:D:601:LEU:HD23	1:D:625:THR:HG21	1.99	0.45
1:A:615:SER:H	1:A:618:GLN:HB2	1.82	0.44
1:B:360:THR:OG1	1:B:361:ASP:N	2.50	0.44
1:B:515:LYS:HG3	1:B:532:MET:HG2	1.98	0.44
1:D:467:ALA:O	1:D:471:MET:HB2	2.17	0.44
1:C:710:VAL:HG22	1:C:721:PRO:HG2	1.99	0.44
1:D:70:LYS:HG2	1:D:71:LYS:H	1.82	0.44
1:D:394:ASN:HA	1:D:447:VAL:HG21	1.98	0.44
1:D:479:GLU:HA	1:D:484:VAL:HA	1.99	0.44
1:C:254:GLY:O	1:C:258:LYS:HG2	2.16	0.44
1:B:765:PHE:CZ	1:B:769:ILE:HD12	2.52	0.44
1:B:641:ASN:ND2	1:B:642:ASP:OD1	2.50	0.44
1:A:479:GLU:CD	1:A:480:ASP:H	2.19	0.44
1:A:587:THR:HG22	1:A:610:VAL:HB	1.99	0.44
1:D:34:THR:OG1	1:D:37:GLU:OE1	2.33	0.44
1:D:170:VAL:HG23	1:D:247:THR:HG22	1.99	0.44
1:D:674:ASP:OD1	1:D:675:LEU:N	2.51	0.44
1:A:34:THR:OG1	1:A:35:LYS:N	2.51	0.44
1:A:85:PRO:O	1:A:89:ILE:HG13	2.18	0.44
1:A:221:SER:C	1:A:223:THR:H	2.21	0.44
1:C:722:MET:HB2	1:C:817:TRP:CE3	2.53	0.44
1:C:886:LEU:HD21	1:D:893:MET:HB3	1.99	0.44
1:B:328:CYS:SG	1:B:742:PRO:HG3	2.58	0.44
1:B:448:VAL:HG23	1:B:524:PHE:CZ	2.53	0.44
1:B:457:THR:OG1	1:B:458:SER:N	2.50	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:689:TYR:CE1	1:D:757:TRP:HA	2.53	0.44
1:A:728:LEU:O	1:A:732:LEU:HG	2.17	0.44
1:C:53:GLN:HA	1:C:56:ILE:HB	2.00	0.44
1:C:352:LEU:HG	1:C:682:ILE:HD13	1.98	0.44
1:C:361:ASP:OD1	1:C:362:LYS:N	2.50	0.44
1:A:118:ILE:O	1:A:122:VAL:HG23	2.17	0.44
1:A:255:GLU:HA	1:A:258:LYS:HE2	2.00	0.44
1:C:567:GLY:HA2	1:C:614:LEU:N	2.30	0.44
1:B:389:ARG:HG3	1:B:426:LEU:HD11	1.99	0.44
1:B:831:MET:SD	1:B:838:PRO:HG2	2.58	0.44
1:D:290:PHE:HD2	1:D:711:LEU:HD11	1.82	0.44
1:A:147:ILE:HB	1:A:342:ILE:HG21	2.00	0.44
1:A:758:ASP:OD1	1:A:759:ALA:N	2.51	0.44
1:A:845:SER:OG	1:A:847:PRO:HD2	2.18	0.44
1:C:136:SER:HB3	1:C:346:LEU:HB2	1.99	0.44
1:B:277:SER:HA	1:B:280:LEU:HD12	1.99	0.44
1:D:43:LYS:O	1:D:45:SER:N	2.51	0.44
1:D:376:HIS:HA	1:D:538:LEU:HD23	2.00	0.44
1:D:828:VAL:O	1:D:832:ILE:HG12	2.18	0.44
1:C:121:MET:HE3	1:C:732:LEU:HD11	1.98	0.43
1:C:485:VAL:HG12	1:C:486:HIS:N	2.30	0.43
1:C:636:MET:HA	1:C:653:ILE:O	2.17	0.43
1:C:818:PHE:CZ	1:C:859:LEU:HD11	2.53	0.43
1:B:818:PHE:CE1	1:B:859:LEU:HD21	2.52	0.43
1:D:189:ILE:HD13	1:D:189:ILE:HA	1.89	0.43
1:C:49:LEU:N	1:C:156:LEU:HB3	2.34	0.43
1:B:717:LEU:HD12	1:B:721:PRO:HG3	2.00	0.43
1:D:190:GLN:O	1:D:240:ALA:HB1	2.17	0.43
1:D:702:SER:HB3	1:D:825:GLN:HG2	1.99	0.43
1:A:35:LYS:HA	1:A:38:LEU:HD23	2.00	0.43
1:A:173:ILE:HA	1:A:242:GLY:O	2.19	0.43
1:C:117:ILE:O	1:C:121:MET:HG3	2.18	0.43
1:D:697:LYS:HZ1	1:D:761:SER:HB3	1.83	0.43
1:A:465:LYS:HE2	1:A:510:ILE:HD12	1.99	0.43
1:D:513:ALA:HB1	1:D:532:MET:HB3	2.00	0.43
1:C:384:ASN:O	1:C:387:VAL:HG12	2.18	0.43
1:D:38:LEU:HB2	1:D:42:PHE:HB3	2.01	0.43
1:A:513:ALA:HB1	1:A:532:MET:HB3	2.00	0.43
1:A:577:CYS:HA	1:A:582:LEU:HD12	2.01	0.43
1:C:377:LEU:HA	1:C:382:GLN:O	2.18	0.43
1:B:548:THR:O	1:B:550:LYS:N	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:196:ILE:HG22	1:A:235:VAL:HA	2.01	0.43
1:A:605:ALA:HA	1:A:611:PHE:HZ	1.84	0.43
1:C:47:LYS:N	1:C:156:LEU:HD23	2.34	0.43
1:C:118:ILE:O	1:C:122:VAL:HG23	2.18	0.43
1:C:499:VAL:HG13	1:C:509:VAL:HG21	2.01	0.43
1:C:587:THR:HG22	1:C:610:VAL:HB	2.01	0.43
1:B:66:ILE:HD11	1:B:257:ALA:HB3	2.00	0.43
1:B:394:ASN:HA	1:B:447:VAL:HG21	2.01	0.43
1:B:507:MET:HB3	1:B:539:ALA:HB1	2.00	0.43
1:A:34:THR:HG23	1:A:36:GLU:H	1.84	0.43
1:A:89:ILE:O	1:A:93:LEU:HG	2.19	0.43
1:C:362:LYS:HD2	1:C:573:THR:HG22	2.01	0.43
1:D:587:THR:HG22	1:D:610:VAL:HB	2.00	0.43
1:D:834:THR:HG21	1:D:842:SER:HB3	2.01	0.43
1:A:89:ILE:O	1:A:92:VAL:HG12	2.19	0.43
1:A:198:GLN:HG2	1:A:233:SER:HB3	2.00	0.43
1:A:213:LEU:HD23	1:A:213:LEU:HA	1.84	0.43
1:C:267:THR:HA	1:C:271:LYS:HD2	2.01	0.43
1:B:50:SER:HB2	1:B:156:LEU:HD12	2.01	0.43
1:B:737:SER:HA	1:B:851:LEU:HG	2.01	0.43
1:D:448:VAL:HA	1:D:461:GLN:O	2.19	0.43
1:A:312:VAL:HA	1:A:707:MET:SD	2.58	0.43
1:A:551:ALA:HB2	1:A:676:MET:HG2	2.01	0.43
1:A:722:MET:HE2	1:A:727:ILE:HG12	2.00	0.43
1:B:726:HIS:CE1	1:B:871:ILE:HG22	2.54	0.43
1:D:723:LEU:H	1:D:726:HIS:HD2	1.66	0.43
1:A:700:ALA:HB1	1:A:766:MET:SD	2.59	0.42
1:B:507:MET:SD	1:B:541:LEU:HB2	2.58	0.42
1:A:504:GLU:OE1	1:A:571:LYS:NZ	2.52	0.42
1:B:49:LEU:HG	1:B:50:SER:H	1.84	0.42
1:B:423:LEU:O	1:B:426:LEU:HG	2.19	0.42
1:D:43:LYS:HG2	1:D:44:THR:H	1.84	0.42
1:D:50:SER:OG	1:D:51:GLU:N	2.51	0.42
1:D:342:ILE:HD12	1:D:671:LEU:HD21	2.02	0.42
1:D:432:LYS:HE2	1:D:435:GLU:HB2	2.01	0.42
1:A:35:LYS:HD2	1:A:189:ILE:HG23	2.00	0.42
1:C:376:HIS:CD2	1:C:388:LEU:HD22	2.54	0.42
1:C:597:ASP:N	1:C:597:ASP:OD1	2.53	0.42
1:B:832:ILE:HA	1:B:899:LYS:HD3	2.01	0.42
1:B:625:THR:O	1:B:629:SER:OG	2.29	0.42
1:A:55:GLU:HG3	1:A:58:ARG:HH12	1.85	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:102:ILE:HD13	1:C:102:ILE:HA	1.89	0.42
1:C:460:THR:O	1:C:518:PRO:HD2	2.19	0.42
1:B:272:GLY:HA3	1:B:757:TRP:CE3	2.55	0.42
1:B:468:ALA:HB2	1:B:511:LEU:HD23	2.01	0.42
1:C:679:GLU:O	1:C:683:ILE:HG12	2.19	0.42
1:C:784:MET:HE2	1:C:813:PHE:HA	2.02	0.42
1:C:831:MET:SD	1:C:838:PRO:HG2	2.59	0.42
1:B:49:LEU:O	1:B:156:LEU:HB2	2.19	0.42
1:B:399:THR:OG1	1:B:435:GLU:OE1	2.37	0.42
1:B:694:LYS:NZ	1:B:744:ASP:OD2	2.53	0.42
1:B:820:GLU:HA	1:B:884:LEU:HD11	2.00	0.42
1:B:881:PHE:O	1:B:885:ILE:HG13	2.19	0.42
1:A:252:ILE:H	1:A:252:ILE:HD12	1.83	0.42
1:C:409:ILE:HD12	1:C:465:LYS:HZ3	1.84	0.42
1:C:578:LYS:HD2	1:C:578:LYS:HA	1.81	0.42
1:B:467:ALA:O	1:B:471:MET:HB2	2.19	0.42
1:B:585:ASP:N	1:B:585:ASP:OD1	2.52	0.42
1:A:144:LEU:HB3	1:A:146:MET:HG3	2.02	0.42
1:A:876:LEU:HD22	1:A:880:PHE:CE2	2.54	0.42
1:C:476:THR:HB	1:C:531:GLU:HG3	2.01	0.42
1:D:33:SER:O	1:D:187:ARG:NH2	2.53	0.42
1:A:421:PRO:O	1:B:553:LYS:HD3	2.20	0.41
1:C:823:TRP:O	1:C:827:LEU:HB2	2.20	0.41
1:C:190:GLN:O	1:C:240:ALA:HA	2.20	0.41
1:C:479:GLU:O	1:C:480:ASP:HB3	2.20	0.41
1:B:342:ILE:H	1:B:342:ILE:HD12	1.86	0.41
1:D:826:THR:HB	1:D:856:ILE:HD11	2.00	0.41
1:A:822:MET:SD	1:A:859:LEU:CB	3.08	0.41
1:C:40:GLN:HB3	1:C:53:GLN:HE22	1.85	0.41
1:C:700:ALA:HB1	1:C:766:MET:SD	2.60	0.41
1:B:53:GLN:HG3	1:B:56:ILE:HD11	2.02	0.41
1:B:98:ALA:O	1:B:102:ILE:HG22	2.19	0.41
1:B:118:ILE:O	1:B:122:VAL:HG23	2.20	0.41
1:B:784:MET:HA	1:B:788:ILE:HB	2.02	0.41
1:D:198:GLN:NE2	1:D:223:THR:O	2.40	0.41
1:D:594:ASP:OD1	1:D:618:GLN:NE2	2.54	0.41
1:A:142:ASN:O	1:A:145:LYS:NZ	2.39	0.41
1:A:826:THR:HG22	1:A:852:THR:CG2	2.42	0.41
1:C:98:ALA:HB2	1:C:115:LEU:HD13	2.02	0.41
1:C:502:LEU:HD23	1:C:502:LEU:HA	1.88	0.41
1:C:504:GLU:HA	1:C:571:LYS:HB3	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:480:ASP:O	1:B:481:LYS:HG3	2.20	0.41
1:B:863:PRO:HG3	1:B:873:LEU:HD13	2.01	0.41
1:A:903:VAL:HG22	1:A:909:LEU:HB2	2.02	0.41
1:B:155:ARG:HA	1:B:155:ARG:HD3	1.79	0.41
1:B:479:GLU:HA	1:B:483:ASN:O	2.19	0.41
1:D:186:LEU:HD21	1:D:242:GLY:HA3	2.02	0.41
1:A:102:ILE:HD12	1:A:102:ILE:HA	1.90	0.41
1:A:504:GLU:HA	1:A:571:LYS:HB3	2.01	0.41
1:A:762:VAL:O	1:A:766:MET:HG3	2.21	0.41
1:C:198:GLN:HE22	1:C:230:PHE:H	1.68	0.41
1:C:564:ILE:HD12	1:C:577:CYS:SG	2.61	0.41
1:D:443:ARG:O	1:D:466:GLY:HA3	2.21	0.41
1:A:189:ILE:HG13	1:A:243:VAL:HG13	2.01	0.41
1:C:114:GLY:HA2	1:C:117:ILE:HG22	2.03	0.41
1:C:800:VAL:HG13	1:C:803:SER:HB3	2.02	0.41
1:B:823:TRP:O	1:B:827:LEU:HB2	2.21	0.41
1:D:758:ASP:OD1	1:D:759:ALA:N	2.54	0.41
1:A:869:HIS:CE1	1:A:874:MET:HA	2.56	0.41
1:C:468:ALA:HB2	1:C:511:LEU:HD23	2.02	0.41
1:B:45:SER:O	1:B:156:LEU:HD22	2.20	0.41
1:B:89:ILE:HG12	1:B:281:ILE:HD11	2.01	0.41
1:B:448:VAL:HG13	1:B:460:THR:HB	2.03	0.41
1:D:419:LYS:HE3	1:D:419:LYS:HB3	1.93	0.41
1:D:499:VAL:HG13	1:D:509:VAL:HG21	2.03	0.41
1:D:567:GLY:HA2	1:D:614:LEU:N	2.31	0.41
1:D:884:LEU:HD12	1:D:884:LEU:HA	1.91	0.41
1:A:50:SER:N	1:A:156:LEU:HD22	2.20	0.41
1:A:352:LEU:HD21	1:A:682:ILE:HG12	2.02	0.41
1:C:155:ARG:HD3	1:C:155:ARG:HA	1.92	0.41
1:C:290:PHE:CD2	1:C:711:LEU:HD11	2.55	0.41
1:C:462:MET:HE1	1:C:515:LYS:HE2	2.03	0.41
1:C:893:MET:HB3	1:D:886:LEU:HD21	2.02	0.41
1:B:281:ILE:HA	1:B:284:MET:HE2	2.02	0.41
1:B:324:ILE:HG13	1:B:695:TYR:CZ	2.55	0.41
1:B:379:ILE:HG23	1:B:495:ILE:HG22	2.01	0.41
1:B:460:THR:HG21	1:B:521:ILE:HG12	2.03	0.41
1:B:511:LEU:HD22	1:B:537:TYR:HB3	2.02	0.41
1:D:35:LYS:HZ2	1:D:189:ILE:HG23	1.84	0.41
1:D:128:LEU:HD23	1:D:128:LEU:HA	1.93	0.41
1:D:465:LYS:HA	1:D:511:LEU:O	2.21	0.41
1:D:899:LYS:HB2	1:D:899:LYS:HE3	1.87	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:41:LYS:NZ	1:A:50:SER:HB2	2.36	0.41
1:A:66:ILE:HD12	1:A:66:ILE:HA	1.97	0.41
1:A:744:ASP:HA	1:A:845:SER:HB2	2.02	0.41
1:A:858:GLY:O	1:A:861:ILE:HG22	2.20	0.41
1:C:694:LYS:NZ	1:C:744:ASP:OD2	2.53	0.41
1:C:900:LYS:HD3	1:D:883:TRP:CZ2	2.55	0.41
1:B:858:GLY:O	1:B:862:ILE:HG12	2.21	0.41
1:D:68:ARG:HB3	1:D:260:VAL:HG11	2.02	0.41
1:A:387:VAL:HG13	1:A:512:VAL:HG21	2.04	0.40
1:A:474:ILE:HD13	1:A:474:ILE:HA	1.96	0.40
1:A:623:VAL:HG13	1:A:633:VAL:HG11	2.02	0.40
1:C:467:ALA:O	1:C:471:MET:HB2	2.21	0.40
1:C:523:THR:O	1:C:527:GLN:NE2	2.54	0.40
1:B:174:ILE:HB	1:B:186:LEU:HD21	2.03	0.40
1:D:197:SER:HB2	1:D:236:ILE:HD11	2.02	0.40
1:D:370:LYS:HD2	1:D:370:LYS:HA	1.91	0.40
1:C:312:VAL:HA	1:C:707:MET:SD	2.61	0.40
1:C:893:MET:HA	1:C:896:THR:HG22	2.02	0.40
1:B:331:LYS:HG3	1:B:332:GLY:N	2.37	0.40
1:B:655:VAL:HG21	1:B:673:LYS:HG3	2.03	0.40
1:A:71:LYS:HD3	1:A:71:LYS:HA	1.84	0.40
1:A:555:LEU:HB3	1:A:560:VAL:HB	2.01	0.40
1:A:592:ASP:O	1:A:596:LEU:HG	2.21	0.40
1:B:675:LEU:HD12	1:B:675:LEU:H	1.85	0.40
1:B:726:HIS:HE1	1:B:871:ILE:HG22	1.86	0.40
1:D:118:ILE:O	1:D:122:VAL:HG23	2.21	0.40
1:A:785:PHE:HB2	1:A:813:PHE:HE2	1.87	0.40
1:A:828:VAL:O	1:A:832:ILE:HG12	2.21	0.40
1:B:56:ILE:O	1:B:60:GLN:CB	2.70	0.40
1:B:519:SER:HB3	1:B:520:PRO:HD3	2.01	0.40
1:D:627:ARG:HD2	1:D:649:SER:HA	2.03	0.40
1:A:184:ALA:HA	1:A:231:MET:SD	2.61	0.40
1:A:867:PHE:O	1:A:871:ILE:HG12	2.21	0.40
1:C:84:ASN:OD1	1:C:84:ASN:N	2.53	0.40
1:C:89:ILE:O	1:C:93:LEU:HG	2.22	0.40
1:C:360:THR:OG1	1:C:361:ASP:N	2.55	0.40
1:C:377:LEU:HB3	1:C:381:GLY:HA2	2.04	0.40
1:B:693:ILE:HD12	1:B:693:ILE:HA	1.98	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 X-ray entries followed by that with respect to entries of similar resolution.

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	A	887/921 (96%)	808 (91%)	77 (9%)	2 (0%)	44 74
1	B	887/921 (96%)	826 (93%)	58 (6%)	3 (0%)	37 67
1	C	887/921 (96%)	821 (93%)	62 (7%)	4 (0%)	25 59
1	D	887/921 (96%)	817 (92%)	69 (8%)	1 (0%)	48 79
All	All	3548/3684 (96%)	3272 (92%)	266 (8%)	10 (0%)	37 67

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	113	GLN
1	C	113	GLN
1	D	521	ILE
1	C	485	VAL
1	C	51	GLU
1	B	40	GLN
1	B	261	THR
1	A	222	ILE
1	C	299	LYS
1	B	222	ILE

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 X-ray entries followed by that with respect to entries of similar resolution.

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	A	764/795 (96%)	758 (99%)	6 (1%)	79 89

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	B	764/795 (96%)	751 (98%)	13 (2%)	56 76
1	C	764/795 (96%)	761 (100%)	3 (0%)	89 95
1	D	764/795 (96%)	760 (100%)	4 (0%)	86 93
All	All	3056/3180 (96%)	3030 (99%)	26 (1%)	75 87

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	135	ARG
1	A	253	PHE
1	A	419	LYS
1	A	524	PHE
1	A	735	ASP
1	A	736	PHE
1	C	24	ASN
1	C	253	PHE
1	C	450	LYS
1	B	43	LYS
1	B	180	ASP
1	B	227	ASN
1	B	253	PHE
1	B	331	LYS
1	B	396	TYR
1	B	481	LYS
1	B	483	ASN
1	B	496	LEU
1	B	524	PHE
1	B	537	TYR
1	B	617	GLN
1	B	818	PHE
1	D	46	ASN
1	D	253	PHE
1	D	483	ASN
1	D	820	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	132	GLN
1	A	138	ASN

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Mol	Chain	Res	Type
1	A	152	ASN
1	A	190	GLN
1	A	368	GLN
1	A	417	GLN
1	A	420	ASN
1	A	486	HIS
1	A	641	ASN
1	A	830	HIS
1	A	869	HIS
1	C	132	GLN
1	C	198	GLN
1	C	227	ASN
1	C	382	GLN
1	C	503	ASN
1	C	517	ASN
1	C	841	GLN
1	B	132	GLN
1	B	345	ASN
1	B	503	ASN
1	B	527	GLN
1	B	617	GLN
1	B	641	ASN
1	B	726	HIS
1	D	60	GLN
1	D	132	GLN
1	D	161	GLN
1	D	234	ASN
1	D	295	ASN
1	D	368	GLN
1	D	417	GLN
1	D	420	ASN
1	D	503	ASN
1	D	527	GLN
1	D	579	GLN
1	D	726	HIS

5.3.3 RNA

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 oligosaccharides in this entry.

5.6 Ligand geometry (i)

Of 4 ligands modelled in this entry, 4 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å^2)	Q<0.9
1	A	889/921 (96%)	-0.80	3 (0%)	90	79	71, 100, 144, 199	0
1	B	889/921 (96%)	-0.78	2 (0%)	92	84	73, 100, 149, 207	0
1	C	889/921 (96%)	-0.87	3 (0%)	90	79	53, 87, 144, 213	0
1	D	889/921 (96%)	-0.87	1 (0%)	92	88	51, 86, 139, 192	0
All	All	3556/3684 (96%)	-0.83	9 (0%)	90	79	51, 94, 144, 213	0

All (9) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	47	LYS	3.2
1	C	28	GLU	2.9
1	C	25	ALA	2.7
1	B	263	ASP	2.5
1	A	191	ALA	2.3
1	A	200	SER	2.2
1	D	59	GLU	2.1
1	C	879	ASN	2.1
1	B	113	GLN	2.0

6.2 Non-standard residues in protein, DNA, RNA chains

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

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands (i)

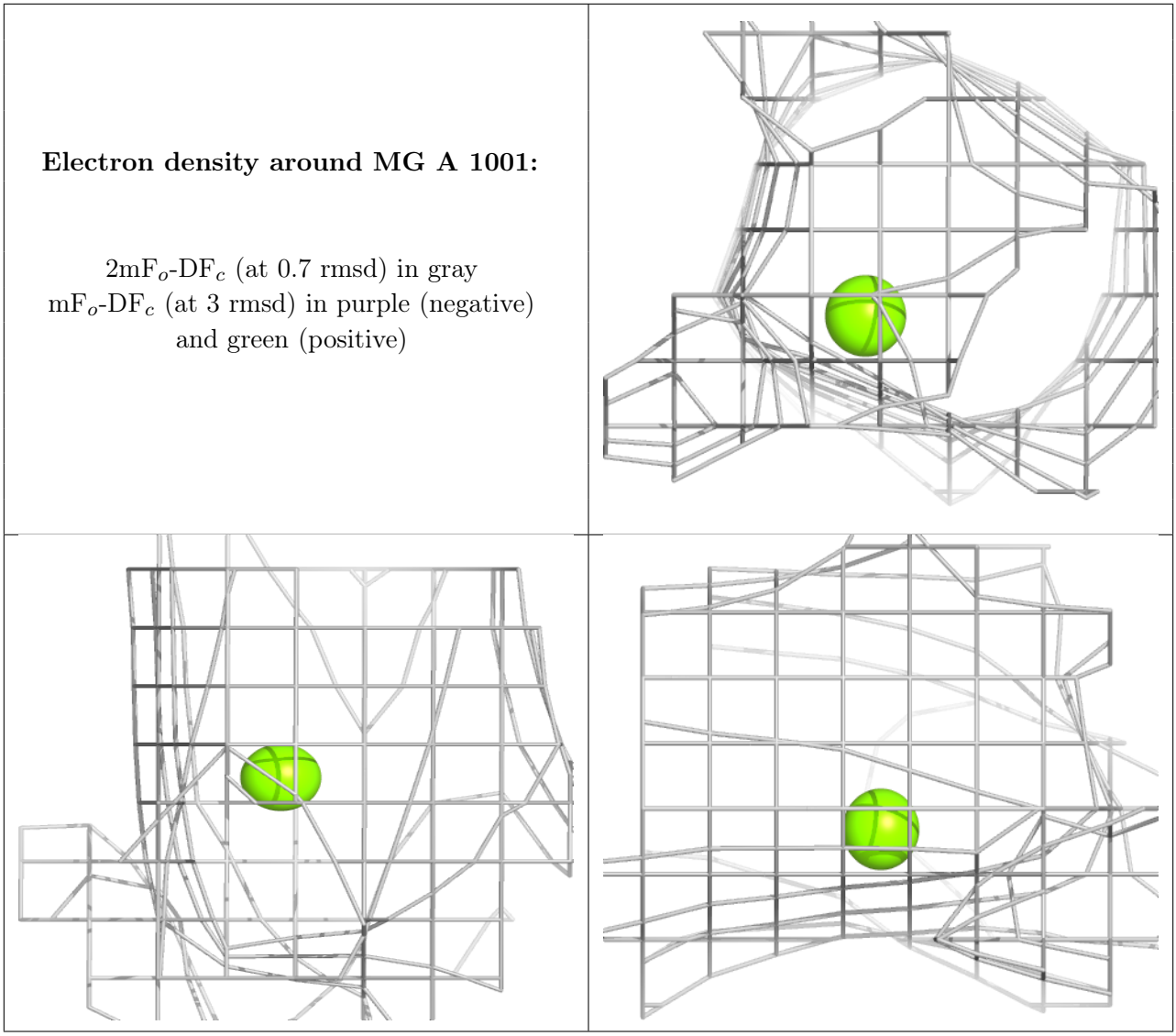
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	MG	A	1001	1/1	0.99	0.04	78,78,78,78	0
2	MG	C	1001	1/1	0.99	0.04	61,61,61,61	0
2	MG	B	1001	1/1	0.99	0.06	75,75,75,75	0
2	MG	D	1001	1/1	1.00	0.03	53,53,53,53	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

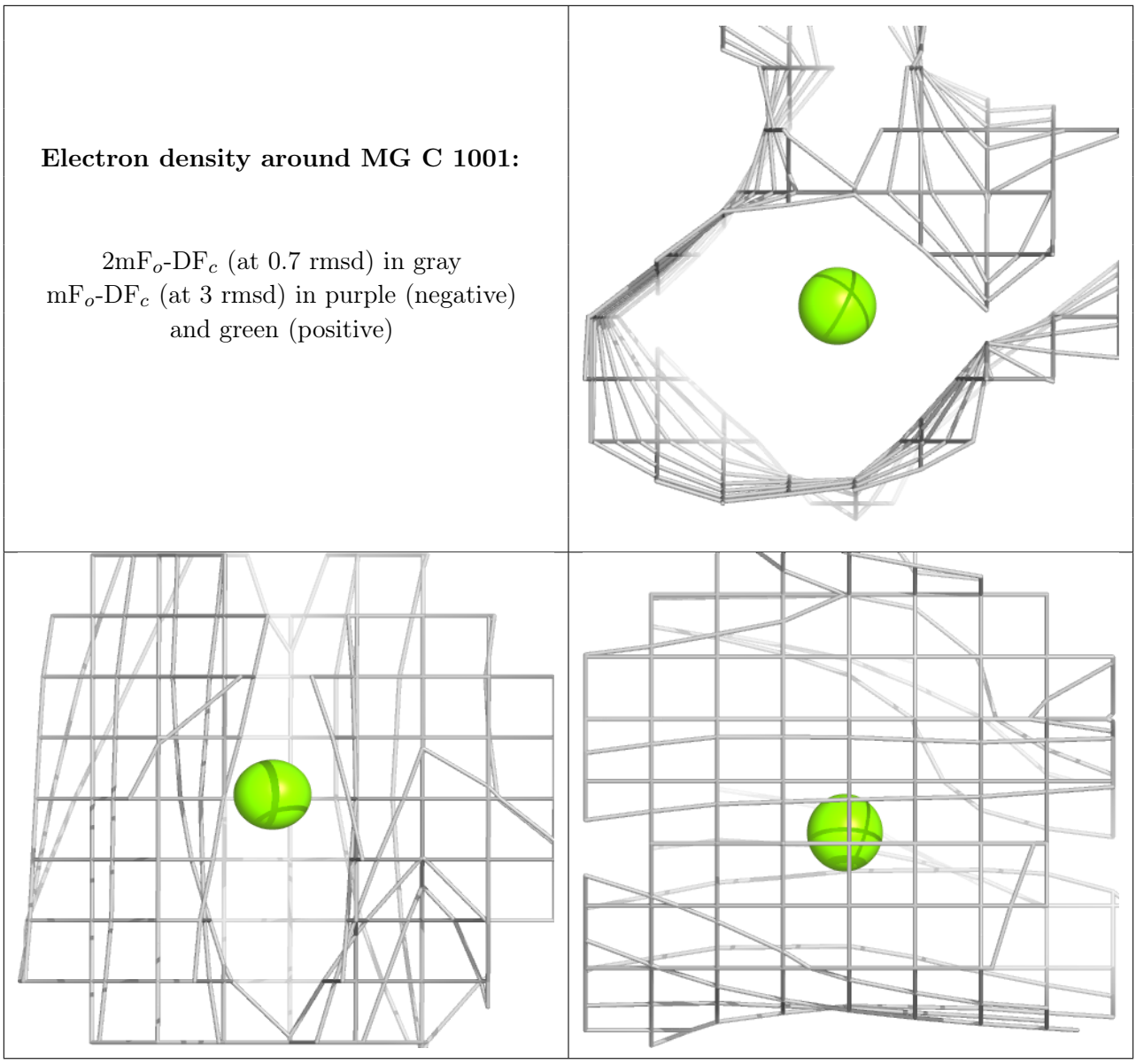
Electron density around MG A 1001:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



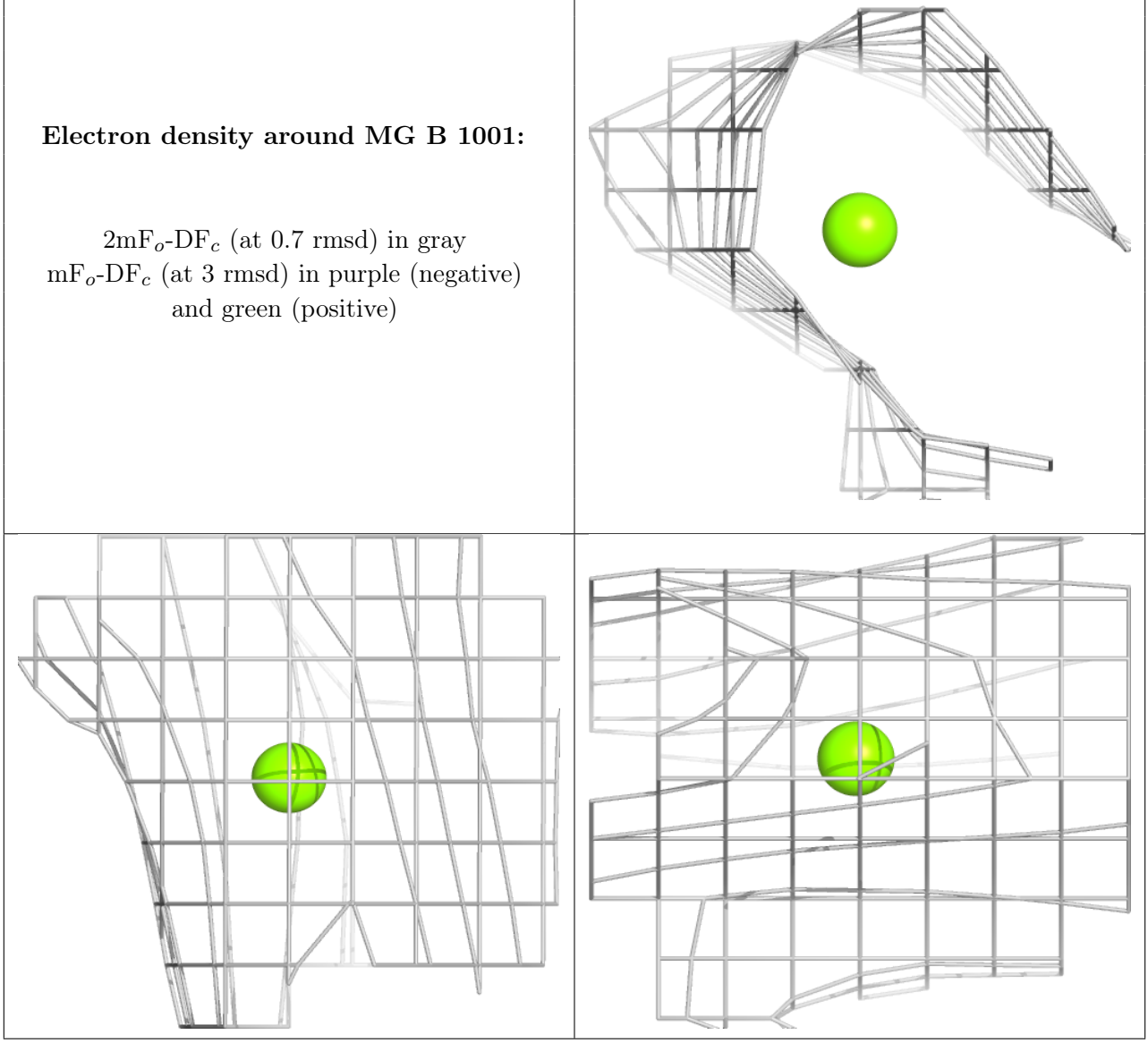
Electron density around MG C 1001:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



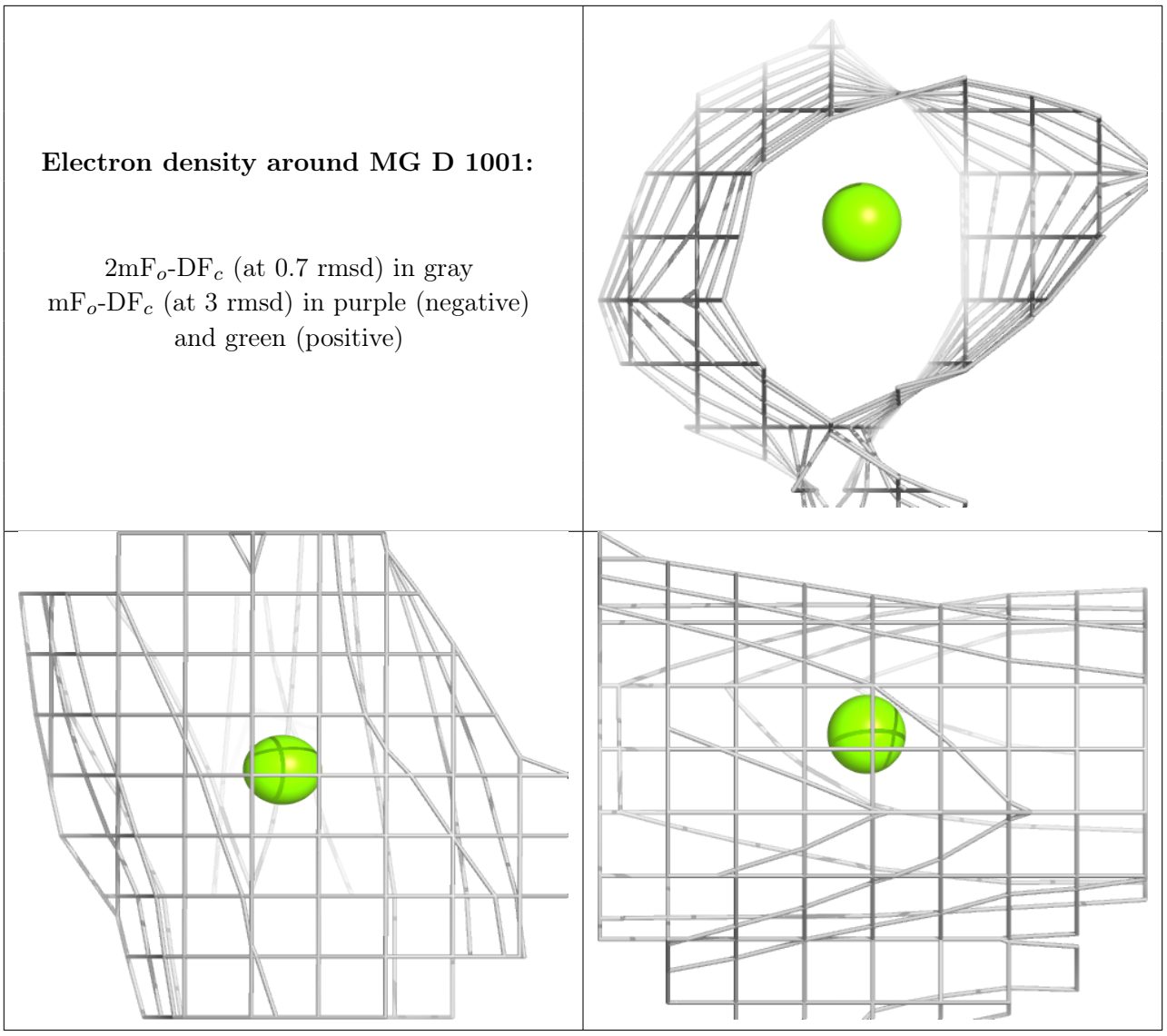
Electron density around MG B 1001:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



Electron density around MG D 1001:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)



6.5 Other polymers (i)

There are no such residues in this entry.