



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 22, 2026 – 03:42 am BST

PDB ID : 1E6V / pdb_00001e6v
Title : Methyl-coenzyme M reductase from Methanopyrus kandleri
Authors : Grabarse, W.; Ermler, U.
Deposited on : 2000-08-23
Resolution : 2.70 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 : 4-5-2 with Phenix2.0
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 2.0
EDS : 3.0
Buster-report : wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.015 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.50

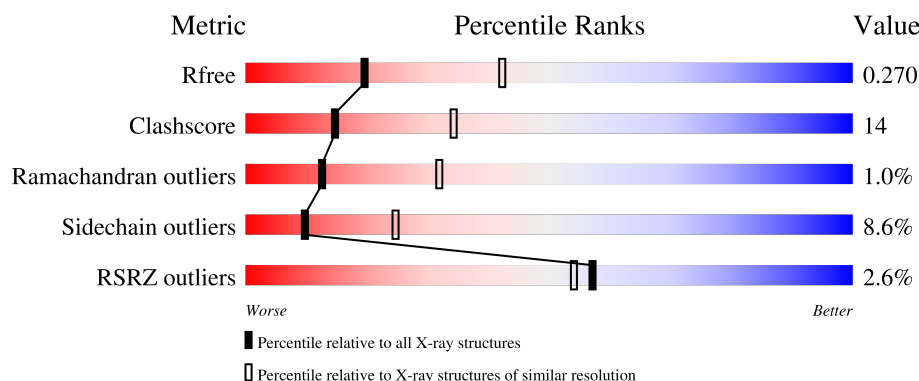
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 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}	180053	3538 (2.70-2.70)
Clashscore	190562	3843 (2.70-2.70)
Ramachandran outliers	187476	3778 (2.70-2.70)
Sidechain outliers	187428	3778 (2.70-2.70)
RSRZ outliers	180081	3538 (2.70-2.70)

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	553	 2% 69% 25% . .
1	D	553	 2% 69% 25% . .
2	B	443	 2% 68% 25% 6% .
2	E	443	 2% 67% 26% 6% .
3	C	258	 3% 67% 25% . .

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Mol	Chain	Length	Quality of chain
3	F	258	7% 67% 26%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 19402 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 METHYL-COENZYME M REDUCTASE I ALPHA SUB-UNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	545	Total	C	N	O	S	18	0	0
			4251	2704	712	807	28			
1	D	545	Total	C	N	O	S	18	0	0
			4251	2704	712	807	28			

- Molecule 2 is a protein called METHYL-COENZYME M REDUCTASE I BETA SUBUNIT.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	436	Total	C	N	O	S	19	0	0
			3316	2089	557	646	24			
2	E	436	Total	C	N	O	S	19	0	0
			3316	2089	557	646	24			

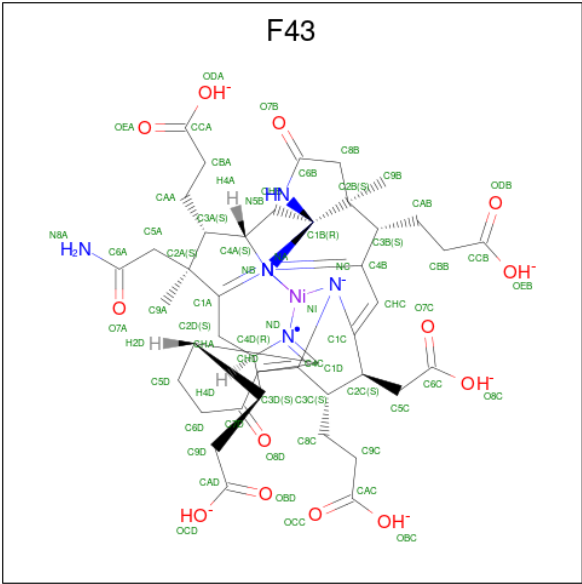
There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	49	VAL	ILE	cloning artifact	UNP Q49601
B	98	GLN	GLU	cloning artifact	UNP Q49601
B	220	GLN	GLU	cloning artifact	UNP Q49601
E	49	VAL	ILE	cloning artifact	UNP Q49601
E	98	GLN	GLU	cloning artifact	UNP Q49601
E	220	GLN	GLU	cloning artifact	UNP Q49601

- Molecule 3 is a protein called METHYL-COENZYME M REDUCTASE I GAMMA SUB-UNIT.

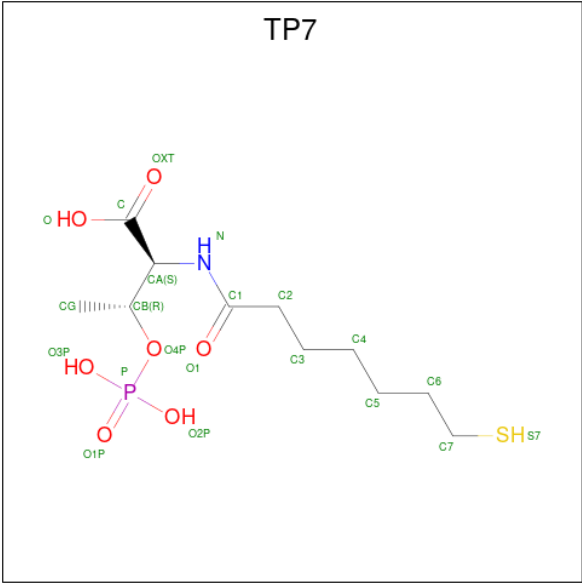
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	248	Total	C	N	O	S	32	0	0
			2044	1280	362	395	7			
3	F	248	Total	C	N	O	S	32	0	0
			2044	1280	362	395	7			

- Molecule 4 is FACTOR 430 (CCD ID: F43) (formula: C₄₂H₅₁N₆NiO₁₃).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total 62	C 42	N 6	Ni 1	O 13	0	0
4	D	1	Total 62	C 42	N 6	Ni 1	O 13	0	0

- Molecule 5 is Coenzyme B (CCD ID: TP7) (formula: C₁₁H₂₂NO₇PS).



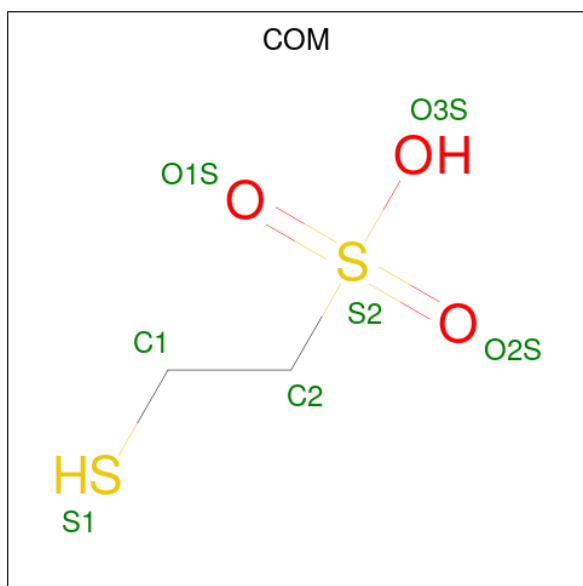
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	
5	A	1	Total	C	N	O	P	S	0	0
			21	11	1	7	1	1		

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Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
5	D	1	Total	C	N	O	P	S	0	0
			21	11	1	7	1	1		

- Molecule 6 is 1-THIOETHANESULFONIC ACID (CCD ID: COM) (formula: $C_2H_6O_3S_2$).

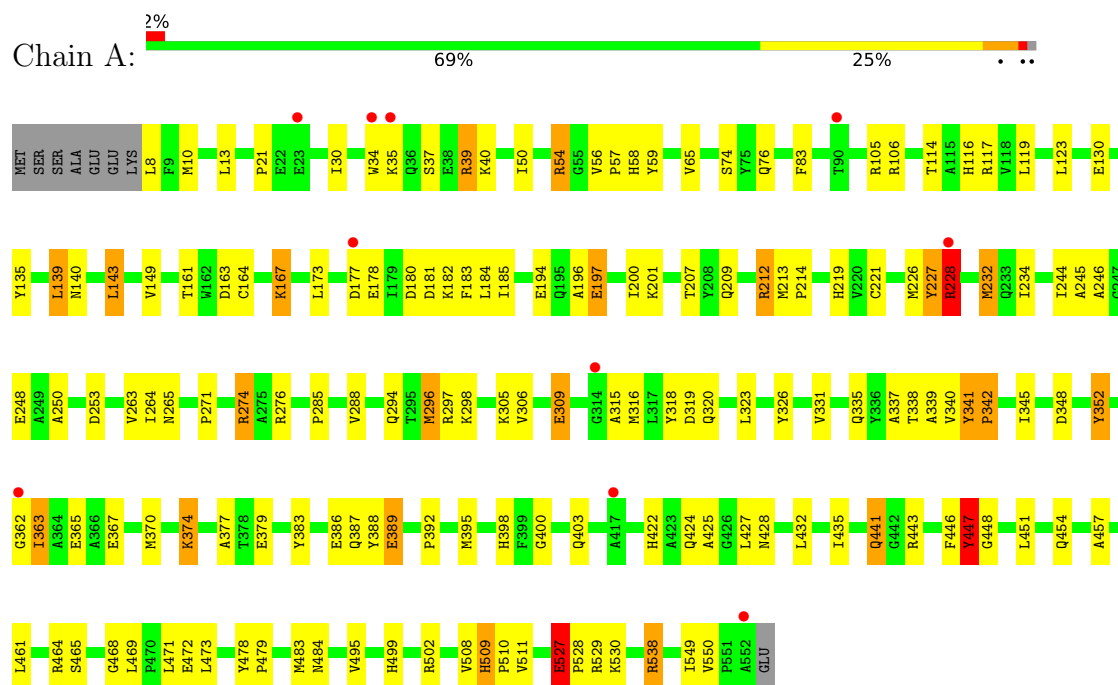


Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
6	A	1	Total	C	O	S	0	0
			7	2	3	2		
6	D	1	Total	C	O	S	0	0
			7	2	3	2		

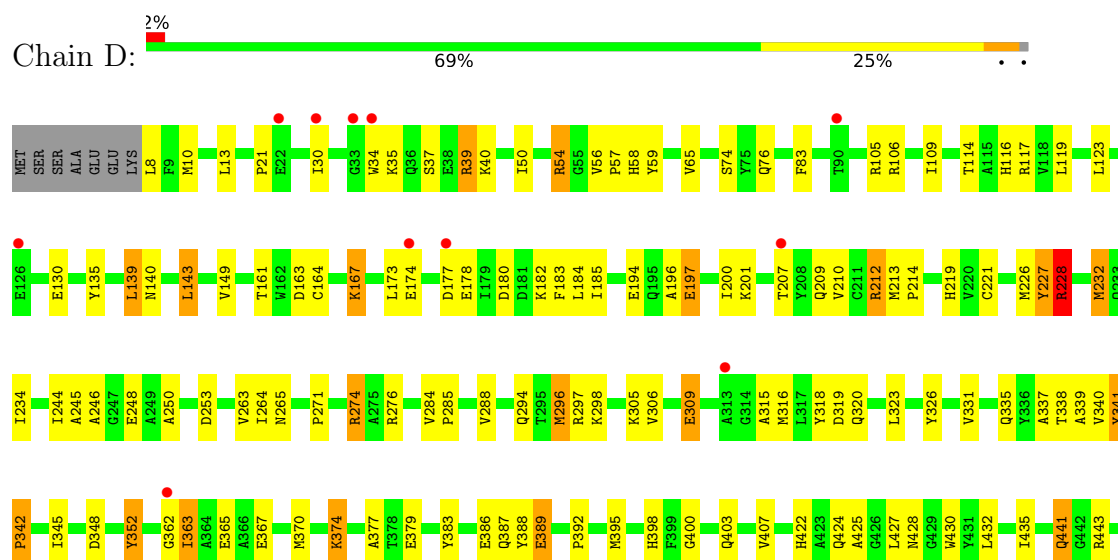
3 Residue-property plots

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: METHYL-COENZYME M REDUCTASE I ALPHA SUBUNIT

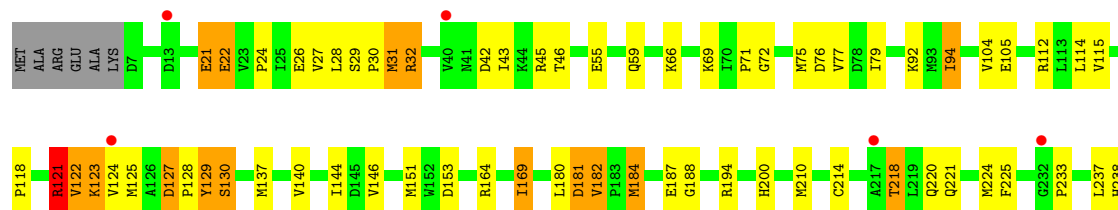


• Molecule 1: METHYL-COENZYME M REDUCTASE I ALPHA SUBUNIT

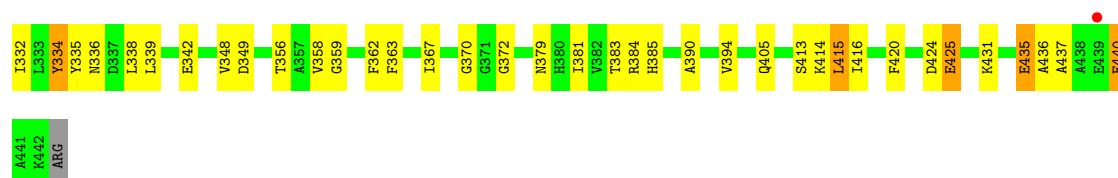
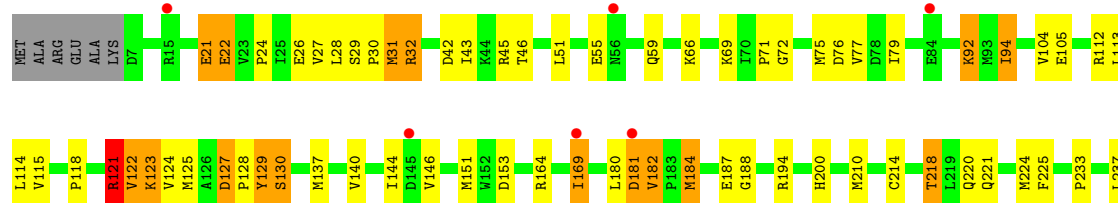




• Molecule 2: METHYL-COENZYME M REDUCTASE I BETA SUBUNIT

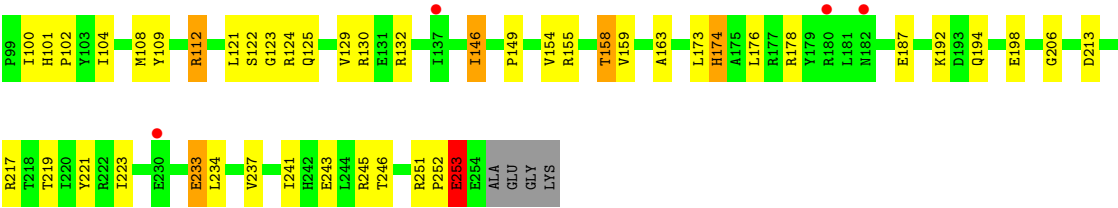


• Molecule 2: METHYL-COENZYME M REDUCTASE I BETA SUBUNIT

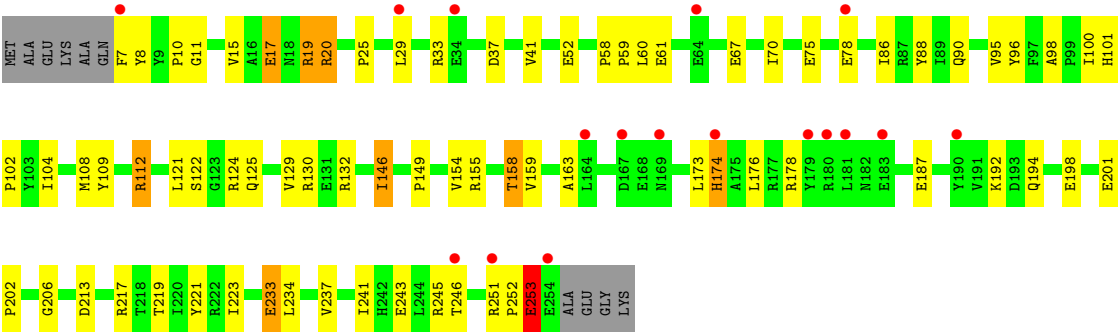


• Molecule 3: METHYL-COENZYME M REDUCTASE I GAMMA SUBUNIT





● Molecule 3: METHYL-COENZYME M REDUCTASE I GAMMA SUBUNIT



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	80.52Å 115.74Å 268.51Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.70 30.00 – 2.70	Depositor EDS
% Data completeness (in resolution range)	62.9 (30.00-2.70) 62.9 (30.00-2.70)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	5.32 (at 2.68Å)	Xtriage
Refinement program	CNS 0.3	Depositor
R, R_{free}	0.239 , 0.278 0.235 , 0.270	Depositor DCC
R_{free} test set	2196 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å ²)	32.1	Xtriage
Anisotropy	0.745	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.35 , 24.5	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	19402	wwPDB-VP
Average B, all atoms (Å ²)	25.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.71% of the height of the origin peak. No significant pseudotranslation is detected.*

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

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: COM, TP7, F43

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	0.37	0/4352	0.82	7/5897 (0.1%)
1	D	0.37	0/4352	0.82	7/5897 (0.1%)
2	B	0.38	0/3374	0.77	4/4573 (0.1%)
2	E	0.38	0/3374	0.77	4/4573 (0.1%)
3	C	0.34	0/2089	0.76	0/2827
3	F	0.34	0/2089	0.76	0/2827
All	All	0.37	0/19630	0.79	22/26594 (0.1%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	5
1	D	0	5
2	B	0	3
2	E	0	3
3	C	0	2
3	F	0	2
All	All	0	20

There are no bond length outliers.

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	121	ARG	NE-CZ-NH1	-6.44	115.06	121.50
2	E	121	ARG	NE-CZ-NH1	-6.42	115.08	121.50
1	D	342	PRO	N-CA-C	6.42	122.39	111.68
1	A	342	PRO	N-CA-C	6.41	122.39	111.68

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	509	HIS	CA-C-N	6.13	125.35	118.97
1	D	509	HIS	C-N-CA	6.13	125.35	118.97
1	A	509	HIS	CA-C-N	6.11	125.33	118.97
1	A	509	HIS	C-N-CA	6.11	125.33	118.97
1	D	228	ARG	NE-CZ-NH1	-5.43	116.06	121.50
1	A	527	GLU	CA-C-N	5.43	125.08	119.05
1	A	527	GLU	C-N-CA	5.43	125.08	119.05
1	D	527	GLU	CA-C-N	5.43	125.08	119.05
1	D	527	GLU	C-N-CA	5.43	125.08	119.05
2	E	146	VAL	N-CA-C	-5.40	107.59	112.12
2	E	105	GLU	CA-C-N	5.39	125.31	119.76
2	E	105	GLU	C-N-CA	5.39	125.31	119.76
1	A	228	ARG	NE-CZ-NH1	-5.38	116.12	121.50
2	B	105	GLU	CA-C-N	5.38	125.30	119.76
2	B	105	GLU	C-N-CA	5.38	125.30	119.76
2	B	146	VAL	N-CA-C	-5.33	107.64	112.12
1	A	178	GLU	N-CA-C	-5.20	106.73	114.64
1	D	178	GLU	N-CA-C	-5.19	106.75	114.64

There are no chirality outliers.

All (20) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	212	ARG	Sidechain
1	A	228	ARG	Sidechain
1	A	274	ARG	Sidechain
1	A	447	TYR	Sidechain
1	A	54	ARG	Sidechain
2	B	121	ARG	Sidechain
2	B	129	TYR	Sidechain
2	B	334	TYR	Sidechain
3	C	19	ARG	Sidechain
3	C	20	ARG	Sidechain
1	D	212	ARG	Sidechain
1	D	228	ARG	Sidechain
1	D	274	ARG	Sidechain
1	D	447	TYR	Sidechain
1	D	54	ARG	Sidechain
2	E	121	ARG	Sidechain
2	E	129	TYR	Sidechain
2	E	334	TYR	Sidechain
3	F	19	ARG	Sidechain

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Mol	Chain	Res	Type	Group
3	F	20	ARG	Sidechain

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	4251	0	4101	144	1
1	D	4251	0	4101	146	1
2	B	3316	0	3254	101	0
2	E	3316	0	3254	102	2
3	C	2044	0	1985	72	0
3	F	2044	0	1985	73	0
4	A	62	0	43	5	0
4	D	62	0	43	6	0
5	A	21	0	19	1	0
5	D	21	0	19	1	0
6	A	7	0	5	1	0
6	D	7	0	5	1	0
All	All	19402	0	18814	527	3

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 14.

All (527) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:118:PRO:HG2	2:B:121:ARG:HG3	1.48	0.95
2:E:118:PRO:HG2	2:E:121:ARG:HG3	1.47	0.94
2:E:257:VAL:HG21	2:E:316:MET:HE2	1.55	0.88
2:B:257:VAL:HG21	2:B:316:MET:HE2	1.55	0.86
1:D:309:GLU:HG3	1:D:528:PRO:HD2	1.58	0.85
1:A:309:GLU:HG3	1:A:528:PRO:HD2	1.58	0.85
2:E:286:LYS:HD2	2:E:296:LYS:HB3	1.59	0.83
1:D:338:THR:O	1:D:342:PRO:HD2	1.78	0.83
1:A:338:THR:O	1:A:342:PRO:HD2	1.79	0.83
2:B:286:LYS:HD2	2:B:296:LYS:HB3	1.60	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:339:ALA:CB	1:A:403:GLN:HB2	2.11	0.81
1:D:339:ALA:CB	1:D:403:GLN:HB2	2.11	0.81
1:D:395:MET:HE2	3:F:95:VAL:HG21	1.66	0.78
1:D:296:MET:HE2	1:D:306:VAL:HG21	1.65	0.77
1:D:335:GLN:HA	1:D:338:THR:OG1	1.85	0.77
1:A:335:GLN:HA	1:A:338:THR:OG1	1.85	0.77
1:A:296:MET:HG2	1:A:306:VAL:HG11	1.67	0.77
1:D:451:LEU:HD12	2:E:359:GLY:HA3	1.67	0.77
1:D:400:GLY:H	1:D:403:GLN:HE21	1.30	0.77
1:A:395:MET:HE2	3:C:95:VAL:HG21	1.66	0.76
1:A:400:GLY:H	1:A:403:GLN:HE21	1.30	0.76
1:A:296:MET:HE2	1:A:306:VAL:HG21	1.65	0.76
1:A:428:ASN:HD21	3:C:246:THR:HG21	1.49	0.76
1:D:454:GLN:NE2	3:F:245:ARG:HH22	1.83	0.76
1:D:296:MET:HG2	1:D:306:VAL:HG11	1.67	0.76
1:A:451:LEU:HD12	2:B:359:GLY:HA3	1.67	0.75
1:A:454:GLN:NE2	3:C:245:ARG:HH22	1.83	0.75
1:D:428:ASN:HD21	3:F:246:THR:HG21	1.49	0.74
1:D:443:ARG:NH1	3:F:101:HIS:HD2	1.85	0.74
1:D:363:ILE:HD12	1:D:363:ILE:H	1.53	0.73
1:A:363:ILE:H	1:A:363:ILE:HD12	1.53	0.73
1:A:443:ARG:NH1	3:C:101:HIS:HD2	1.85	0.73
3:C:33:ARG:HH11	3:C:149:PRO:HD3	1.54	0.72
1:A:139:LEU:HD11	1:A:209:GLN:HE21	1.55	0.72
1:D:139:LEU:HD11	1:D:209:GLN:HE21	1.55	0.71
3:F:33:ARG:HH11	3:F:149:PRO:HD3	1.54	0.71
2:B:129:TYR:CE1	2:B:181:ASP:HA	2.27	0.70
3:C:19:ARG:HH11	3:C:104:ILE:HD11	1.57	0.70
3:F:17:GLU:HA	3:F:17:GLU:OE1	1.91	0.70
3:C:17:GLU:OE1	3:C:17:GLU:HA	1.91	0.70
1:D:58:HIS:ND1	1:D:59:TYR:N	2.40	0.69
1:A:58:HIS:ND1	1:A:59:TYR:N	2.40	0.69
2:B:194:ARG:NH2	2:B:220:GLN:HE22	1.90	0.69
6:A:1555:COM:O1S	1:D:446:PHE:HB2	1.93	0.69
2:B:31:MET:HE2	2:E:121:ARG:HA	1.75	0.69
2:E:194:ARG:NH2	2:E:220:GLN:HE22	1.90	0.68
2:E:129:TYR:CE1	2:E:181:ASP:HA	2.26	0.68
3:C:19:ARG:NH2	3:C:221:TYR:HE1	1.92	0.68
3:F:19:ARG:NH2	3:F:221:TYR:HE1	1.92	0.68
2:B:121:ARG:HA	2:E:31:MET:HE2	1.76	0.68
1:D:443:ARG:HH11	3:F:101:HIS:HD2	1.41	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:341:TYR:CD1	1:A:342:PRO:HD3	2.29	0.68
1:A:446:PHE:HB2	6:D:1555:COM:O1S	1.94	0.67
1:D:341:TYR:CD1	1:D:342:PRO:HD3	2.29	0.67
1:A:443:ARG:HH11	3:C:101:HIS:HD2	1.41	0.67
3:F:129:VAL:HG22	3:F:130:ARG:H	1.60	0.67
3:F:19:ARG:HH11	3:F:104:ILE:HD11	1.57	0.67
1:A:274:ARG:NH1	2:B:381:ILE:HD13	2.10	0.67
2:B:304:ASN:HD21	2:B:349:ASP:H	1.43	0.67
3:C:129:VAL:HG22	3:C:130:ARG:H	1.60	0.66
3:F:252:PRO:O	3:F:253:GLU:HB2	1.94	0.66
1:A:549:ILE:HA	1:D:538:ARG:HG2	1.78	0.66
3:C:252:PRO:O	3:C:253:GLU:HB2	1.94	0.66
3:C:122:SER:HB3	4:D:1553:F43:O8C	1.96	0.65
1:D:143:LEU:HD13	1:D:164:CYS:SG	2.36	0.65
2:E:304:ASN:HD21	2:E:349:ASP:H	1.43	0.65
1:D:274:ARG:NH1	2:E:381:ILE:HD13	2.10	0.65
2:E:214:CYS:O	2:E:218:THR:HG23	1.97	0.65
1:A:143:LEU:HD13	1:A:164:CYS:SG	2.36	0.65
4:A:1553:F43:O8C	3:F:122:SER:HB3	1.96	0.65
1:A:65:VAL:HG21	1:D:149:VAL:O	1.97	0.65
2:B:129:TYR:CE2	2:B:182:VAL:HG23	2.33	0.64
1:D:338:THR:O	1:D:342:PRO:CD	2.45	0.64
2:E:292:PHE:C	2:E:292:PHE:CD2	2.75	0.64
1:A:149:VAL:O	1:D:65:VAL:HG21	1.98	0.64
1:A:538:ARG:HG2	1:D:549:ILE:HA	1.78	0.64
2:B:292:PHE:C	2:B:292:PHE:CD2	2.74	0.64
2:B:214:CYS:O	2:B:218:THR:HG23	1.96	0.64
1:A:34:TRP:HE1	1:A:40:LYS:HB3	1.63	0.64
2:E:129:TYR:CE2	2:E:182:VAL:HG23	2.33	0.64
2:B:244:TYR:HB3	2:B:309:ALA:HB2	1.80	0.63
2:E:244:TYR:HB3	2:E:309:ALA:HB2	1.80	0.63
1:A:139:LEU:CD1	1:A:209:GLN:HE21	2.12	0.63
1:D:34:TRP:HE1	1:D:40:LYS:HB3	1.63	0.63
1:A:105:ARG:O	1:A:226:MET:HG3	1.98	0.63
1:A:338:THR:O	1:A:342:PRO:CD	2.45	0.63
1:D:139:LEU:CD1	1:D:209:GLN:HE21	2.12	0.63
1:D:105:ARG:O	1:D:226:MET:HG3	1.98	0.62
3:C:29:LEU:H	3:C:29:LEU:HD12	1.64	0.62
1:A:484:ASN:HA	5:A:1554:TP7:S7	2.40	0.62
1:D:400:GLY:H	1:D:403:GLN:NE2	1.98	0.61
2:E:304:ASN:ND2	2:E:349:ASP:H	1.98	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:29:LEU:HD12	3:F:29:LEU:H	1.64	0.61
1:A:443:ARG:NH1	3:C:101:HIS:CD2	2.68	0.61
1:A:209:GLN:NE2	1:A:234:ILE:HG12	2.16	0.61
2:B:128:PRO:HB2	2:B:180:LEU:HD13	1.82	0.61
1:D:443:ARG:NH1	3:F:101:HIS:CD2	2.68	0.61
2:B:304:ASN:ND2	2:B:349:ASP:H	1.98	0.61
1:A:441:GLN:HE21	1:A:441:GLN:HA	1.66	0.60
1:D:484:ASN:HA	5:D:1554:TP7:S7	2.40	0.60
1:D:209:GLN:NE2	1:D:234:ILE:HG12	2.16	0.60
1:D:441:GLN:HA	1:D:441:GLN:HE21	1.66	0.60
2:E:128:PRO:HB2	2:E:180:LEU:HD13	1.82	0.60
3:F:8:TYR:HB2	3:F:20:ARG:HG2	1.83	0.60
1:D:30:ILE:O	1:D:30:ILE:HG22	2.02	0.60
2:B:271:ARG:NH2	2:B:342:GLU:OE1	2.35	0.59
1:A:76:GLN:HB2	1:A:83:PHE:CZ	2.38	0.59
1:D:39:ARG:HE	1:D:538:ARG:NH2	2.00	0.59
1:A:472:GLU:HG3	1:A:495:VAL:HG13	1.84	0.59
3:C:8:TYR:HB2	3:C:20:ARG:HG2	1.82	0.59
1:A:362:GLY:HA3	1:A:365:GLU:HG3	1.85	0.59
1:D:472:GLU:HG3	1:D:495:VAL:HG13	1.84	0.59
1:A:400:GLY:H	1:A:403:GLN:NE2	1.98	0.59
1:D:76:GLN:HB2	1:D:83:PHE:CZ	2.38	0.59
1:A:39:ARG:HE	1:A:538:ARG:NH2	2.00	0.58
1:D:443:ARG:NH2	3:F:122:SER:O	2.36	0.58
2:E:271:ARG:NH2	2:E:342:GLU:OE1	2.35	0.58
1:A:30:ILE:HG22	1:A:30:ILE:O	2.02	0.58
1:A:443:ARG:NH2	3:C:122:SER:O	2.36	0.58
3:C:19:ARG:HH22	3:C:221:TYR:HE1	1.51	0.58
1:D:483:MET:HE1	2:E:385:HIS:HE2	1.68	0.58
1:A:483:MET:HE1	2:B:385:HIS:HE2	1.68	0.58
1:D:362:GLY:HA3	1:D:365:GLU:HG3	1.85	0.58
1:D:196:ALA:O	1:D:200:ILE:HG12	2.04	0.57
1:A:377:ALA:HB3	1:A:432:LEU:HD23	1.86	0.57
2:E:342:GLU:OE1	3:F:7:PHE:HB2	2.04	0.57
1:A:448:GLY:HA2	2:B:358:VAL:HG12	1.85	0.57
2:B:342:GLU:OE1	3:C:7:PHE:HB2	2.04	0.57
3:C:15:VAL:O	3:C:19:ARG:HG3	2.05	0.57
2:B:320:GLY:O	2:B:323:ARG:HD3	2.04	0.57
1:D:377:ALA:HB3	1:D:432:LEU:HD23	1.86	0.57
3:F:174:HIS:NE2	3:F:178:ARG:HD2	2.19	0.57
1:D:448:GLY:HA2	2:E:358:VAL:HG12	1.85	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:174:HIS:NE2	3:C:178:ARG:HD2	2.19	0.56
1:A:337:ALA:O	1:A:340:VAL:HG22	2.06	0.56
2:E:320:GLY:O	2:E:323:ARG:HD3	2.04	0.56
1:A:527:GLU:HG2	1:A:530:LYS:HD2	1.88	0.56
1:D:337:ALA:O	1:D:340:VAL:HG22	2.06	0.56
2:E:122:VAL:O	2:E:124:VAL:N	2.38	0.56
3:F:19:ARG:HH22	3:F:221:TYR:HE1	1.52	0.56
3:C:158:THR:HG22	1:D:149:VAL:O	2.05	0.56
1:A:196:ALA:O	1:A:200:ILE:HG12	2.04	0.56
2:E:316:MET:HE3	3:F:70:ILE:CG2	2.36	0.56
2:B:316:MET:HE3	3:C:70:ILE:CG2	2.36	0.56
1:D:527:GLU:HG2	1:D:530:LYS:HD2	1.88	0.56
3:F:15:VAL:O	3:F:19:ARG:HG3	2.05	0.56
1:A:182:LYS:HD2	1:D:57:PRO:HD3	1.88	0.55
2:B:122:VAL:O	2:B:124:VAL:N	2.38	0.55
1:D:39:ARG:HE	1:D:538:ARG:HH22	1.54	0.55
1:A:39:ARG:HE	1:A:538:ARG:HH22	1.54	0.55
3:C:78:GLU:HB3	3:C:132:ARG:HD2	1.89	0.55
1:D:309:GLU:CG	1:D:528:PRO:HD2	2.35	0.54
1:D:386:GLU:HG2	3:F:223:ILE:HD13	1.89	0.54
1:A:386:GLU:HG2	3:C:223:ILE:HD13	1.89	0.54
3:F:78:GLU:HB3	3:F:132:ARG:HD2	1.89	0.54
1:D:315:ALA:O	1:D:319:ASP:HB2	2.08	0.54
2:E:316:MET:HE3	3:F:70:ILE:HG23	1.88	0.54
1:A:57:PRO:HD3	1:D:182:LYS:HD2	1.89	0.54
1:A:464:ARG:HH22	2:B:238:HIS:HE1	1.56	0.54
1:D:464:ARG:HH22	2:E:238:HIS:HE1	1.56	0.54
1:A:246:ALA:HB1	4:A:1553:F43:H9B1	1.90	0.54
1:A:315:ALA:O	1:A:319:ASP:HB2	2.08	0.54
2:B:316:MET:HE3	3:C:70:ILE:HG23	1.88	0.54
1:A:34:TRP:NE1	1:A:40:LYS:HB3	2.22	0.54
1:A:149:VAL:O	3:F:158:THR:HG22	2.06	0.54
1:A:400:GLY:N	1:A:403:GLN:HE21	2.04	0.54
2:B:336:ASN:ND2	2:B:348:VAL:H	2.06	0.54
1:D:34:TRP:NE1	1:D:40:LYS:HB3	2.22	0.54
1:A:309:GLU:CG	1:A:528:PRO:HD2	2.35	0.54
4:A:1553:F43:O8D	1:D:400:GLY:HA3	2.08	0.53
2:B:253:VAL:O	2:B:257:VAL:HG23	2.09	0.53
2:B:200:HIS:HA	2:B:413:SER:OG	2.09	0.53
3:C:129:VAL:HG22	3:C:130:ARG:N	2.22	0.53
2:E:253:VAL:O	2:E:257:VAL:HG23	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:336:ASN:ND2	2:E:348:VAL:H	2.06	0.53
2:E:390:ALA:O	2:E:394:VAL:HG23	2.08	0.53
1:A:50:ILE:HG21	1:A:54:ARG:HH21	1.73	0.53
2:B:24:PRO:HB2	2:B:26:GLU:OE2	2.09	0.53
2:B:390:ALA:O	2:B:394:VAL:HG23	2.08	0.53
1:D:34:TRP:CH2	1:D:35:LYS:HE3	2.43	0.53
1:A:34:TRP:CH2	1:A:35:LYS:HE3	2.43	0.53
1:D:400:GLY:N	1:D:403:GLN:HE21	2.04	0.53
1:A:464:ARG:HA	2:E:137:MET:CE	2.39	0.53
3:C:29:LEU:HD23	3:C:146:ILE:HD12	1.89	0.53
1:D:352:TYR:CD1	1:D:352:TYR:C	2.86	0.53
3:F:129:VAL:HG22	3:F:130:ARG:N	2.22	0.53
1:A:428:ASN:HD21	3:C:246:THR:CG2	2.22	0.53
2:B:137:MET:CE	1:D:464:ARG:HA	2.39	0.53
1:A:167:LYS:HB3	1:A:185:ILE:HG13	1.91	0.53
1:A:338:THR:HB	1:A:342:PRO:CG	2.39	0.53
2:E:194:ARG:HH21	2:E:220:GLN:HE22	1.56	0.53
3:F:213:ASP:O	3:F:217:ARG:HG2	2.09	0.53
3:F:174:HIS:CD2	3:F:178:ARG:HH21	2.27	0.53
1:A:331:VAL:HB	4:D:1553:F43:H9A1	1.90	0.52
1:A:352:TYR:CD1	1:A:352:TYR:C	2.86	0.52
1:D:338:THR:HB	1:D:342:PRO:CG	2.39	0.52
3:C:174:HIS:CD2	3:C:178:ARG:HH21	2.27	0.52
2:E:24:PRO:HB2	2:E:26:GLU:OE2	2.09	0.52
2:E:266:VAL:O	2:E:270:VAL:HG23	2.09	0.52
4:A:1553:F43:H9A1	1:D:331:VAL:HB	1.90	0.52
2:B:127:ASP:O	2:B:130:SER:HB2	2.09	0.52
2:E:200:HIS:HA	2:E:413:SER:OG	2.09	0.52
3:C:213:ASP:O	3:C:217:ARG:HG2	2.09	0.52
2:E:127:ASP:O	2:E:130:SER:HB2	2.09	0.52
1:A:219:HIS:HA	1:D:219:HIS:O	2.10	0.52
1:A:227:TYR:CD1	1:A:227:TYR:C	2.88	0.52
2:B:124:VAL:HG11	2:E:30:PRO:HB2	1.92	0.52
1:D:246:ALA:HB1	4:D:1553:F43:H9B1	1.90	0.52
3:F:29:LEU:HD23	3:F:146:ILE:HD12	1.90	0.52
1:A:209:GLN:HE22	1:A:234:ILE:HG12	1.74	0.52
1:D:227:TYR:CD1	1:D:227:TYR:C	2.88	0.52
1:D:209:GLN:HE22	1:D:234:ILE:HG12	1.74	0.52
2:B:118:PRO:HG2	2:B:121:ARG:CG	2.33	0.52
2:B:266:VAL:O	2:B:270:VAL:HG23	2.09	0.52
1:D:50:ILE:HG21	1:D:54:ARG:HH21	1.73	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:289:LEU:HB3	3:C:233:GLU:OE1	2.11	0.51
3:F:11:GLY:O	3:F:20:ARG:NH2	2.37	0.51
1:A:50:ILE:HG22	1:A:54:ARG:HE	1.76	0.51
1:A:219:HIS:O	1:D:219:HIS:HA	2.09	0.51
2:B:30:PRO:HB2	2:E:124:VAL:HG11	1.92	0.51
1:D:167:LYS:HB3	1:D:185:ILE:HG13	1.91	0.51
2:E:257:VAL:HG21	2:E:316:MET:CE	2.35	0.51
1:A:245:ALA:HB2	3:F:88:TYR:CZ	2.46	0.51
2:E:323:ARG:HG3	3:F:60:LEU:HD11	1.93	0.51
2:B:194:ARG:HH21	2:B:220:GLN:HE22	1.56	0.51
2:B:328:VAL:HG21	2:B:394:VAL:HA	1.93	0.51
3:C:88:TYR:CZ	1:D:245:ALA:HB2	2.46	0.51
2:E:289:LEU:HB3	3:F:233:GLU:OE1	2.10	0.51
1:A:135:TYR:OH	1:A:234:ILE:HG23	2.11	0.51
1:A:400:GLY:HA3	4:D:1553:F43:O8D	2.09	0.51
1:A:106:ARG:HD2	1:A:213:MET:O	2.11	0.51
1:A:10:MET:SD	1:A:21:PRO:HG2	2.52	0.50
1:A:232:MET:HG3	2:E:367:ILE:HD12	1.94	0.50
2:B:323:ARG:HG3	3:C:60:LEU:HD11	1.93	0.50
1:D:10:MET:SD	1:D:21:PRO:HG2	2.52	0.50
1:D:483:MET:HE1	2:E:385:HIS:NE2	2.27	0.50
1:D:135:TYR:OH	1:D:234:ILE:HG23	2.11	0.50
1:A:338:THR:HB	1:A:342:PRO:HG3	1.93	0.50
2:E:328:VAL:HG21	2:E:394:VAL:HA	1.93	0.50
3:F:29:LEU:HD12	3:F:29:LEU:N	2.26	0.50
2:B:257:VAL:HG21	2:B:316:MET:CE	2.35	0.50
3:C:29:LEU:HD12	3:C:29:LEU:N	2.26	0.50
2:E:118:PRO:HG2	2:E:121:ARG:CG	2.32	0.50
2:E:124:VAL:O	2:E:124:VAL:HG13	2.11	0.50
1:A:483:MET:HE1	2:B:385:HIS:NE2	2.27	0.49
1:D:50:ILE:HG22	1:D:54:ARG:HE	1.76	0.49
1:D:194:GLU:O	1:D:197:GLU:HG3	2.13	0.49
1:A:232:MET:HE2	2:E:367:ILE:O	2.12	0.49
1:D:338:THR:HB	1:D:342:PRO:HG3	1.93	0.49
1:D:106:ARG:HD2	1:D:213:MET:O	2.11	0.49
1:A:502:ARG:CZ	2:E:72:GLY:HA3	2.43	0.49
1:A:509:HIS:HD2	1:A:511:VAL:H	1.60	0.49
3:C:19:ARG:NH1	3:C:219:THR:O	2.45	0.49
1:A:194:GLU:O	1:A:197:GLU:HG3	2.13	0.49
2:B:367:ILE:O	1:D:232:MET:HE2	2.12	0.49
3:C:33:ARG:NH1	3:C:149:PRO:HD3	2.25	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:428:ASN:HD21	3:F:246:THR:CG2	2.22	0.49
2:B:210:MET:HG2	3:C:70:ILE:HD11	1.95	0.49
2:B:336:ASN:HD21	2:B:348:VAL:HG23	1.77	0.49
1:D:422:HIS:CD2	1:D:425:ALA:H	2.30	0.49
3:F:19:ARG:NH1	3:F:104:ILE:HD11	2.26	0.49
3:F:19:ARG:NH1	3:F:219:THR:O	2.45	0.49
1:A:422:HIS:CD2	1:A:425:ALA:H	2.30	0.49
2:B:425:GLU:CD	2:B:425:GLU:H	2.21	0.49
1:A:167:LYS:HG3	1:A:183:PHE:C	2.38	0.49
1:D:167:LYS:HG3	1:D:183:PHE:C	2.38	0.48
2:E:32:ARG:O	2:E:440:GLU:HG2	2.13	0.48
2:E:210:MET:HG2	3:F:70:ILE:HD11	1.95	0.48
2:B:124:VAL:O	2:B:124:VAL:HG13	2.11	0.48
2:B:326:GLN:HE22	3:C:86:ILE:HG21	1.79	0.48
2:E:336:ASN:HD21	2:E:348:VAL:HG23	1.77	0.48
1:A:454:GLN:HE22	3:C:245:ARG:HH22	1.60	0.48
2:B:367:ILE:HD12	1:D:232:MET:HG3	1.94	0.48
3:C:19:ARG:NH1	3:C:104:ILE:HD11	2.26	0.48
2:B:255:ASP:HB3	2:B:276:ARG:HH12	1.79	0.48
3:F:33:ARG:NH1	3:F:149:PRO:HD3	2.25	0.48
2:B:32:ARG:O	2:B:440:GLU:HG2	2.13	0.48
3:C:102:PRO:HA	3:C:125:GLN:HG3	1.96	0.48
1:A:316:MET:HA	1:A:320:GLN:HE21	1.79	0.48
2:B:72:GLY:HA3	1:D:502:ARG:CZ	2.43	0.48
2:E:255:ASP:HB3	2:E:276:ARG:HH12	1.79	0.48
1:D:245:ALA:HB3	1:D:248:GLU:HB2	1.96	0.48
2:E:416:ILE:O	2:E:420:PHE:HB2	2.14	0.48
3:F:102:PRO:HA	3:F:125:GLN:HG3	1.96	0.48
1:A:245:ALA:HB3	1:A:248:GLU:HB2	1.96	0.47
3:F:7:PHE:O	3:F:8:TYR:HB2	2.15	0.47
1:D:509:HIS:HD2	1:D:511:VAL:H	1.61	0.47
3:C:7:PHE:O	3:C:8:TYR:HB2	2.15	0.47
3:F:237:VAL:O	3:F:241:ILE:HG12	2.15	0.47
2:B:151:MET:HG2	1:D:461:LEU:HD22	1.95	0.47
2:B:416:ILE:O	2:B:420:PHE:HB2	2.14	0.47
1:A:461:LEU:HD22	2:E:151:MET:HG2	1.96	0.47
2:B:140:VAL:O	2:B:144:ILE:HG12	2.15	0.47
1:D:58:HIS:CG	1:D:59:TYR:H	2.25	0.47
2:E:425:GLU:CD	2:E:425:GLU:H	2.21	0.47
1:A:479:PRO:O	2:B:385:HIS:HE1	1.97	0.47
1:D:392:PRO:HB3	3:F:96:TYR:OH	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:436:ALA:O	2:E:440:GLU:HB2	2.14	0.47
3:C:25:PRO:HA	3:C:112:ARG:NH2	2.30	0.47
2:B:436:ALA:O	2:B:440:GLU:HB2	2.14	0.47
3:C:11:GLY:O	3:C:20:ARG:NH2	2.37	0.47
1:D:316:MET:HA	1:D:320:GLN:HE21	1.79	0.47
2:E:75:MET:CE	2:E:153:ASP:HB3	2.45	0.47
3:F:25:PRO:HA	3:F:112:ARG:NH2	2.30	0.47
1:A:392:PRO:HB3	3:C:96:TYR:OH	2.15	0.46
2:B:75:MET:CE	2:B:153:ASP:HB3	2.45	0.46
2:E:326:GLN:HE22	3:F:86:ILE:HG21	1.79	0.46
1:D:479:PRO:O	2:E:385:HIS:HE1	1.97	0.46
2:E:221:GLN:HG3	2:E:242:TYR:HB2	1.97	0.46
2:E:328:VAL:O	2:E:332:ILE:HG13	2.16	0.46
3:F:19:ARG:HD2	3:F:104:ILE:HG12	1.97	0.46
2:B:431:LYS:O	2:B:435:GLU:HB2	2.15	0.46
2:E:431:LYS:O	2:E:435:GLU:HB2	2.15	0.46
3:C:237:VAL:O	3:C:241:ILE:HG12	2.15	0.46
1:A:161:THR:HG22	1:A:214:PRO:HB3	1.97	0.46
1:A:443:ARG:HH11	3:C:101:HIS:CD2	2.26	0.46
1:D:294:GLN:O	1:D:297:ARG:HB2	2.16	0.46
1:A:285:PRO:HD2	1:A:288:VAL:HB	1.97	0.46
2:B:42:ASP:HA	2:B:45:ARG:HG2	1.98	0.46
1:D:161:THR:HG22	1:D:214:PRO:HB3	1.97	0.46
2:E:69:LYS:O	2:E:71:PRO:HD3	2.16	0.46
1:A:370:MET:HG2	3:C:243:GLU:HG2	1.98	0.46
1:A:58:HIS:CG	1:A:59:TYR:H	2.25	0.46
1:A:294:GLN:O	1:A:297:ARG:HB2	2.16	0.46
3:C:19:ARG:HH11	3:C:104:ILE:CD1	2.27	0.46
3:F:121:LEU:HD13	3:F:124:ARG:HG3	1.97	0.46
2:B:221:GLN:HG3	2:B:242:TYR:HB2	1.98	0.46
1:D:227:TYR:C	1:D:227:TYR:HD1	2.24	0.46
2:E:140:VAL:O	2:E:144:ILE:HG12	2.15	0.46
1:A:227:TYR:C	1:A:227:TYR:HD1	2.24	0.45
1:D:388:TYR:OH	1:D:398:HIS:HD2	1.99	0.45
2:E:414:LYS:HG3	2:E:415:LEU:H	1.80	0.45
2:B:69:LYS:O	2:B:71:PRO:HD3	2.16	0.45
2:B:328:VAL:O	2:B:332:ILE:HG13	2.16	0.45
1:D:8:LEU:HB2	1:D:348:ASP:HB2	1.98	0.45
1:D:339:ALA:HB1	1:D:403:GLN:HB2	1.96	0.45
1:D:370:MET:HG2	3:F:243:GLU:HG2	1.98	0.45
2:E:363:PHE:O	2:E:370:GLY:HA3	2.15	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:169:ILE:HD12	2:B:169:ILE:HA	1.81	0.45
1:D:454:GLN:HE22	3:F:245:ARG:HH22	1.60	0.45
2:E:31:MET:HE2	2:E:31:MET:HB3	1.84	0.45
2:E:42:ASP:HA	2:E:45:ARG:HG2	1.98	0.45
3:C:19:ARG:HD2	3:C:104:ILE:HG12	1.97	0.45
3:C:176:LEU:HD12	3:C:178:ARG:NH1	2.31	0.45
1:D:285:PRO:HD2	1:D:288:VAL:HB	1.97	0.45
1:D:228:ARG:HH11	1:D:228:ARG:HG3	1.82	0.45
2:E:293:LYS:CG	3:F:7:PHE:HZ	2.30	0.45
1:A:8:LEU:HB2	1:A:348:ASP:HB2	1.98	0.45
2:B:414:LYS:HG3	2:B:415:LEU:H	1.80	0.45
1:A:271:PRO:HB3	2:E:169:ILE:HD11	1.98	0.45
1:A:339:ALA:HB1	1:A:403:GLN:HB2	1.96	0.45
2:B:55:GLU:HG3	2:B:79:ILE:HG12	1.99	0.45
2:B:363:PHE:O	2:B:370:GLY:HA3	2.16	0.45
3:F:176:LEU:HD12	3:F:178:ARG:NH1	2.31	0.45
2:B:293:LYS:CG	3:C:7:PHE:HZ	2.30	0.45
1:D:54:ARG:HD3	1:D:56:VAL:HB	1.98	0.45
1:A:228:ARG:HG3	1:A:228:ARG:HH11	1.82	0.45
2:B:194:ARG:NH1	2:B:384:ARG:O	2.50	0.45
3:C:121:LEU:HD13	3:C:124:ARG:HG3	1.97	0.45
1:D:114:THR:HG22	1:D:117:ARG:NH2	2.32	0.45
2:E:356:THR:HG23	2:E:383:THR:HA	1.98	0.45
1:A:388:TYR:OH	1:A:398:HIS:HD2	1.99	0.44
2:B:169:ILE:HD11	1:D:271:PRO:HB3	1.99	0.44
3:C:155:ARG:HD3	3:C:159:VAL:HA	1.99	0.44
1:D:116:HIS:HA	1:D:119:LEU:HD12	1.99	0.44
3:F:19:ARG:HH11	3:F:104:ILE:CD1	2.27	0.44
2:B:356:THR:HG23	2:B:383:THR:HA	1.98	0.44
1:A:54:ARG:HD3	1:A:56:VAL:HB	1.99	0.44
1:A:339:ALA:HB2	1:A:403:GLN:HB2	1.98	0.44
1:A:116:HIS:HA	1:A:119:LEU:HD12	1.99	0.44
1:D:228:ARG:HH11	1:D:228:ARG:CG	2.30	0.44
2:B:181:ASP:O	2:B:182:VAL:O	2.36	0.44
2:B:194:ARG:HH21	2:B:220:GLN:NE2	2.16	0.44
2:E:334:TYR:O	2:E:338:LEU:HG	2.18	0.44
1:A:464:ARG:HA	2:E:137:MET:HE2	2.00	0.44
2:E:290:PRO:O	2:E:291:SER:CB	2.66	0.44
3:C:108:MET:HE3	3:C:109:TYR:CE2	2.53	0.44
2:E:55:GLU:HG3	2:E:79:ILE:HG12	1.99	0.44
3:F:192:LYS:HG2	3:F:198:GLU:HA	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:228:ARG:HH11	1:A:228:ARG:CG	2.30	0.44
2:B:21:GLU:HB3	2:B:22:GLU:H	1.62	0.44
2:B:290:PRO:O	2:B:291:SER:CB	2.66	0.44
3:F:108:MET:HE3	3:F:109:TYR:CE2	2.53	0.44
1:A:39:ARG:HA	1:A:39:ARG:HD3	1.39	0.43
1:A:114:THR:HG22	1:A:117:ARG:NH2	2.32	0.43
2:B:46:THR:HG23	2:B:114:LEU:HD11	2.00	0.43
2:B:125:MET:HE3	2:B:127:ASP:O	2.18	0.43
1:D:422:HIS:CD2	1:D:422:HIS:C	2.96	0.43
3:C:192:LYS:HG2	3:C:198:GLU:HA	2.00	0.43
1:D:464:ARG:HH22	2:E:238:HIS:CE1	2.35	0.43
2:E:265:THR:O	2:E:269:VAL:HG23	2.18	0.43
3:F:155:ARG:HD3	3:F:159:VAL:HA	1.99	0.43
1:A:464:ARG:HH22	2:B:238:HIS:CE1	2.35	0.43
2:E:194:ARG:NH1	2:E:384:ARG:O	2.50	0.43
1:A:383:TYR:O	1:A:387:GLN:HG2	2.19	0.43
2:B:210:MET:CG	3:C:70:ILE:HD11	2.49	0.43
2:B:265:THR:O	2:B:269:VAL:HG23	2.18	0.43
2:B:290:PRO:O	2:B:291:SER:HB2	2.19	0.43
2:E:194:ARG:HH21	2:E:220:GLN:NE2	2.16	0.43
2:E:221:GLN:O	2:E:225:PHE:HD1	2.02	0.43
1:A:422:HIS:CD2	1:A:422:HIS:C	2.96	0.43
2:B:27:VAL:HG11	2:B:437:ALA:O	2.19	0.43
2:B:27:VAL:HG13	2:B:440:GLU:HB3	2.01	0.43
2:B:221:GLN:O	2:B:225:PHE:HD1	2.02	0.43
2:B:334:TYR:O	2:B:338:LEU:HG	2.18	0.43
2:E:27:VAL:HG11	2:E:437:ALA:O	2.19	0.43
1:D:457:ALA:HB1	3:F:246:THR:HG23	2.00	0.43
2:E:273:VAL:HG21	2:E:335:TYR:OH	2.18	0.43
1:A:427:LEU:HD13	1:A:471:LEU:HD13	2.00	0.43
1:A:441:GLN:HE21	1:A:441:GLN:CA	2.32	0.43
2:B:94:ILE:HG23	2:B:118:PRO:HD2	2.01	0.43
1:D:422:HIS:HD2	1:D:424:GLN:N	2.17	0.43
1:D:305:LYS:O	1:D:309:GLU:HB2	2.19	0.42
2:E:46:THR:HG23	2:E:114:LEU:HD11	2.00	0.42
2:E:181:ASP:O	2:E:182:VAL:O	2.36	0.42
2:E:194:ARG:HD2	2:E:220:GLN:OE1	2.19	0.42
1:A:318:TYR:O	1:A:323:LEU:HG	2.19	0.42
2:B:137:MET:HE2	1:D:464:ARG:HA	2.00	0.42
1:D:318:TYR:O	1:D:323:LEU:HG	2.19	0.42
1:D:454:GLN:HE21	3:F:245:ARG:HH22	1.65	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:21:GLU:HB3	2:E:22:GLU:H	1.61	0.42
2:E:125:MET:HE3	2:E:127:ASP:O	2.18	0.42
1:A:232:MET:N	1:A:232:MET:HE3	2.35	0.42
1:A:296:MET:CE	1:A:306:VAL:HG21	2.43	0.42
2:B:194:ARG:HD2	2:B:220:GLN:OE1	2.19	0.42
1:D:296:MET:CE	1:D:306:VAL:HG21	2.43	0.42
1:A:173:LEU:HD21	1:A:200:ILE:HD12	2.01	0.42
1:A:457:ALA:HB1	3:C:246:THR:HG23	2.00	0.42
1:A:468:GLY:O	1:A:469:LEU:HB2	2.19	0.42
2:E:187:GLU:HG3	2:E:379:ASN:O	2.20	0.42
2:E:210:MET:CG	3:F:70:ILE:HD11	2.49	0.42
3:F:10:PRO:HG3	3:F:237:VAL:HG11	2.02	0.42
1:A:345:ILE:HD12	1:A:398:HIS:CE1	2.55	0.42
1:D:232:MET:HE3	1:D:232:MET:N	2.35	0.42
2:E:27:VAL:HG13	2:E:440:GLU:HB3	2.01	0.42
1:A:161:THR:C	1:A:163:ASP:H	2.28	0.42
2:B:273:VAL:HG21	2:B:335:TYR:OH	2.18	0.42
1:D:383:TYR:O	1:D:387:GLN:HG2	2.19	0.42
1:A:389:GLU:H	1:A:389:GLU:HG2	1.74	0.42
3:C:10:PRO:HG3	3:C:237:VAL:HG11	2.02	0.42
1:D:114:THR:HG22	1:D:117:ARG:HH22	1.85	0.42
1:D:339:ALA:HB2	1:D:403:GLN:HB2	1.98	0.42
1:D:468:GLY:O	1:D:469:LEU:HB2	2.19	0.42
3:F:58:PRO:HA	3:F:59:PRO:HD3	1.90	0.42
1:A:305:LYS:O	1:A:309:GLU:HB2	2.19	0.42
1:A:326:TYR:CZ	1:D:221:CYS:HA	2.55	0.42
2:B:187:GLU:HG3	2:B:379:ASN:O	2.20	0.42
1:D:389:GLU:H	1:D:389:GLU:HG2	1.74	0.42
2:E:94:ILE:HG23	2:E:118:PRO:HD2	2.01	0.42
2:E:233:PRO:CB	3:F:251:ARG:HD2	2.49	0.42
1:A:250:ALA:O	1:A:253:ASP:HB2	2.20	0.42
4:A:1553:F43:CAD	1:D:335:GLN:H	2.33	0.42
2:B:372:GLY:HA3	2:B:405:GLN:HE22	1.85	0.42
1:D:250:ALA:O	1:D:253:ASP:HB2	2.20	0.42
1:D:443:ARG:HH11	3:F:101:HIS:CD2	2.26	0.42
2:E:293:LYS:HD2	3:F:7:PHE:HZ	1.84	0.42
1:A:457:ALA:O	3:C:246:THR:HG22	2.20	0.41
2:B:289:LEU:O	2:B:291:SER:N	2.47	0.41
3:C:98:ALA:O	3:C:101:HIS:HE1	2.03	0.41
1:D:284:VAL:HA	1:D:285:PRO:HD3	1.83	0.41
2:E:104:VAL:HG13	2:E:115:VAL:HG22	2.01	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:F:90:GLN:HB3	3:F:155:ARG:O	2.20	0.41
3:F:154:VAL:HG12	3:F:194:GLN:HB3	2.02	0.41
1:A:527:GLU:N	1:A:528:PRO:HD3	2.35	0.41
2:B:293:LYS:HD2	3:C:7:PHE:HZ	1.84	0.41
1:D:161:THR:C	1:D:163:ASP:H	2.28	0.41
1:D:427:LEU:HD13	1:D:471:LEU:HD13	2.00	0.41
1:A:140:ASN:HB3	1:D:57:PRO:O	2.20	0.41
1:A:495:VAL:O	1:A:499:HIS:HD2	2.03	0.41
2:B:233:PRO:CB	3:C:251:ARG:HD2	2.49	0.41
3:F:201:GLU:HA	3:F:202:PRO:HD3	1.93	0.41
1:A:422:HIS:HD2	1:A:424:GLN:N	2.17	0.41
2:B:188:GLY:HA2	2:E:184:MET:HE1	2.02	0.41
3:C:90:GLN:HB3	3:C:155:ARG:O	2.20	0.41
3:C:100:ILE:HG13	3:C:101:HIS:N	2.35	0.41
1:D:527:GLU:N	1:D:528:PRO:HD3	2.35	0.41
3:F:37:ASP:O	3:F:41:VAL:HG23	2.20	0.41
1:A:123:LEU:HD13	1:A:244:ILE:HG21	2.02	0.41
1:A:221:CYS:HA	1:D:326:TYR:CZ	2.55	0.41
2:B:104:VAL:HG13	2:B:115:VAL:HG22	2.01	0.41
1:D:495:VAL:O	1:D:499:HIS:HD2	2.03	0.41
2:E:290:PRO:O	2:E:291:SER:HB2	2.19	0.41
3:F:187:GLU:HB3	3:F:206:GLY:HA3	2.03	0.41
1:A:370:MET:HG3	1:A:374:LYS:HD3	2.03	0.41
1:A:478:TYR:HA	1:A:479:PRO:HD3	1.95	0.41
1:D:345:ILE:HD12	1:D:398:HIS:CE1	2.55	0.41
1:A:34:TRP:CZ3	1:A:35:LYS:HG3	2.56	0.41
2:E:372:GLY:HA3	2:E:405:GLN:HE22	1.85	0.41
1:A:335:GLN:H	4:D:1553:F43:CAD	2.34	0.41
2:B:293:LYS:HD2	3:C:7:PHE:CZ	2.56	0.41
1:D:34:TRP:CE3	1:D:35:LYS:HG3	2.56	0.41
2:E:51:LEU:HD11	2:E:113:LEU:HB2	2.03	0.41
3:F:100:ILE:HG13	3:F:101:HIS:N	2.35	0.41
1:A:316:MET:O	1:A:320:GLN:HB2	2.21	0.41
2:B:184:MET:HE1	2:E:188:GLY:HA2	2.03	0.41
3:C:37:ASP:O	3:C:41:VAL:HG23	2.20	0.41
1:D:173:LEU:HD21	1:D:200:ILE:HD12	2.01	0.41
1:D:395:MET:HG3	3:F:163:ALA:HB1	2.03	0.41
3:F:98:ALA:O	3:F:101:HIS:HE1	2.03	0.41
1:A:57:PRO:O	1:D:140:ASN:HB3	2.21	0.40
1:D:123:LEU:HD13	1:D:244:ILE:HG21	2.02	0.40
1:D:427:LEU:O	1:D:430:TRP:HB3	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:457:ALA:O	3:F:246:THR:HG22	2.20	0.40
3:C:123:GLY:N	4:D:1553:F43:O7C	2.41	0.40
3:C:154:VAL:HG12	3:C:194:GLN:HB3	2.02	0.40
1:D:106:ARG:HA	1:D:226:MET:HG3	2.02	0.40
1:D:370:MET:HG3	1:D:374:LYS:HD3	2.03	0.40
2:E:293:LYS:HD2	3:F:7:PHE:CZ	2.56	0.40
2:E:414:LYS:HB2	2:E:414:LYS:HE2	1.87	0.40
1:A:263:VAL:HG22	1:A:264:ILE:N	2.36	0.40
2:B:323:ARG:HA	2:B:323:ARG:HD2	1.95	0.40
3:C:40:ILE:HG22	3:C:44:MET:HE2	2.04	0.40
1:D:316:MET:O	1:D:320:GLN:HB2	2.21	0.40
1:A:34:TRP:CE3	1:A:35:LYS:HG3	2.56	0.40
1:A:114:THR:HG22	1:A:117:ARG:HH22	1.85	0.40
1:A:509:HIS:HA	1:A:510:PRO:HD3	1.91	0.40
2:B:31:MET:HE2	2:B:31:MET:HB3	1.84	0.40
3:C:187:GLU:HB3	3:C:206:GLY:HA3	2.03	0.40
1:D:403:GLN:O	1:D:407:VAL:HG23	2.22	0.40
1:A:395:MET:HG3	3:C:163:ALA:HB1	2.03	0.40
1:A:447:TYR:CE2	2:B:361:SER:HB3	2.56	0.40
1:D:109:ILE:HG12	1:D:210:VAL:HG22	2.04	0.40
1:D:263:VAL:HG22	1:D:264:ILE:N	2.36	0.40
1:D:441:GLN:HE21	1:D:441:GLN:CA	2.32	0.40
1:D:448:GLY:N	2:E:362:PHE:HB2	2.37	0.40
2:E:182:VAL:HG13	2:E:184:MET:SD	2.61	0.40
2:E:260:HIS:HD2	2:E:268:THR:OG1	2.04	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:181:ASP:OD2	1:D:174:GLU:OE1[1_455]	1.74	0.46
2:E:92:LYS:CE	2:E:262:LYS:NZ[3_655]	1.83	0.37
2:E:92:LYS:CE	2:E:262:LYS:CE[3_655]	2.01	0.19

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	543/553 (98%)	506 (93%)	34 (6%)	3 (1%)	21	44
1	D	543/553 (98%)	506 (93%)	34 (6%)	3 (1%)	21	44
2	B	434/443 (98%)	406 (94%)	21 (5%)	7 (2%)	7	20
2	E	434/443 (98%)	406 (94%)	21 (5%)	7 (2%)	7	20
3	C	246/258 (95%)	231 (94%)	13 (5%)	2 (1%)	16	37
3	F	246/258 (95%)	231 (94%)	13 (5%)	2 (1%)	16	37
All	All	2446/2508 (98%)	2286 (94%)	136 (6%)	24 (1%)	12	32

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	465	SER
2	B	123	LYS
2	B	182	VAL
2	B	326	GLN
1	D	465	SER
2	E	123	LYS
2	E	182	VAL
2	E	326	GLN
1	A	341	TYR
2	B	21	GLU
2	B	122	VAL
2	B	291	SER
1	D	341	TYR
2	E	21	GLU
2	E	122	VAL
2	E	291	SER
3	C	253	GLU
3	F	253	GLU
1	A	508	VAL
3	C	67	GLU
1	D	508	VAL
3	F	67	GLU
2	B	290	PRO
2	E	290	PRO

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	432/439 (98%)	395 (91%)	37 (9%)	10	25
1	D	432/439 (98%)	395 (91%)	37 (9%)	10	25
2	B	345/350 (99%)	308 (89%)	37 (11%)	6	16
2	E	345/350 (99%)	308 (89%)	37 (11%)	6	16
3	C	218/224 (97%)	206 (94%)	12 (6%)	19	45
3	F	218/224 (97%)	206 (94%)	12 (6%)	19	45
All	All	1990/2026 (98%)	1818 (91%)	172 (9%)	10	25

All (172) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	13	LEU
1	A	37	SER
1	A	39	ARG
1	A	74	SER
1	A	130	GLU
1	A	139	LEU
1	A	143	LEU
1	A	167	LYS
1	A	177	ASP
1	A	180	ASP
1	A	184	LEU
1	A	197	GLU
1	A	201	LYS
1	A	207	THR
1	A	212	ARG
1	A	227	TYR
1	A	228	ARG
1	A	232	MET
1	A	265	ASN
1	A	276	ARG
1	A	296	MET
1	A	298	LYS

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Mol	Chain	Res	Type
1	A	309	GLU
1	A	352	TYR
1	A	363	ILE
1	A	367	GLU
1	A	374	LYS
1	A	379	GLU
1	A	389	GLU
1	A	435	ILE
1	A	441	GLN
1	A	447	TYR
1	A	473	LEU
1	A	527	GLU
1	A	529	ARG
1	A	538	ARG
1	A	550	VAL
2	B	22	GLU
2	B	28	LEU
2	B	29	SER
2	B	31	MET
2	B	32	ARG
2	B	43	ILE
2	B	59	GLN
2	B	66	LYS
2	B	76	ASP
2	B	77	VAL
2	B	92	LYS
2	B	94	ILE
2	B	112	ARG
2	B	121	ARG
2	B	123	LYS
2	B	127	ASP
2	B	130	SER
2	B	164	ARG
2	B	169	ILE
2	B	181	ASP
2	B	184	MET
2	B	218	THR
2	B	224	MET
2	B	237	LEU
2	B	245	GLN
2	B	259	LYS
2	B	278	LEU

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Mol	Chain	Res	Type
2	B	287	GLU
2	B	292	PHE
2	B	302	LEU
2	B	323	ARG
2	B	339	LEU
2	B	415	LEU
2	B	424	ASP
2	B	425	GLU
2	B	435	GLU
2	B	440	GLU
3	C	17	GLU
3	C	52	GLU
3	C	61	GLU
3	C	75	GLU
3	C	112	ARG
3	C	146	ILE
3	C	158	THR
3	C	173	LEU
3	C	174	HIS
3	C	233	GLU
3	C	234	LEU
3	C	253	GLU
1	D	13	LEU
1	D	37	SER
1	D	39	ARG
1	D	74	SER
1	D	130	GLU
1	D	139	LEU
1	D	143	LEU
1	D	167	LYS
1	D	177	ASP
1	D	180	ASP
1	D	184	LEU
1	D	197	GLU
1	D	201	LYS
1	D	207	THR
1	D	212	ARG
1	D	227	TYR
1	D	228	ARG
1	D	232	MET
1	D	265	ASN
1	D	276	ARG

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Mol	Chain	Res	Type
1	D	296	MET
1	D	298	LYS
1	D	309	GLU
1	D	352	TYR
1	D	363	ILE
1	D	367	GLU
1	D	374	LYS
1	D	379	GLU
1	D	389	GLU
1	D	435	ILE
1	D	441	GLN
1	D	447	TYR
1	D	473	LEU
1	D	527	GLU
1	D	529	ARG
1	D	538	ARG
1	D	550	VAL
2	E	22	GLU
2	E	28	LEU
2	E	29	SER
2	E	31	MET
2	E	32	ARG
2	E	43	ILE
2	E	59	GLN
2	E	66	LYS
2	E	76	ASP
2	E	77	VAL
2	E	92	LYS
2	E	94	ILE
2	E	112	ARG
2	E	121	ARG
2	E	123	LYS
2	E	127	ASP
2	E	130	SER
2	E	164	ARG
2	E	169	ILE
2	E	181	ASP
2	E	184	MET
2	E	218	THR
2	E	224	MET
2	E	237	LEU
2	E	245	GLN

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Mol	Chain	Res	Type
2	E	259	LYS
2	E	278	LEU
2	E	287	GLU
2	E	292	PHE
2	E	302	LEU
2	E	323	ARG
2	E	339	LEU
2	E	415	LEU
2	E	424	ASP
2	E	425	GLU
2	E	435	GLU
2	E	440	GLU
3	F	17	GLU
3	F	52	GLU
3	F	61	GLU
3	F	75	GLU
3	F	112	ARG
3	F	146	ILE
3	F	158	THR
3	F	173	LEU
3	F	174	HIS
3	F	233	GLU
3	F	234	LEU
3	F	253	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (60) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	76	GLN
1	A	99	GLN
1	A	195	GLN
1	A	205	ASN
1	A	209	GLN
1	A	219	HIS
1	A	260	HIS
1	A	320	GLN
1	A	398	HIS
1	A	422	HIS
1	A	428	ASN
1	A	441	GLN
1	A	452	GLN
1	A	454	GLN

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Mol	Chain	Res	Type
1	A	459	ASN
1	A	480	ASN
1	A	509	HIS
1	A	520	ASN
2	B	41	ASN
2	B	60	ASN
2	B	103	ASN
2	B	220	GLN
2	B	238	HIS
2	B	260	HIS
2	B	304	ASN
2	B	319	GLN
2	B	326	GLN
2	B	336	ASN
2	B	405	GLN
3	C	18	ASN
3	C	101	HIS
3	C	182	ASN
1	D	76	GLN
1	D	99	GLN
1	D	205	ASN
1	D	209	GLN
1	D	219	HIS
1	D	260	HIS
1	D	320	GLN
1	D	398	HIS
1	D	422	HIS
1	D	441	GLN
1	D	452	GLN
1	D	454	GLN
1	D	509	HIS
1	D	520	ASN
2	E	41	ASN
2	E	60	ASN
2	E	103	ASN
2	E	220	GLN
2	E	238	HIS
2	E	260	HIS
2	E	304	ASN
2	E	319	GLN
2	E	326	GLN
2	E	336	ASN

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Mol	Chain	Res	Type
2	E	405	GLN
3	F	18	ASN
3	F	101	HIS
3	F	182	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

6 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
5	TP7	A	1554	-	19,20,20	2.01	6 (31%)	24,26,26	1.34	3 (12%)
4	F43	A	1553	6,1	61,71,71	3.64	20 (32%)	64,118,118	2.04	15 (23%)
6	COM	D	1555	4	6,6,6	1.68	3 (50%)	7,8,8	1.46	1 (14%)
4	F43	D	1553	6,1	61,71,71	3.64	20 (32%)	64,118,118	2.04	15 (23%)
5	TP7	D	1554	-	19,20,20	2.00	6 (31%)	24,26,26	1.34	3 (12%)
6	COM	A	1555	4	6,6,6	1.68	3 (50%)	7,8,8	1.46	1 (14%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	TP7	A	1554	-	-	0/24/24/24	-
4	F43	A	1553	6,1	-	10/28/185/185	-
6	COM	D	1555	4	-	0/4/4/4	-
4	F43	D	1553	6,1	-	10/28/185/185	-
5	TP7	D	1554	-	-	0/24/24/24	-
6	COM	A	1555	4	-	0/4/4/4	-

All (58) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1553	F43	CHB-C1B	-15.76	1.42	1.53
4	D	1553	F43	CHB-C1B	-15.71	1.42	1.53
4	D	1553	F43	NI-NA	11.74	2.14	1.89
4	A	1553	F43	NI-NA	11.70	2.14	1.89
4	D	1553	F43	CHD-C1D	9.78	1.56	1.43
4	A	1553	F43	CHD-C1D	9.77	1.56	1.43
4	D	1553	F43	NI-NB	9.49	2.10	1.89
4	A	1553	F43	NI-NB	9.49	2.10	1.89
5	A	1554	TP7	C2-C1	-5.31	1.41	1.51
5	D	1554	TP7	C2-C1	-5.29	1.41	1.51
4	A	1553	F43	CAA-C3A	5.26	1.63	1.53
4	D	1553	F43	CAA-C3A	5.25	1.63	1.53
4	A	1553	F43	CHC-C4B	5.15	1.53	1.39
4	D	1553	F43	CHC-C4B	5.12	1.53	1.39
4	D	1553	F43	NI-ND	5.01	2.00	1.89
4	A	1553	F43	NI-ND	5.00	2.00	1.89
4	D	1553	F43	C3D-C4D	-4.02	1.46	1.53
4	A	1553	F43	C3D-C4D	-4.01	1.46	1.53
4	A	1553	F43	C4D-ND	3.70	1.54	1.49
4	D	1553	F43	C4D-ND	3.68	1.54	1.49
5	A	1554	TP7	C1-N	3.43	1.41	1.34
4	A	1553	F43	CAB-C3B	3.40	1.62	1.54
5	D	1554	TP7	C1-N	3.39	1.41	1.34
4	D	1553	F43	CAB-C3B	3.39	1.62	1.54
4	A	1553	F43	CHD-C4C	-3.33	1.31	1.40
4	D	1553	F43	CHD-C4C	-3.33	1.31	1.40
4	D	1553	F43	CHD-C7D	3.25	1.53	1.46
4	A	1553	F43	CHD-C7D	3.24	1.53	1.46
5	A	1554	TP7	P-O4P	3.13	1.65	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	1554	TP7	P-O4P	3.12	1.65	1.59
4	A	1553	F43	C5D-C2D	-3.08	1.47	1.53
4	D	1553	F43	C5D-C2D	-3.05	1.48	1.53
4	A	1553	F43	C6B-N5B	-2.81	1.30	1.34
4	D	1553	F43	C6B-N5B	-2.80	1.30	1.34
5	D	1554	TP7	CA-C	2.58	1.56	1.52
5	A	1554	TP7	CA-C	2.57	1.56	1.52
4	A	1553	F43	C9D-C3D	-2.52	1.48	1.53
5	A	1554	TP7	CA-N	-2.50	1.40	1.45
4	A	1553	F43	C4A-NA	-2.50	1.45	1.49
4	D	1553	F43	C9D-C3D	-2.50	1.48	1.53
5	D	1554	TP7	CA-N	-2.48	1.40	1.45
4	D	1553	F43	C4A-NA	-2.47	1.45	1.49
6	D	1555	COM	O2S-S2	2.41	1.52	1.45
6	A	1555	COM	O2S-S2	2.39	1.52	1.45
4	A	1553	F43	C2D-C1D	-2.37	1.46	1.52
4	A	1553	F43	C4C-NC	2.37	1.38	1.35
4	D	1553	F43	C2D-C1D	-2.36	1.46	1.52
4	D	1553	F43	C4C-NC	2.35	1.38	1.35
4	D	1553	F43	C9A-C2A	-2.35	1.50	1.54
4	A	1553	F43	C9A-C2A	-2.35	1.50	1.54
6	A	1555	COM	C2-S2	2.33	1.80	1.77
6	D	1555	COM	C2-S2	2.33	1.80	1.77
5	D	1554	TP7	OXT-C	2.10	1.28	1.22
6	A	1555	COM	O1S-S2	2.09	1.51	1.45
6	D	1555	COM	O1S-S2	2.09	1.51	1.45
5	A	1554	TP7	OXT-C	2.09	1.28	1.22
4	D	1553	F43	C2A-C3A	2.05	1.58	1.54
4	A	1553	F43	C2A-C3A	2.02	1.58	1.54

All (38) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1553	F43	CAB-C3B-C2B	-5.65	107.12	119.09
4	D	1553	F43	CAB-C3B-C2B	-5.65	107.14	119.09
4	A	1553	F43	C3B-C4B-CHC	-5.55	111.34	123.32
4	D	1553	F43	C3B-C4B-CHC	-5.54	111.36	123.32
4	A	1553	F43	C4D-ND-C1D	-5.43	101.37	108.51
4	D	1553	F43	C4D-ND-C1D	-5.41	101.40	108.51
4	A	1553	F43	C3D-C4D-ND	5.01	110.13	102.34
4	D	1553	F43	C3D-C4D-ND	5.00	110.12	102.34
4	A	1553	F43	C6D-C7D-CHD	3.97	124.42	116.95

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	D	1553	F43	C6D-C7D-CHD	3.96	124.40	116.95
4	A	1553	F43	O8D-C7D-C6D	-3.94	114.40	120.86
4	D	1553	F43	O8D-C7D-C6D	-3.94	114.41	120.86
5	A	1554	TP7	O1-C1-N	-3.43	117.16	122.95
5	D	1554	TP7	O1-C1-N	-3.41	117.19	122.95
4	A	1553	F43	C3A-C4A-NA	3.09	107.00	102.30
4	D	1553	F43	C3A-C4A-NA	3.09	107.00	102.30
4	D	1553	F43	ODB-CCB-CBB	-2.92	113.70	123.08
4	A	1553	F43	ODB-CCB-CBB	-2.92	113.71	123.08
4	D	1553	F43	C2B-C1B-NB	2.90	106.18	101.84
4	A	1553	F43	C2B-C1B-NB	2.88	106.14	101.84
4	A	1553	F43	OEB-CCB-CBB	2.80	123.03	114.03
4	D	1553	F43	OEB-CCB-CBB	2.80	123.01	114.03
5	A	1554	TP7	C4-C3-C2	2.54	122.34	113.19
5	D	1554	TP7	C4-C3-C2	2.54	122.31	113.19
5	D	1554	TP7	C5-C6-C7	-2.52	108.59	113.09
5	A	1554	TP7	C5-C6-C7	-2.51	108.62	113.09
6	D	1555	COM	O3S-S2-C2	2.47	109.77	105.77
4	D	1553	F43	C2D-C1D-CHD	-2.46	118.70	121.85
4	A	1553	F43	C2D-C1D-CHD	-2.45	118.71	121.85
6	A	1555	COM	O3S-S2-C2	2.45	109.73	105.77
4	D	1553	F43	C5C-C2C-C3C	-2.32	109.00	114.94
4	A	1553	F43	C5C-C2C-C3C	-2.32	109.00	114.94
4	A	1553	F43	C2B-C3B-C4B	-2.24	99.10	101.63
4	D	1553	F43	C2B-C3B-C4B	-2.21	99.13	101.63
4	A	1553	F43	O7B-C6B-N5B	-2.11	122.39	125.13
4	D	1553	F43	O7B-C6B-N5B	-2.10	122.41	125.13
4	D	1553	F43	C1B-CHB-C4A	2.05	114.26	109.54
4	A	1553	F43	C1B-CHB-C4A	2.05	114.25	109.54

There are no chirality outliers.

All (20) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	1553	F43	C3A-CAA-CBA-CCA
4	D	1553	F43	C3A-CAA-CBA-CCA
4	A	1553	F43	C2C-C5C-C6C-O8C
4	D	1553	F43	C2C-C5C-C6C-O8C
4	A	1553	F43	C2C-C5C-C6C-O7C
4	D	1553	F43	C2C-C5C-C6C-O7C
4	A	1553	F43	CAA-CBA-CCA-OEA
4	D	1553	F43	CAA-CBA-CCA-OEA

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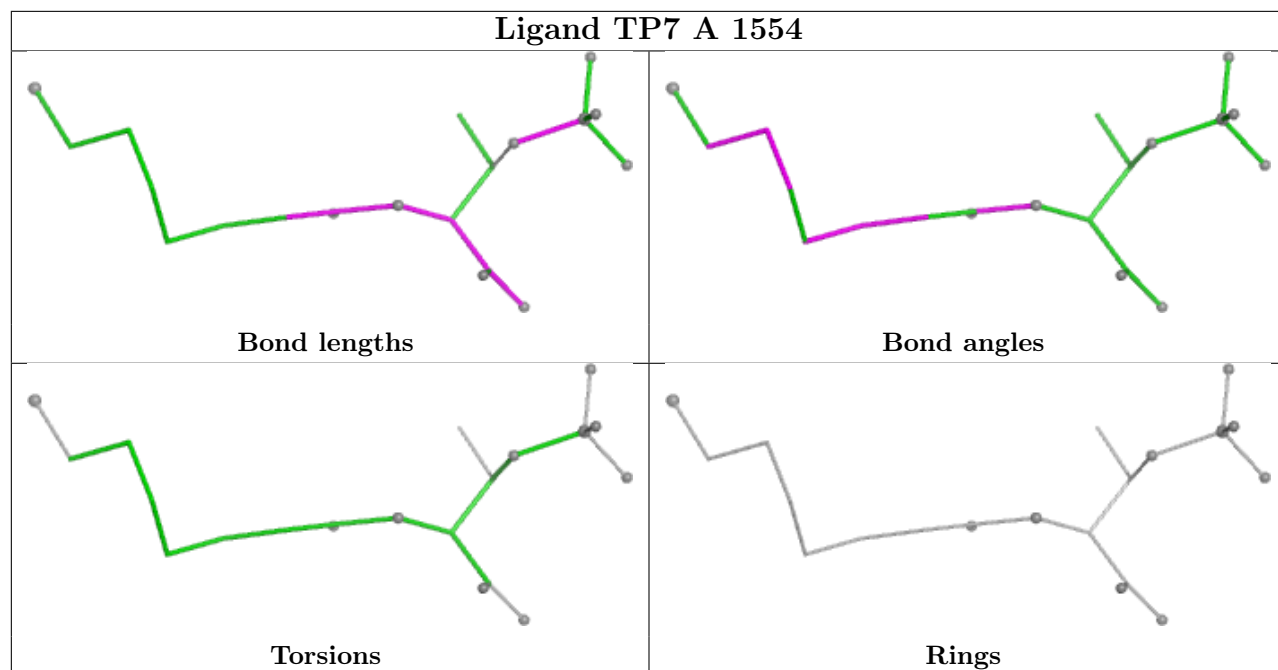
Mol	Chain	Res	Type	Atoms
4	A	1553	F43	C8C-C9C-CAC-OBC
4	D	1553	F43	C8C-C9C-CAC-OBC
4	A	1553	F43	CAA-CBA-CCA-ODA
4	D	1553	F43	CAA-CBA-CCA-ODA
4	A	1553	F43	C8C-C9C-CAC-OCC
4	D	1553	F43	C8C-C9C-CAC-OCC
4	A	1553	F43	CAB-CBB-CCB-OEB
4	D	1553	F43	CAB-CBB-CCB-OEB
4	D	1553	F43	CAB-CBB-CCB-ODB
4	A	1553	F43	CAB-CBB-CCB-ODB
4	A	1553	F43	C3D-C9D-CAD-OB
4	D	1553	F43	C3D-C9D-CAD-OB

There are no ring outliers.

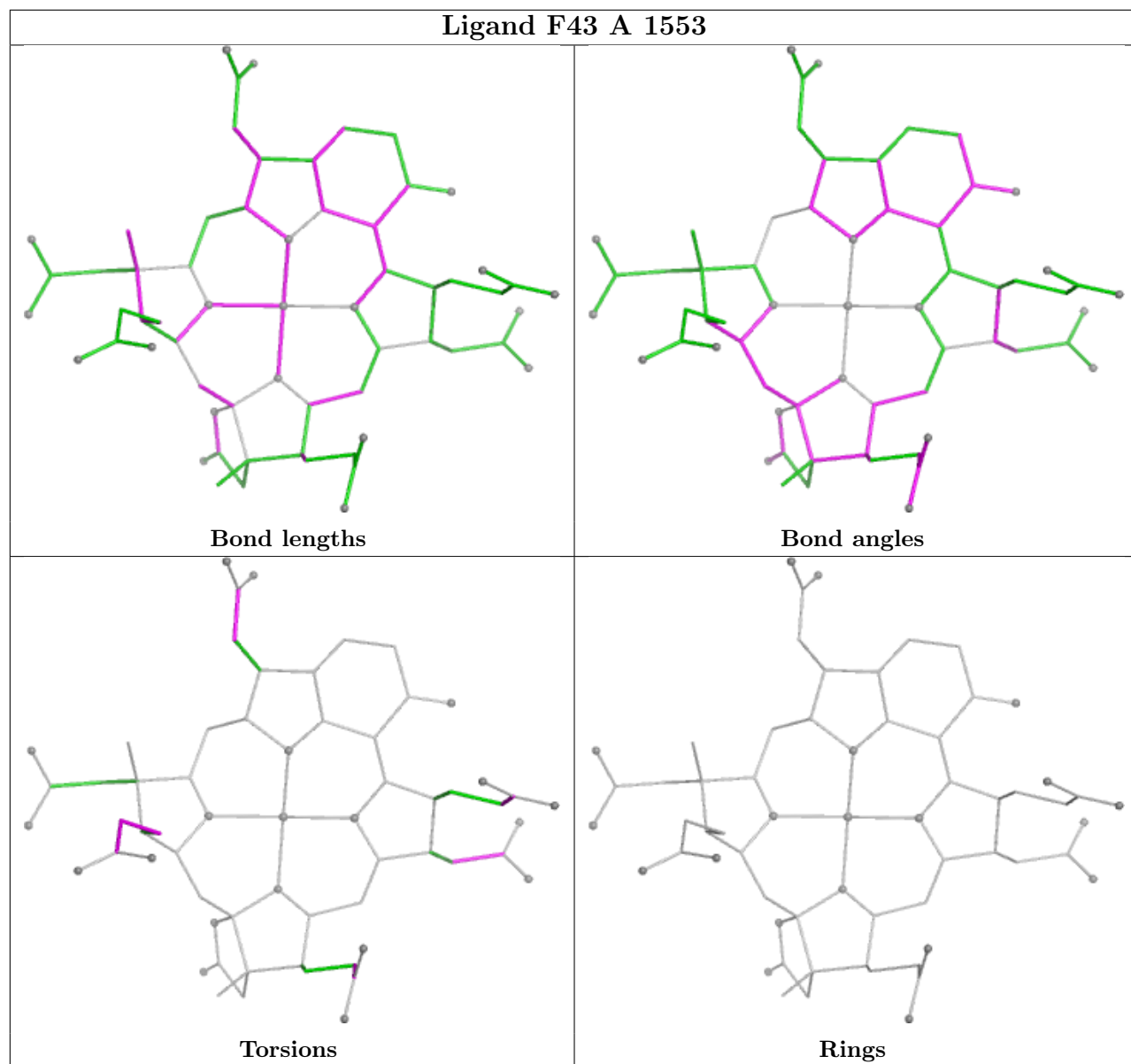
6 monomers are involved in 15 short contacts:

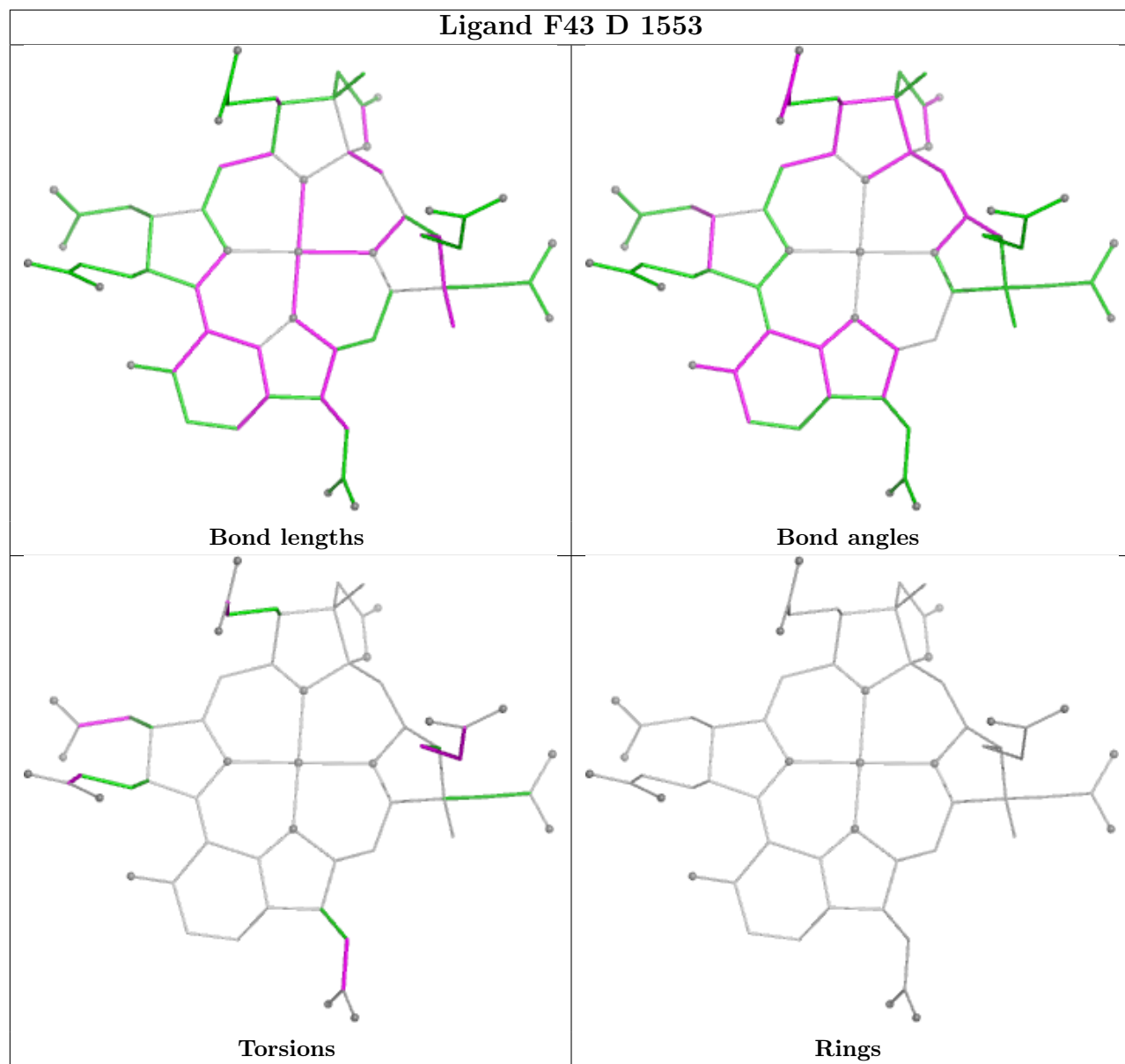
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	A	1554	TP7	1	0
4	A	1553	F43	5	0
6	D	1555	COM	1	0
4	D	1553	F43	6	0
5	D	1554	TP7	1	0
6	A	1555	COM	1	0

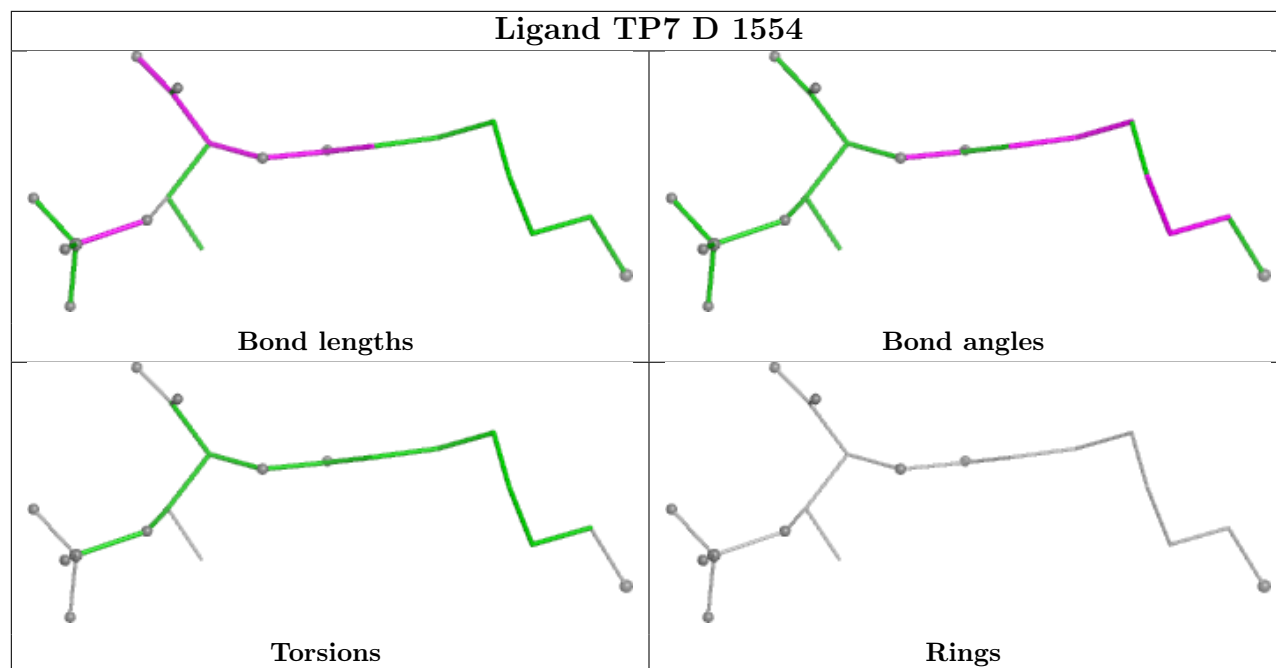
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included.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



Ligand F43 A 1553







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, 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	545/553 (98%)	0.23	10 (1%) 67 65	14, 21, 31, 36	7 (1%)
1	D	545/553 (98%)	0.28	13 (2%) 59 56	14, 21, 31, 36	7 (1%)
2	B	436/443 (98%)	0.26	7 (1%) 70 68	14, 25, 35, 42	7 (1%)
2	E	436/443 (98%)	0.32	10 (2%) 61 58	14, 25, 35, 42	7 (1%)
3	C	248/258 (96%)	0.61	8 (3%) 50 46	16, 31, 40, 46	10 (4%)
3	F	248/258 (96%)	0.68	17 (6%) 23 20	16, 31, 40, 46	10 (4%)
All	All	2458/2508 (98%)	0.35	65 (2%) 57 54	14, 24, 36, 46	48 (1%)

All (65) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	30	ILE	4.4
1	D	34	TRP	4.2
1	D	33	GLY	3.8
2	B	40	VAL	3.5
3	F	78	GLU	3.4
1	D	90	THR	3.3
1	D	313	ALA	3.3
1	D	177	ASP	3.2
2	E	259	LYS	3.2
3	F	254	GLU	3.0
1	D	126	GLU	2.9
3	F	183	GLU	2.9
1	A	90	THR	2.8
3	F	174	HIS	2.8
2	E	145	ASP	2.7
1	A	228	ARG	2.7
1	A	34	TRP	2.7
1	A	552	ALA	2.7
1	D	22	GLU	2.6

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Mol	Chain	Res	Type	RSRZ
2	B	336	ASN	2.6
2	E	181	ASP	2.6
3	C	230	GLU	2.6
2	E	56	ASN	2.6
3	F	190	TYR	2.6
3	F	7	PHE	2.5
2	B	124	VAL	2.5
3	C	180	ARG	2.5
3	F	181	LEU	2.5
1	A	35	LYS	2.4
3	C	182	ASN	2.4
3	F	64	GLU	2.4
2	B	232	GLY	2.4
3	F	246	THR	2.4
3	F	29	LEU	2.4
3	F	167	ASP	2.4
3	C	11	GLY	2.4
1	D	463	VAL	2.4
3	F	164	LEU	2.3
1	D	207	THR	2.3
3	C	50	GLY	2.3
3	F	180	ARG	2.3
2	E	169	ILE	2.3
2	E	286	LYS	2.3
1	A	177	ASP	2.3
1	D	174	GLU	2.2
2	E	84	GLU	2.2
2	B	291	SER	2.2
1	A	362	GLY	2.2
3	C	74	VAL	2.2
1	A	417	ALA	2.2
3	C	137	ILE	2.2
1	A	314	GLY	2.1
2	B	217	ALA	2.1
2	E	15	ARG	2.1
3	C	65	GLU	2.1
3	F	251	ARG	2.1
2	B	13	ASP	2.1
2	E	439	GLU	2.1
3	F	34	GLU	2.1
1	D	461	LEU	2.1
3	F	169	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
2	E	246	GLY	2.1
1	A	23	GLU	2.0
1	D	362	GLY	2.0
3	F	179	TYR	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

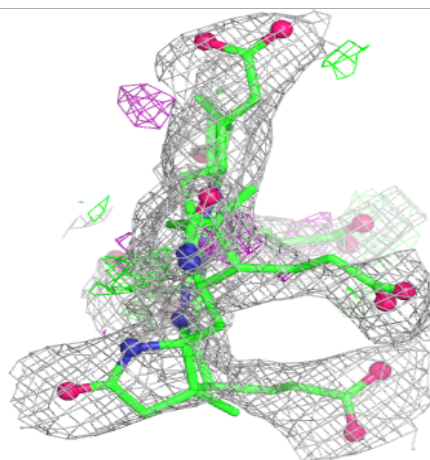
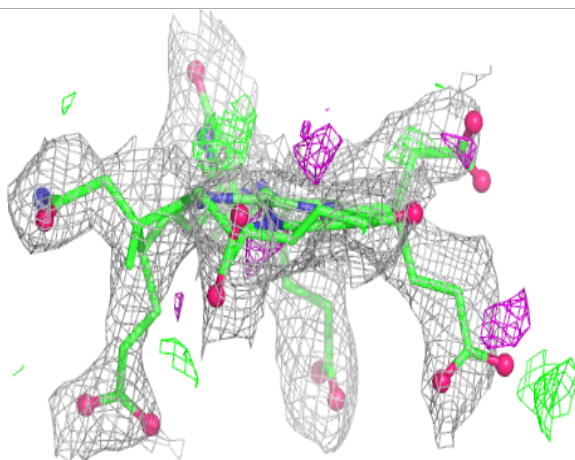
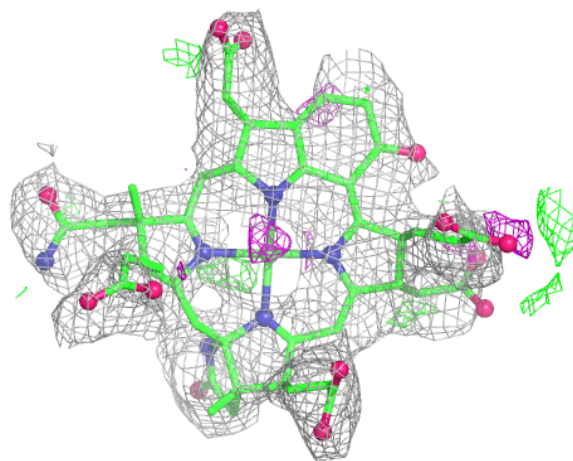
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
4	F43	A	1553	62/62	0.89	0.13	24,26,26,27	0
4	F43	D	1553	62/62	0.89	0.13	24,26,26,27	0
5	TP7	A	1554	21/21	0.91	0.12	23,23,24,24	0
6	COM	A	1555	7/7	0.92	0.13	16,17,17,17	0
6	COM	D	1555	7/7	0.92	0.11	16,17,17,17	0
5	TP7	D	1554	21/21	0.96	0.09	23,23,24,24	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.

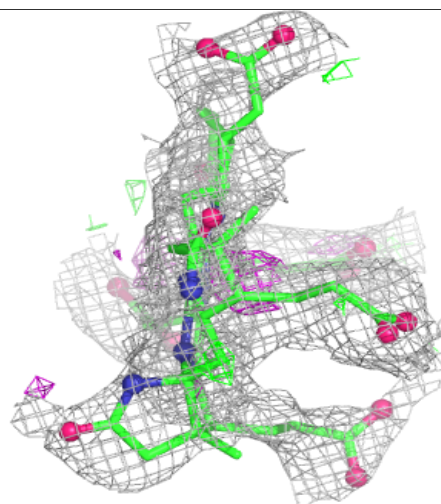
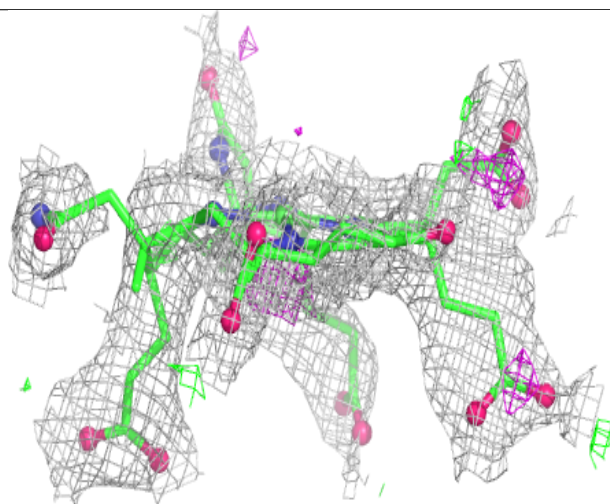
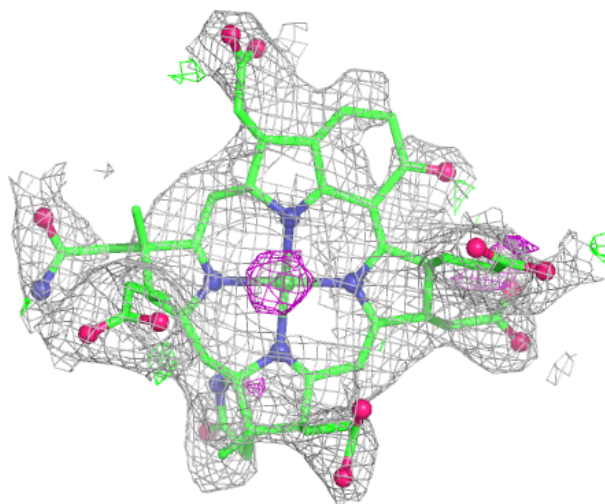
Electron density around F43 A 1553:

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



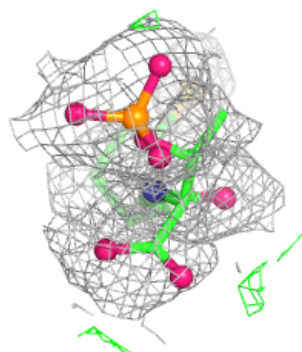
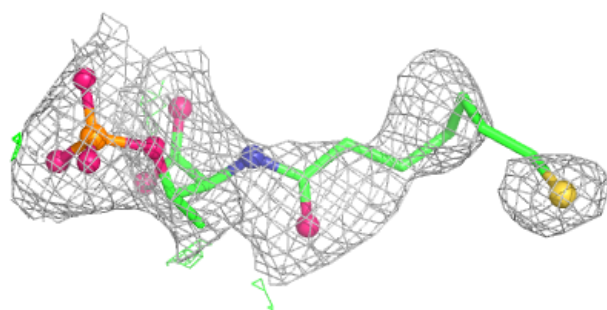
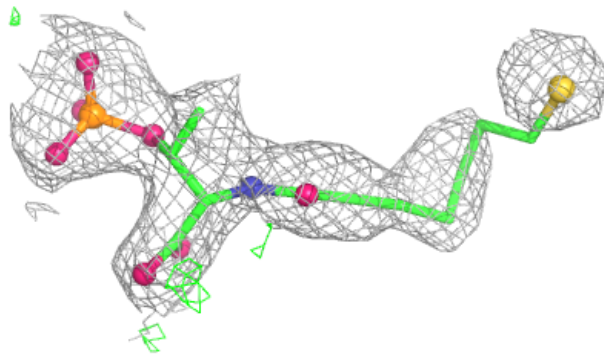
Electron density around F43 D 1553:

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

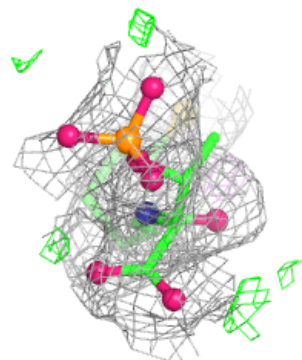
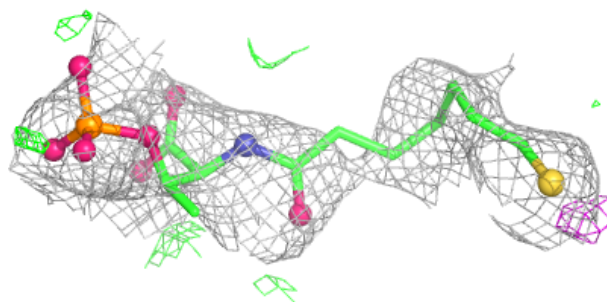
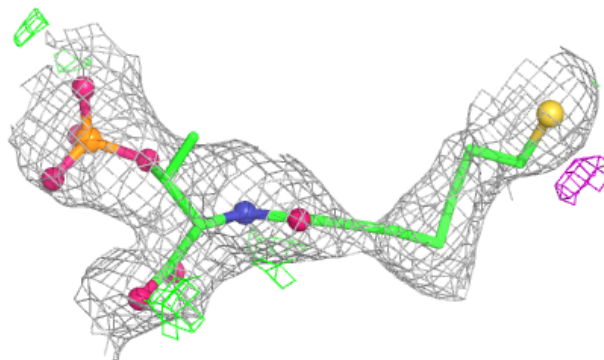


Electron density around TP7 A 1554:

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

**Electron density around TP7 D 1554:**

$2mF_o-DF_c$ (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.