



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 19, 2025 – 10:18 PM EST

PDB ID : 9EJN
Title : Crystal structure of magnesium-transporting ATPase MgtA in an E1-like magnesium-bound state
Authors : Khan, M.B.; 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) : 2.41.3

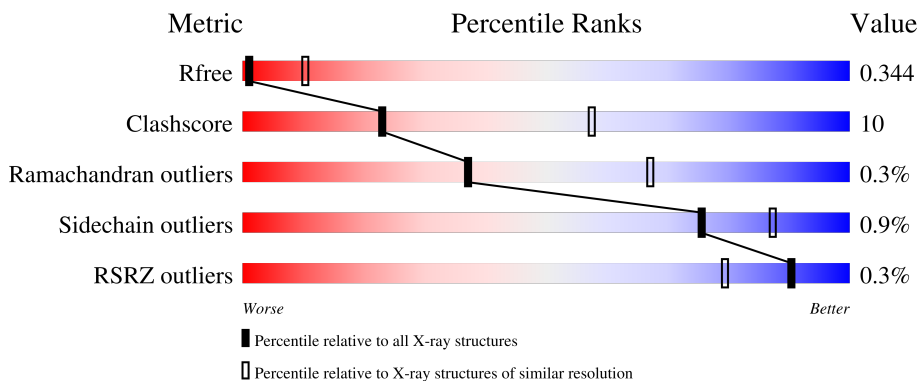
1 Overall quality at a glance i

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 $\leq 5\%$. 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% (green), 23% (yellow), 4% (orange), 0% (red), 0% (grey)
1	B	921	71% (green), 25% (yellow), 4% (orange), 0% (red), 0% (grey)
1	C	921	73% (green), 23% (yellow), 4% (orange), 0% (red), 0% (grey)
1	D	921	72% (green), 25% (yellow), 4% (orange), 0% (red), 0% (grey)

2 Entry composition

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
			Total	C	N	O	S			
1	A	889	6837	4403	1106	1286	42	0	0	0
1	C	889	6837	4403	1106	1286	42	0	0	0
1	B	889	6837	4403	1106	1286	42	0	0	0
1	D	889	6837	4403	1106	1286	42	0	0	0

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

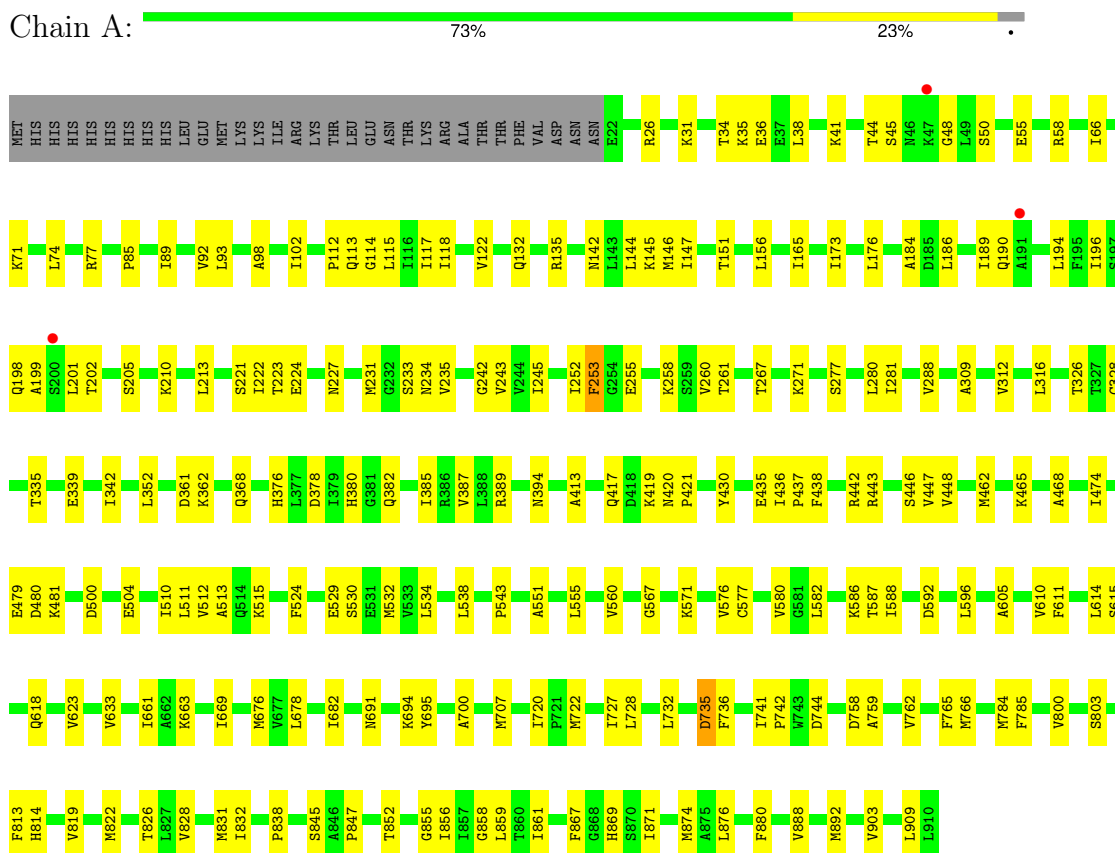
- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

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

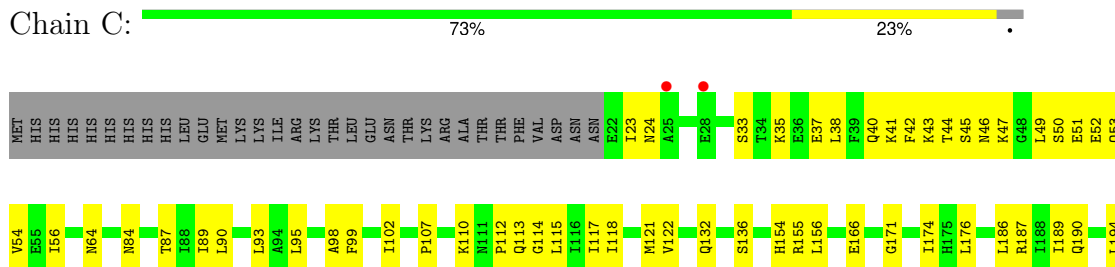
3 Residue-property plots

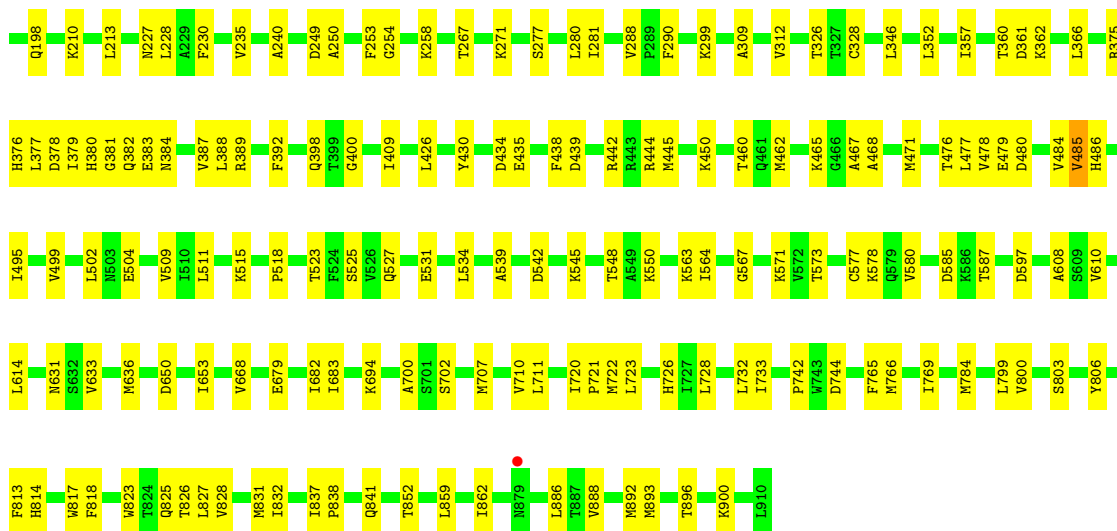
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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



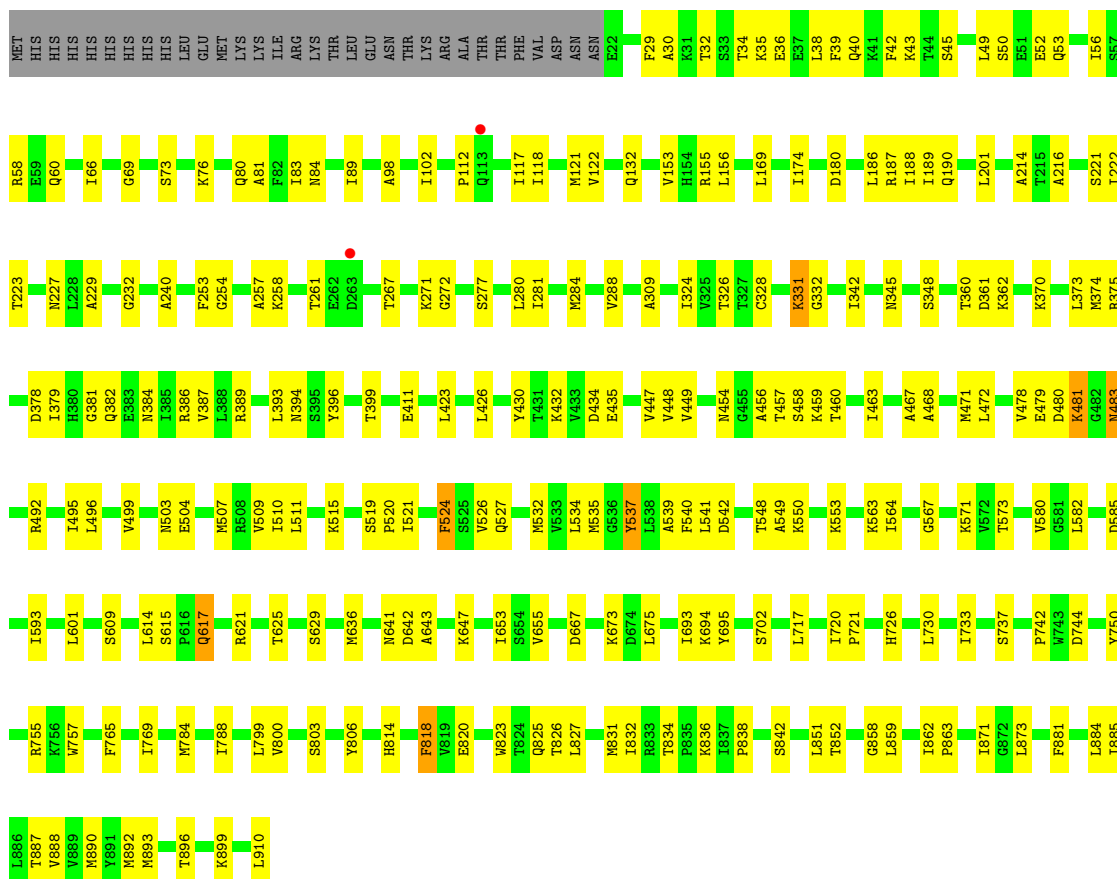
- Molecule 1: Magnesium-transporting ATPase, P-type 1





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

Chain B:



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

Chain D:



MET	B68	F195	T363	I495	V610	D744
HIS	G89	I196	G364	V499	F611	V752
HIS	K70	S197	T365	L502	L614	W757
HIS	K71	Q198	L366	R507	S615	D758
HIS	R77	D212	K370	R508	F616	A759
HIS	F82	L213	R375	W509	Q617	S760
HIS	T89	A214	H376	L510	Q618	S761
LEU	T89	S221	L377	L511	I622	L799
LEU	N111	T223	D378	V512	T625	Y806
MET	P112	T227	Q382	A513	L626	H814
LYS	Q113	N227	S383	R514	R627	E820
LYS	I118	V235	N394	T515	Y635	H822
ILE	I118	I236	V387	N517	Y641	Q825
ARG	V122	S237	L393	P520	R641	T826
LYS	V122	G238	N394	S521	R646	L827
THR	G126	S239	T399	N532	S649	W828
LEU	I127	A240	K419	L538	L671	I829
GLU	R128	Y241	L426	A539	D674	I832
ASN	L129	G242	K432	F540	L675	R833
THR	R129	R243	R443	L541	Y689	T834
LYS	F130	V244	F435	K545	A690	S842
ARG	V131	V244	T436	Y558	R691	I856
ALA	V131	I245	P437	G567	K694	L859
THR	Q132	A246	R442	D570	T695	P863
THR	G137	T247	R443	K571	I696	F867
PHE	M142	F253	V447	V572	K697	I871
ASP	I147	V260	V448	R574	S702	L873
ASN	V153	T267	Q461	V580	L711	F881
E22	H154	K271	K465	G581	L723	P882
I23	R155	S277	A467	L582	H726	W883
R26	L156	L280	M471	P583	I727	L884
S33	G159	I281	I474	T587	L728	I885
T34	S160	V288	T476	I593	L729	L886
K35	I165	F289	L477	D594	L730	T887
E36	V170	F290	V478	Q595	R731	W888
E37	G171	A309	I479	L596	L732	M892
L38	I174	T326	L479	D597	I733	M893
K41	H175	T327	L476	D598	Y734	K899
F42	L176	C328	L477	N599	D735	L910
K43	P183	A194	V478	E600	I741	W743
T44	A194	I342	I479	L601	P742	
S45	D185	N345	D480	A605		
M46	L186	Q350	N483			
K47	R187	D361	V484			
G48	E51	K362	L491			
L49	E52					
S50	Q53					
E51	E59					
E52						
Q53						

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
$\langle I/\sigma(I) \rangle$ ¹	1.21 (at 3.18Å)	Xtrriage
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	Xtrriage
Anisotropy	0.520	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 65.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.38$, $\langle L^2 \rangle = 0.21$	Xtrriage
Estimated twinning fraction	0.348 for h,-k,-l	Xtrriage
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

Xtrriage'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.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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 [i](#)

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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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, 95th 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 [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands

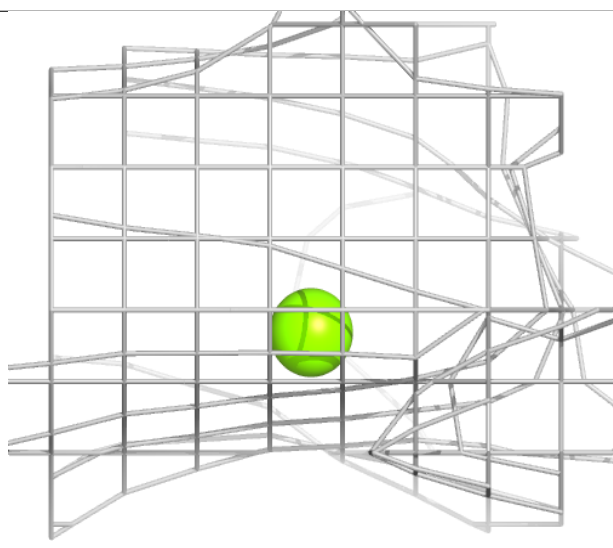
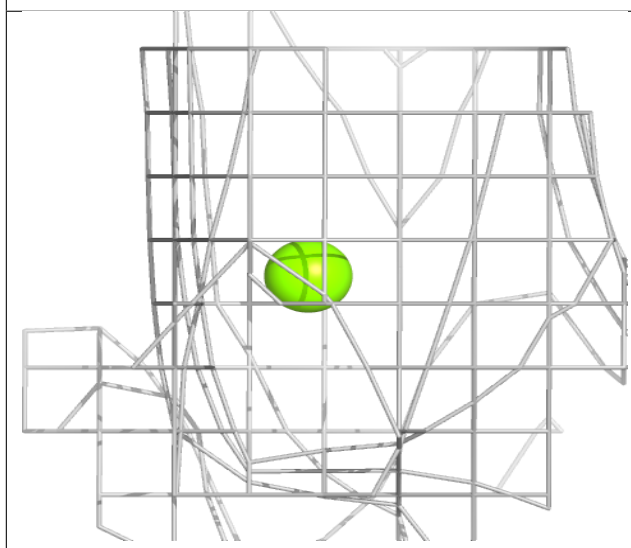
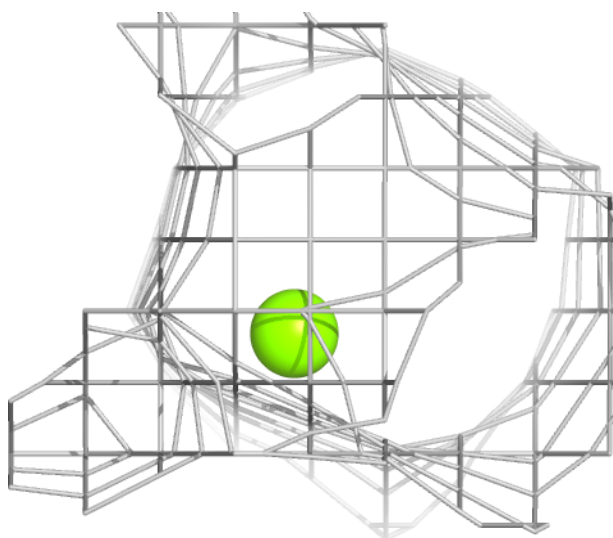
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

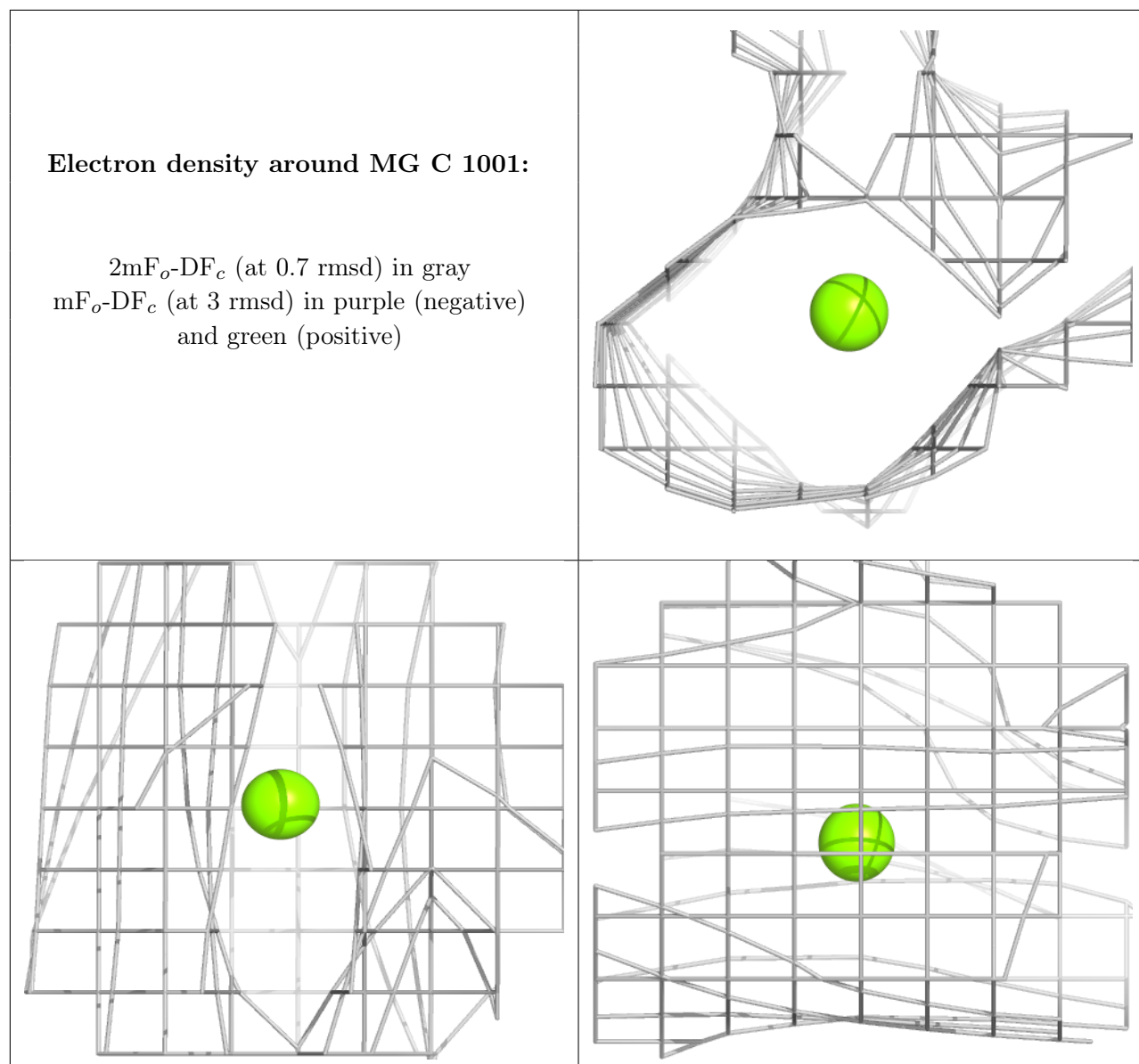
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
2	MG	A	1001	1/1	0.99	0.04	78,78,78,78	0
2	MG	C	1001	1/1	0.99	0.04	61,61,61,61	0
2	MG	B	1001	1/1	0.99	0.06	75,75,75,75	0
2	MG	D	1001	1/1	1.00	0.03	53,53,53,53	0

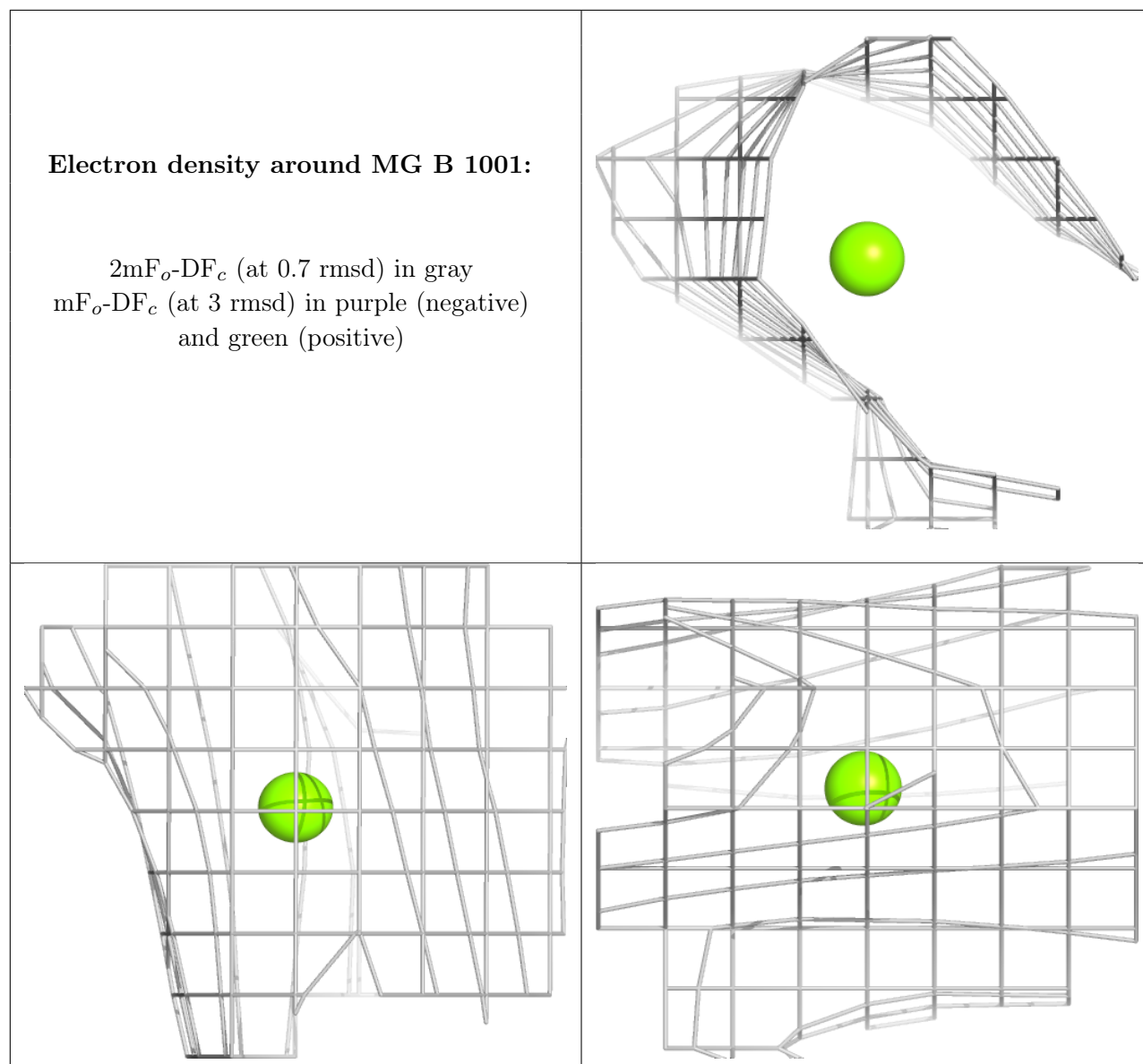
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

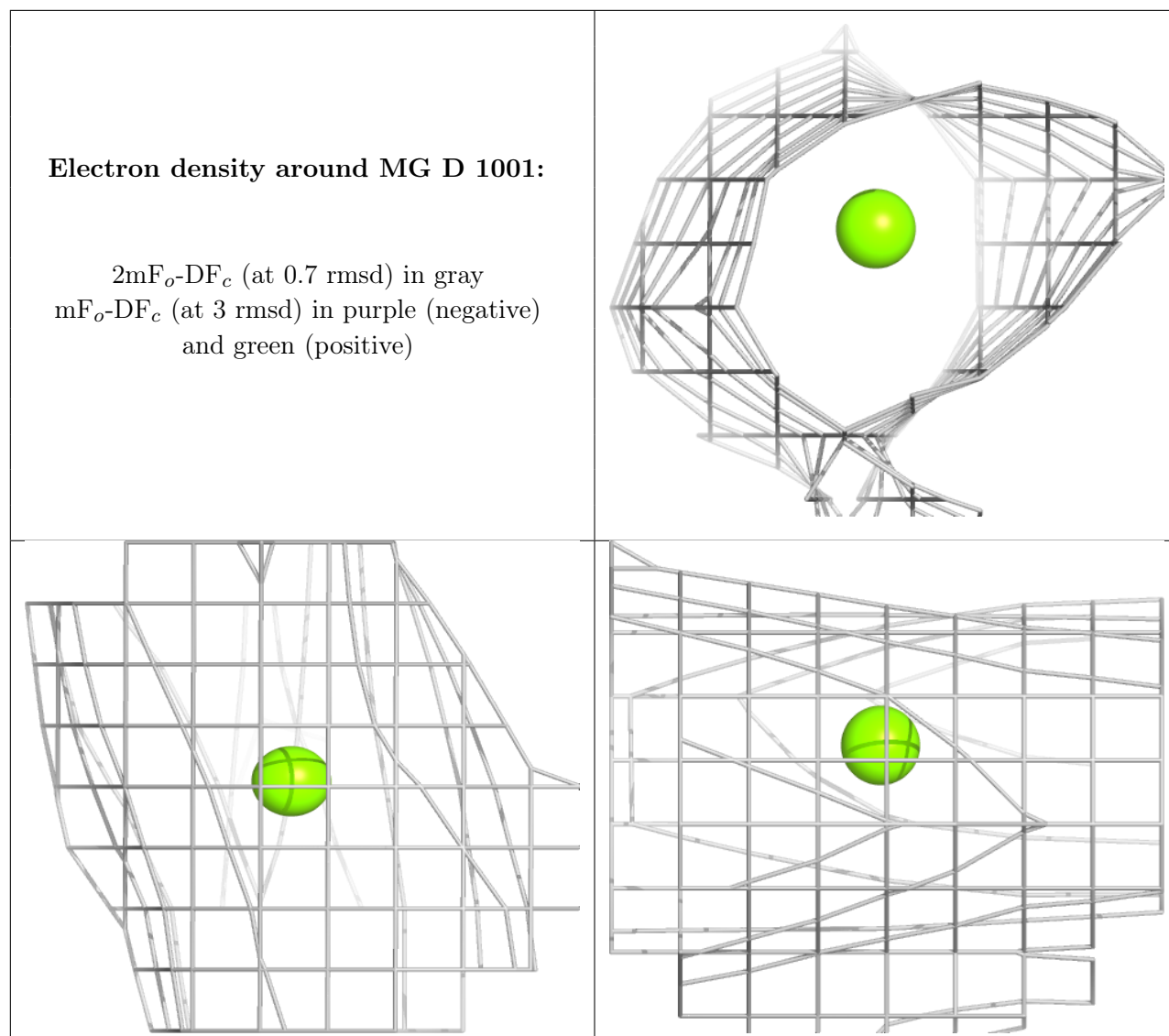
Electron density around MG A 1001:

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









6.5 Other polymers [i](#)

There are no such residues in this entry.