



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 5, 2026 – 12:53 PM EDT

PDB ID : 3M1V / pdb_00003m1v
Title : Structural Insight into Methyl-Coenzyme M Reductase Chemistry using Coenzyme B Analogues
Authors : Cedervall, P.E.; Dey, M.; Ragsdale, S.W.; Wilmot, C.M.
Deposited on : 2010-03-05
Resolution : 1.45 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	:	2022.3.0, CSD as543be (2022)
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

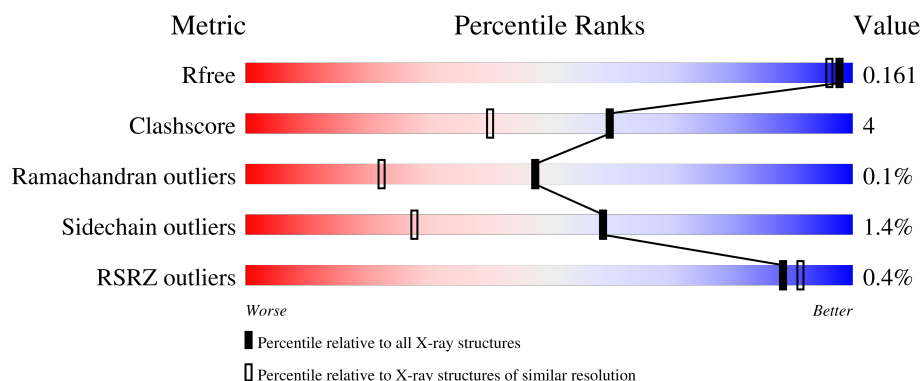
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.45 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	1756 (1.46-1.46)
Clashscore	190562	1795 (1.46-1.46)
Ramachandran outliers	187476	1776 (1.46-1.46)
Sidechain outliers	187428	1776 (1.46-1.46)
RSRZ outliers	180081	1756 (1.46-1.46)

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	549	 81% 18% .
1	D	549	 83% 15% .
2	B	442	 85% 14% .
2	E	442	 81% 18% .
3	C	248	 2% 86% 12% ..

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Mol	Chain	Length	Quality of chain
3	F	248	2% 84% 13% ..

2 Entry composition [i](#)

There are 12 unique types of molecules in this entry. The entry contains 23013 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 subunit alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	548	Total	C	N	O	S	0	54	0
			4639	2933	771	914	21			
1	D	548	Total	C	N	O	S	0	30	0
			4423	2816	725	862	20			

- Molecule 2 is a protein called Methyl-coenzyme M reductase I subunit beta.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	442	Total	C	N	O	S	0	28	0
			3485	2225	566	672	22			
2	E	442	Total	C	N	O	S	0	41	0
			3574	2282	581	689	22			

- Molecule 3 is a protein called Methyl-coenzyme M reductase I subunit gamma.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	246	Total	C	N	O	S	0	12	0
			2063	1279	359	412	13			
3	F	246	Total	C	N	O	S	0	16	0
			2081	1295	362	412	12			

- Molecule 4 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

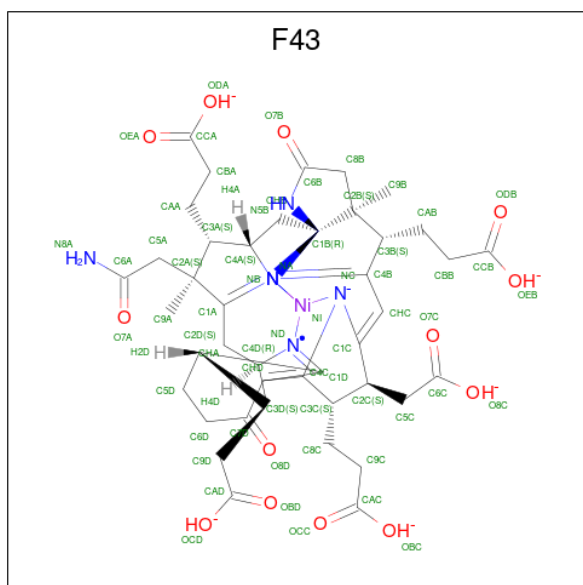
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	Mg	0	2
			2	2		
4	B	2	Total	Mg	0	0
			2	2		
4	C	1	Total	Mg	0	0
			1	1		
4	D	2	Total	Mg	0	0
			2	2		

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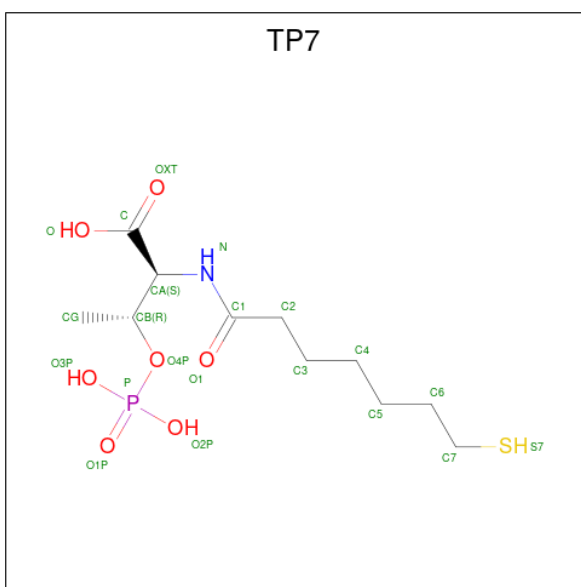
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	E	1	Total Mg 1 1	0	0
4	F	1	Total Mg 1 1	0	0

- Molecule 5 is FACTOR 430 (CCD ID: F43) (formula: $\text{C}_{42}\text{H}_{51}\text{N}_6\text{NiO}_{13}$).



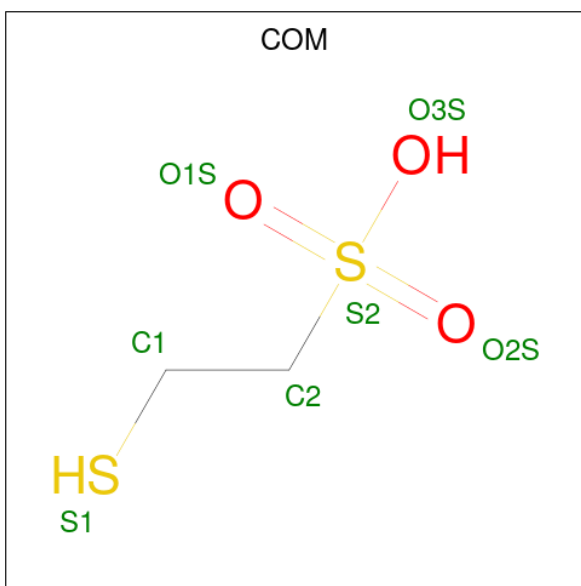
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total 62	C 42	N 6	Ni 1	O 13	0	0
5	D	1	Total 62	C 42	N 6	Ni 1	O 13	0	0

- Molecule 6 is Coenzyme B (CCD ID: TP7) (formula: $\text{C}_{11}\text{H}_{22}\text{NO}_7\text{PS}$).



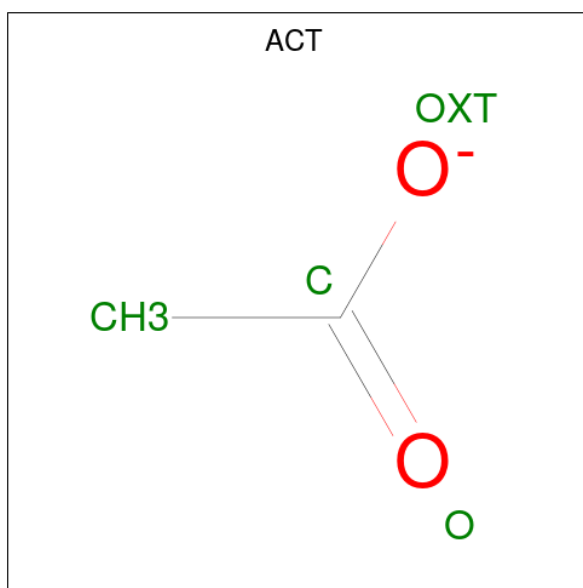
Mol	Chain	Residues	Atoms						ZeroOcc	AltConf
6	A	1	Total	C	N	O	P	S	0	1
			21	11	1	7	1	1		
6	D	1	Total	C	N	O	P	S	0	1
			21	11	1	7	1	1		

- Molecule 7 is 1-THIOETHANESULFONIC ACID (CCD ID: COM) (formula: $C_2H_6O_3S_2$).



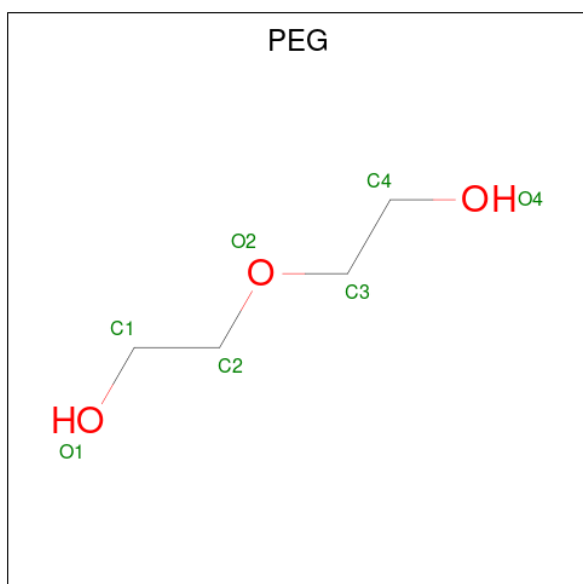
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	A	1	Total	C	O	S	0	0
			7	2	3	2		
7	D	1	Total	C	O	S	0	0
			7	2	3	2		

- Molecule 8 is ACETATE ION (CCD ID: ACT) (formula: $\text{C}_2\text{H}_3\text{O}_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
8	A	1	Total	C	O	0	1
			4	2	2		
8	A	1	Total	C	O	0	1
			4	2	2		
8	B	1	Total	C	O	0	1
			4	2	2		
8	C	1	Total	C	O	0	0
			4	2	2		

- Molecule 9 is DI(HYDROXYETHYL)ETHER (CCD ID: PEG) (formula: $\text{C}_4\text{H}_{10}\text{O}_3$).

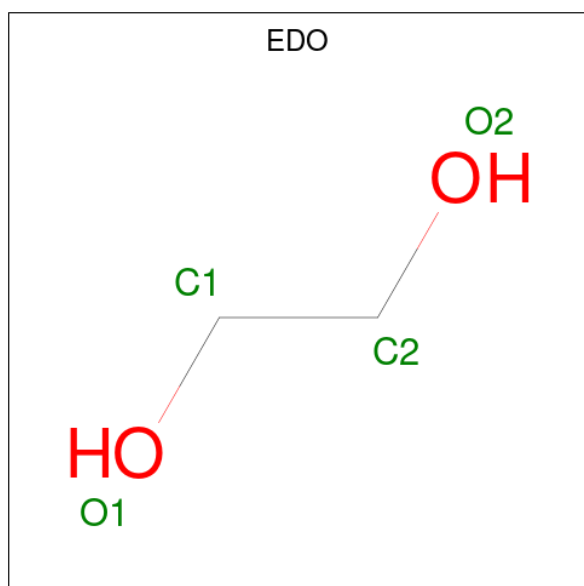


Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
9	A	1	Total	C	O	0	0
			7	4	3		
9	C	1	Total	C	O	0	0
			7	4	3		

- Molecule 10 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
10	A	1	Total	Zn	0	0
			1	1		

- Molecule 11 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: C₂H₆O₂).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
11	D	1	Total	C	O	0	0
			4	2	2		
11	F	1	Total	C	O	0	0
			4	2	2		
11	F	1	Total	C	O	0	0
			4	2	2		

- Molecule 12 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
12	A	524	Total	O	0	36
			533	533		

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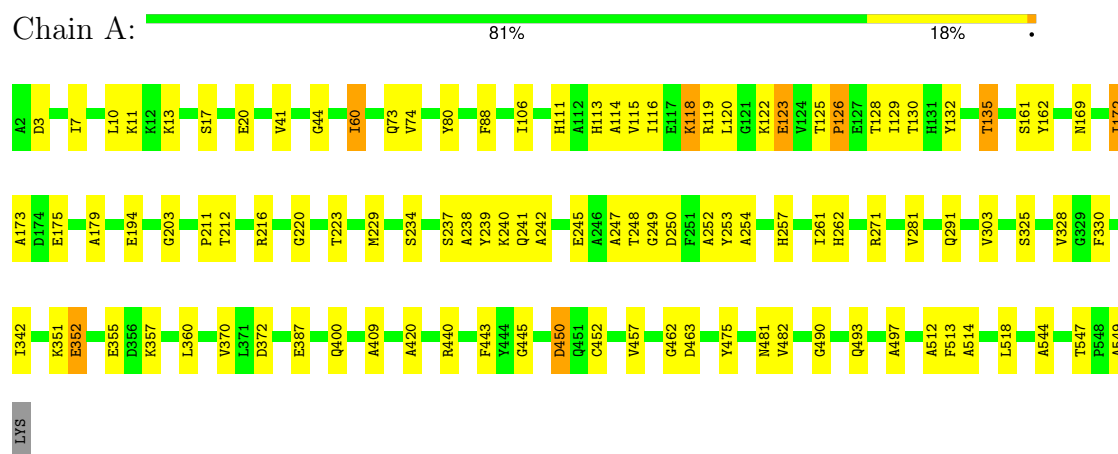
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
12	B	456	Total 470	O 470	0	27
12	C	262	Total 271	O 271	0	11
12	D	537	Total 547	O 547	0	27
12	E	419	Total 426	O 426	0	16
12	F	264	Total 269	O 269	0	9

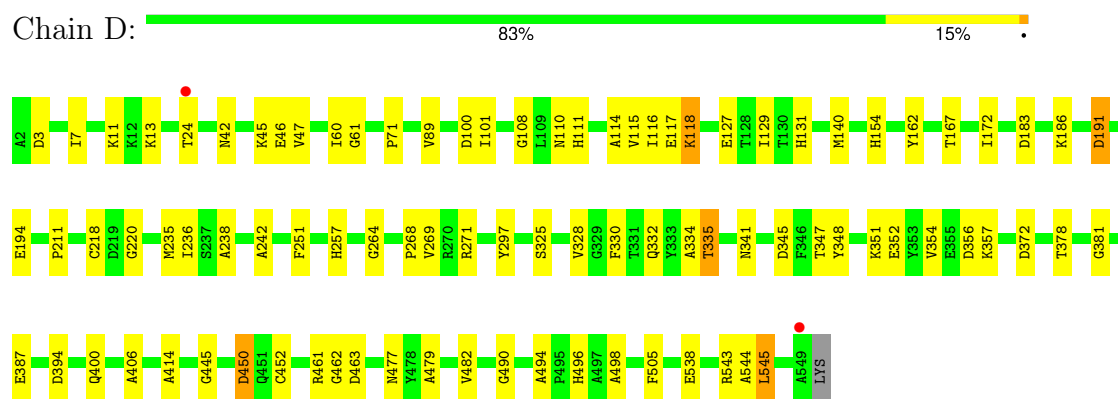
3 Residue-property plots

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.

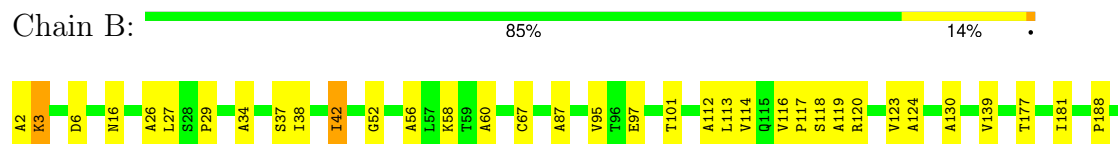
- Molecule 1: Methyl-coenzyme M reductase I subunit alpha



- Molecule 1: Methyl-coenzyme M reductase I subunit alpha



- Molecule 2: Methyl-coenzyme M reductase I subunit beta





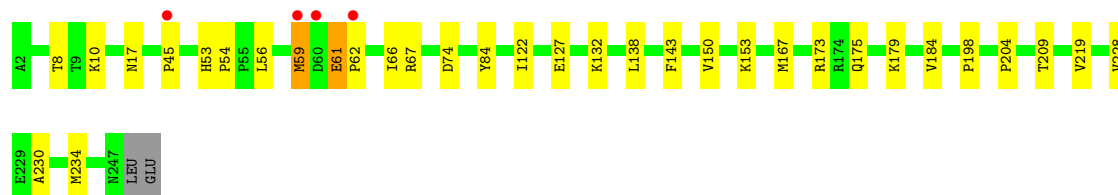
• Molecule 2: Methyl-coenzyme M reductase I subunit beta

Chain E: 81% 18%



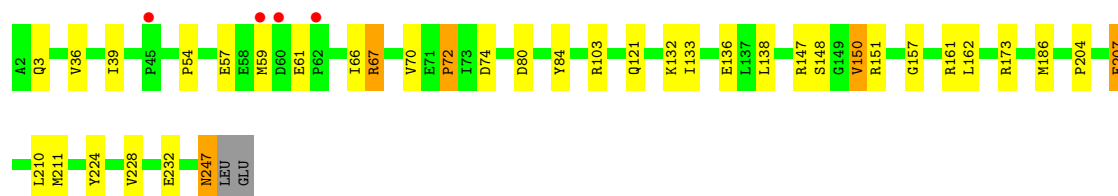
• Molecule 3: Methyl-coenzyme M reductase I subunit gamma

Chain C: 2% 86% 12%



• Molecule 3: Methyl-coenzyme M reductase I subunit gamma

Chain F: 2% 84% 13%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	82.02Å 118.26Å 122.39Å 90.00° 91.84° 90.00°	Depositor
Resolution (Å)	20.15 – 1.45 20.15 – 1.45	Depositor EDS
% Data completeness (in resolution range)	98.8 (20.15-1.45) 98.7 (20.15-1.45)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.42 (at 1.45Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.135 , 0.162 0.134 , 0.161	Depositor DCC
R_{free} test set	20362 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å ²)	10.6	Xtriage
Anisotropy	0.019	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 45.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.000 for -h,l,k 0.009 for -h,-l,-k 0.014 for h,-k,-l	Xtriage
F_o, F_c correlation	0.98	EDS
Total number of atoms	23013	wwPDB-VP
Average B, all atoms (Å ²)	13.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.85% 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: F43, COM, PEG, MG, SMC, MHS, ZN, EDO, ACT, GL3, MGN, TP7, AGM

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	1.73	43/4732 (0.9%)	1.42	24/6422 (0.4%)
1	D	1.78	52/4550 (1.1%)	1.44	12/6173 (0.2%)
2	B	1.79	39/3607 (1.1%)	1.37	8/4877 (0.2%)
2	E	1.79	48/3702 (1.3%)	1.38	9/5003 (0.2%)
3	C	1.81	19/2127 (0.9%)	1.39	3/2864 (0.1%)
3	F	1.81	21/2166 (1.0%)	1.45	3/2914 (0.1%)
All	All	1.78	222/20884 (1.1%)	1.41	59/28253 (0.2%)

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	1	1
1	D	1	0
All	All	2	1

All (222) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	140	MET	N-CA	10.42	1.57	1.46
2	B	139	VAL	CA-CB	9.10	1.65	1.54
1	A	172	ILE	CA-CB	8.88	1.65	1.54
3	F	36	VAL	N-CA	8.57	1.56	1.46
2	E	130	ALA	C-O	8.28	1.32	1.24
2	B	286	LYS	N-CA	7.86	1.55	1.46
3	C	228	VAL	CA-CB	7.57	1.65	1.54
3	C	209	THR	CA-C	7.53	1.62	1.52
3	F	72	PRO	C-O	7.50	1.32	1.23
2	B	117	PRO	C-O	7.18	1.32	1.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	437	ALA	N-CA	7.17	1.55	1.46
1	A	252	ALA	CA-CB	7.10	1.64	1.53
2	E	112	ALA	C-O	7.03	1.32	1.23
1	D	496	HIS	C-O	6.99	1.32	1.24
2	B	409	GLU	C-O	6.98	1.32	1.24
2	B	87	ALA	CA-CB	6.96	1.64	1.53
1	D	218	CYS	CA-C	-6.91	1.49	1.53
2	B	240	GLY	N-CA	6.89	1.54	1.45
2	E	92	MET	N-CA	6.89	1.55	1.46
2	B	114	VAL	N-CA	-6.88	1.38	1.46
3	C	198	PRO	C-O	6.88	1.31	1.23
1	A	547	THR	CA-C	6.83	1.59	1.52
2	E	168	VAL	N-CA	6.81	1.54	1.46
3	F	204	PRO	C-O	6.78	1.31	1.23
1	A	514	ALA	CA-CB	6.76	1.61	1.52
1	A	342	ILE	CA-CB	-6.74	1.46	1.54
1	A	203	GLY	N-CA	6.73	1.53	1.45
3	C	53	HIS	CA-CB	6.67	1.62	1.53
1	A	135	THR	C-O	6.65	1.31	1.24
1	D	347	THR	CA-C	6.63	1.61	1.52
3	C	204	PRO	C-O	6.60	1.31	1.23
2	E	75	ASP	C-O	6.59	1.31	1.23
2	E	145	GLU	C-O	6.59	1.31	1.24
1	D	220	GLY	N-CA	6.58	1.53	1.45
1	D	127	GLU	N-CA	-6.55	1.38	1.46
1	A	409	ALA	N-CA	6.53	1.54	1.46
2	E	321	ALA	CA-CB	6.52	1.64	1.53
2	E	9	ASP	C-O	6.49	1.31	1.24
1	A	247	ALA	N-CA	6.48	1.54	1.46
1	D	129	ILE	N-CA	6.47	1.54	1.46
3	F	80	ASP	CA-C	6.42	1.61	1.53
1	A	216	ARG	C-O	6.35	1.31	1.24
2	B	216	THR	C-O	6.35	1.31	1.24
3	F	150	VAL	CA-CB	6.32	1.60	1.53
2	E	32	ASN	C-O	6.29	1.31	1.24
2	E	161	LEU	N-CA	6.28	1.54	1.46
1	D	335	THR	N-CA	6.26	1.54	1.46
2	B	130	ALA	CA-CB	6.20	1.61	1.53
1	D	264	GLY	N-CA	6.19	1.52	1.45
2	E	274[A]	GLU	C-O	6.19	1.31	1.24
2	E	274[B]	GLU	C-O	6.19	1.31	1.24
1	D	47	VAL	CA-CB	6.17	1.61	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	281	VAL	N-CA	6.16	1.51	1.46
2	E	169	GLU	N-CA	6.13	1.53	1.45
1	D	162	TYR	N-CA	6.13	1.53	1.46
2	E	69	ILE	CA-CB	-6.12	1.46	1.53
1	A	254	ALA	N-CA	6.11	1.53	1.46
2	E	85	ILE	N-CA	6.11	1.53	1.46
2	E	355	THR	N-CA	6.10	1.53	1.46
2	B	425	PHE	N-CA	6.08	1.54	1.46
1	D	544	ALA	CA-CB	6.05	1.62	1.53
1	D	131	HIS	CA-C	6.03	1.60	1.52
2	B	16	ASN	N-CA	6.02	1.53	1.46
3	F	210	LEU	N-CA	6.02	1.53	1.46
3	C	230	ALA	N-CA	6.01	1.53	1.46
1	D	60	ILE	CA-C	6.00	1.59	1.52
3	F	103	ARG	CA-CB	6.00	1.62	1.53
1	A	450	ASP	CA-C	-5.99	1.45	1.52
3	C	66	ILE	CA-CB	5.99	1.61	1.54
3	C	8	THR	N-CA	5.99	1.53	1.46
2	E	319	GLY	N-CA	5.98	1.53	1.45
2	B	2	ALA	N-CA	5.98	1.57	1.46
1	A	370	VAL	N-CA	5.98	1.53	1.46
1	A	74	VAL	CA-C	5.97	1.59	1.52
2	E	130	ALA	N-CA	5.96	1.51	1.46
3	F	232	GLU	CA-CB	5.96	1.62	1.53
2	B	60	ALA	CA-CB	5.95	1.62	1.53
2	E	411	THR	CA-CB	5.92	1.63	1.53
1	D	462	GLY	N-CA	5.92	1.53	1.45
1	A	60	ILE	CA-CB	5.92	1.61	1.54
3	F	70	VAL	CA-CB	5.90	1.60	1.53
1	D	110	ASN	N-CA	5.90	1.53	1.46
2	E	435	ALA	CA-CB	5.90	1.62	1.53
2	E	336	ASP	CA-C	5.88	1.60	1.52
1	A	44	GLY	N-CA	5.88	1.53	1.45
2	E	284	VAL	C-O	5.85	1.30	1.24
2	B	27	LEU	N-CA	5.83	1.53	1.46
2	B	56	ALA	N-CA	5.83	1.53	1.46
2	E	401	ALA	C-O	5.81	1.31	1.24
1	A	462	GLY	N-CA	5.79	1.53	1.45
1	D	269	VAL	CA-CB	5.79	1.61	1.54
1	D	354	VAL	CA-CB	5.77	1.61	1.54
2	E	354	GLY	CA-C	5.77	1.58	1.52
3	C	138	LEU	CA-C	5.76	1.60	1.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	11	LYS	N-CA	5.72	1.53	1.46
2	E	313	ALA	CA-CB	5.69	1.62	1.53
2	B	112	ALA	C-O	5.67	1.30	1.23
1	D	348	TYR	N-CA	5.67	1.53	1.46
1	D	71	PRO	C-O	5.67	1.30	1.23
1	D	381	GLY	N-CA	5.66	1.52	1.45
1	D	351	LYS	CA-C	5.65	1.59	1.52
3	F	161	ARG	CZ-NH1	5.64	1.40	1.32
3	F	157	GLY	N-CA	5.62	1.53	1.45
2	B	401	ALA	N-CA	5.62	1.53	1.46
3	C	175	GLN	C-N	5.62	1.40	1.33
1	A	490	GLY	N-CA	5.60	1.53	1.45
1	A	355	GLU	C-O	5.59	1.30	1.24
2	E	96	THR	N-CA	5.58	1.53	1.45
1	D	11	LYS	N-CA	5.58	1.53	1.46
2	B	273	VAL	CA-C	5.58	1.59	1.52
2	E	291	TYR	N-CA	5.58	1.53	1.46
2	B	435	ALA	N-CA	-5.56	1.39	1.46
1	D	490	GLY	N-CA	5.56	1.52	1.45
3	C	173	ARG	C-O	5.56	1.30	1.23
1	D	89	VAL	CA-CB	5.55	1.62	1.54
1	A	161	SER	N-CA	5.54	1.53	1.46
1	A	493	GLN	CA-C	5.54	1.59	1.52
1	D	111	HIS	CA-C	-5.54	1.45	1.52
1	A	247	ALA	C-O	5.53	1.31	1.24
1	D	251	PHE	N-CA	5.53	1.53	1.46
1	D	414	ALA	CA-CB	5.53	1.62	1.53
2	E	129	ALA	CA-CB	5.53	1.62	1.53
2	E	269	ILE	CA-C	5.53	1.59	1.52
3	F	138	LEU	CA-C	5.51	1.60	1.52
2	B	257	LYS	N-CA	5.51	1.52	1.46
2	B	177	THR	N-CA	5.50	1.52	1.45
1	D	378	THR	N-CA	5.50	1.52	1.46
2	E	301	MET	CA-CB	5.49	1.62	1.53
3	C	143	PHE	C-O	5.49	1.30	1.24
1	A	440	ARG	N-CA	5.48	1.53	1.46
1	D	211	PRO	N-CA	5.48	1.53	1.47
2	B	124	ALA	N-CA	5.47	1.52	1.45
2	B	417	GLU	C-O	5.47	1.30	1.24
2	B	101	THR	C-O	5.47	1.30	1.23
1	A	20	GLU	C-O	5.47	1.30	1.23
1	D	334	ALA	N-CA	5.46	1.53	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	303	ASN	N-CA	5.46	1.52	1.46
1	A	443	PHE	CA-CB	5.46	1.60	1.53
1	D	191	ASP	CA-C	5.45	1.59	1.52
3	C	17	ASN	C-O	-5.45	1.17	1.24
1	A	262	HIS	C-O	5.44	1.31	1.23
1	A	420	ALA	C-O	5.44	1.30	1.24
2	B	52	GLY	N-CA	5.43	1.52	1.45
2	E	126	GLU	C-O	5.43	1.30	1.24
1	D	461	ARG	CZ-NH1	5.43	1.40	1.32
1	D	61	GLY	C-O	5.42	1.30	1.24
1	D	479	ALA	N-CA	5.40	1.53	1.46
2	B	38	ILE	CA-CB	5.40	1.61	1.54
2	B	42[A]	ILE	C-O	5.37	1.30	1.24
2	B	42[B]	ILE	C-O	5.37	1.30	1.24
1	D	116	ILE	CA-C	5.36	1.59	1.52
2	E	337	LEU	N-CA	5.35	1.52	1.46
1	D	236	ILE	C-O	5.34	1.30	1.24
1	D	498	ALA	N-CA	5.33	1.52	1.46
1	D	235	MET	N-CA	5.33	1.52	1.46
3	C	167	MET	N-CA	5.32	1.53	1.46
2	B	361	PHE	CA-C	5.32	1.59	1.52
3	F	39	ILE	N-CA	5.32	1.52	1.46
2	B	181	ILE	CA-C	5.31	1.58	1.52
1	A	41	VAL	N-CA	5.31	1.52	1.46
1	A	450	ASP	CA-CB	-5.31	1.45	1.53
3	F	173	ARG	N-CA	5.30	1.54	1.46
1	D	545[A]	LEU	C-O	5.29	1.30	1.24
1	D	545[B]	LEU	C-O	5.29	1.30	1.24
2	B	60	ALA	C-O	5.29	1.31	1.23
1	A	518	LEU	N-CA	5.29	1.52	1.45
1	D	543	ARG	N-CA	5.28	1.52	1.46
3	C	122	ILE	C-O	5.27	1.29	1.24
1	D	494	ALA	N-CA	5.26	1.51	1.46
3	C	219	VAL	CA-CB	5.26	1.62	1.54
2	E	174	ASN	N-CA	5.26	1.52	1.46
1	A	212	THR	C-O	5.25	1.30	1.24
2	E	265	VAL	CA-C	5.25	1.59	1.52
1	A	211	PRO	CA-CB	5.24	1.60	1.53
2	B	120	ARG	N-CA	5.24	1.52	1.46
2	E	412	SER	CA-C	5.22	1.59	1.52
1	D	100	ASP	N-CA	5.20	1.52	1.46
1	D	101	ILE	C-O	5.18	1.29	1.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	198	ASN	N-CA	5.18	1.52	1.46
1	A	457	VAL	CA-CB	5.18	1.60	1.54
2	B	26	ALA	C-O	-5.17	1.17	1.24
1	D	498	ALA	C-O	5.17	1.30	1.24
1	A	3	ASP	C-O	5.16	1.29	1.23
2	E	230	VAL	C-O	5.15	1.29	1.24
2	E	5	GLU	N-CA	5.15	1.52	1.46
3	F	224	TYR	CA-CB	5.15	1.61	1.53
1	A	512	ALA	C-O	5.14	1.30	1.24
1	D	341	ASN	N-CA	5.14	1.53	1.46
2	B	214	LEU	CA-CB	5.13	1.61	1.53
3	C	74	ASP	CA-C	-5.13	1.45	1.52
1	A	291	GLN	CA-C	5.13	1.60	1.52
2	E	416	LYS	N-CA	5.13	1.52	1.46
2	E	7	LYS	N-CA	5.13	1.52	1.45
3	F	162	LEU	N-CA	5.13	1.52	1.45
1	A	220	GLY	N-CA	5.12	1.52	1.45
2	E	87	ALA	CA-CB	5.12	1.61	1.53
1	A	172	ILE	CG1-CD1	-5.12	1.31	1.51
1	A	162	TYR	N-CA	5.11	1.52	1.46
2	B	314	THR	C-O	5.11	1.30	1.24
3	C	234	MET	N-CA	5.11	1.52	1.46
1	D	406	ALA	CA-CB	5.11	1.61	1.53
1	A	360	LEU	N-CA	5.11	1.52	1.46
1	D	167	THR	N-CA	5.11	1.52	1.45
1	D	3	ASP	CA-C	5.09	1.59	1.53
2	B	270	ALA	N-CA	5.09	1.52	1.46
1	D	108	GLY	N-CA	5.08	1.51	1.45
3	F	3	GLN	CB-CG	-5.08	1.37	1.52
2	E	38	ILE	N-CA	5.08	1.52	1.46
3	F	136	GLU	CA-C	5.06	1.59	1.52
2	E	29	PRO	CA-CB	5.06	1.60	1.53
3	F	3	GLN	C-O	-5.06	1.17	1.24
3	F	133	ILE	C-O	5.06	1.30	1.24
2	E	400	ASP	CA-CB	5.04	1.60	1.53
3	C	184	VAL	CA-CB	5.04	1.60	1.54
2	E	276	ALA	CA-CB	5.03	1.61	1.53
2	E	72	ARG	N-CA	5.03	1.52	1.46
1	A	179	ALA	CA-CB	5.02	1.61	1.53
1	D	297	TYR	C-O	5.02	1.30	1.24
3	F	147	ARG	N-CA	5.01	1.52	1.46
2	E	139	VAL	CA-CB	5.01	1.60	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	435	ALA	CA-CB	5.00	1.61	1.53
2	B	437	ALA	C-O	5.00	1.29	1.24

All (59) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	13	LYS	N-CA-C	8.69	120.83	111.36
2	E	97	GLU	CA-C-N	-8.21	110.30	122.86
2	E	97	GLU	C-N-CA	-8.21	110.30	122.86
1	A	303	VAL	N-CA-C	-7.98	103.03	110.53
2	E	32	ASN	CA-C-O	7.69	125.38	119.46
2	E	32	ASN	O-C-N	-7.60	114.85	121.31
1	A	450	ASP	CB-CA-C	7.11	122.59	110.79
1	D	7	ILE	N-CA-C	6.95	117.71	110.62
1	D	345	ASP	O-C-N	-6.54	115.33	122.07
1	A	450	ASP	N-CA-CB	6.38	119.50	110.12
1	D	356	ASP	O-C-N	-6.37	115.22	122.09
1	D	238	ALA	CA-C-O	-6.18	112.50	119.79
1	D	450	ASP	CB-CA-C	6.16	122.02	110.63
1	A	253	TYR	O-C-N	6.06	128.54	122.12
2	E	337	LEU	CA-C-O	-5.91	114.61	120.82
1	D	450	ASP	N-CA-CB	5.85	119.23	110.22
1	A	497	ALA	CA-C-O	-5.80	114.27	120.42
2	E	390	ILE	N-CA-CB	-5.77	106.87	110.50
1	A	547	THR	CA-C-N	-5.76	113.76	119.92
1	A	547	THR	C-N-CA	-5.76	113.76	119.92
1	A	41	VAL	O-C-N	5.75	127.54	121.91
1	D	218	CYS	N-CA-C	5.73	114.25	108.75
1	A	547	THR	O-C-N	5.73	126.02	121.55
1	A	13	LYS	CB-CA-C	-5.72	101.12	110.85
1	D	394	ASP	CA-C-O	-5.72	115.01	120.90
1	A	513	PHE	O-C-N	5.68	129.44	122.34
2	E	436	ALA	N-CA-C	-5.56	105.30	111.36
1	A	10	LEU	O-C-N	5.45	127.90	122.12
3	F	66	ILE	N-CA-C	5.42	115.63	110.53
1	A	234	SER	N-CA-C	-5.38	105.45	112.23
2	B	34	ALA	CA-C-O	-5.30	114.80	120.42
2	B	273	VAL	O-C-N	5.28	126.99	121.87
1	D	13	LYS	CB-CA-C	-5.28	101.88	110.85
2	E	318	GLN	O-C-N	5.25	129.37	122.33
2	B	333	TYR	CA-C-O	-5.25	112.80	119.31
1	A	549	ALA	CA-C-O	-5.22	111.93	120.80

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	116	VAL	CA-C-N	-5.21	114.74	119.90
2	B	116	VAL	C-N-CA	-5.21	114.74	119.90
1	A	475	TYR	N-CA-C	-5.21	103.03	109.64
1	D	116	ILE	CA-C-O	-5.20	115.66	121.17
1	A	223	THR	CA-C-O	-5.17	115.39	120.82
1	D	538	GLU	CB-CA-C	-5.15	104.45	110.17
1	A	7	ILE	N-CA-C	5.15	115.87	110.62
2	B	418	VAL	N-CA-C	5.14	115.81	110.82
1	A	450	ASP	N-CA-C	5.13	116.87	111.28
3	C	54	PRO	CB-CA-C	-5.11	104.68	110.92
3	F	74	ASP	N-CA-C	5.11	116.85	111.28
1	A	342	ILE	N-CA-C	-5.10	106.10	110.74
1	D	477	ASN	CB-CG-ND2	5.09	124.04	116.40
3	C	127	GLU	CA-C-N	-5.09	112.58	120.31
3	C	127	GLU	C-N-CA	-5.09	112.58	120.31
2	B	6	ASP	N-CA-C	5.08	117.26	110.35
1	A	135	THR	CA-C-O	-5.07	115.50	120.82
1	A	253	TYR	CA-C-O	-5.07	115.18	120.55
2	E	143	ILE	O-C-N	5.06	127.00	121.94
2	B	216	THR	OG1-CB-CG2	-5.06	99.18	109.30
1	A	88	PHE	CA-C-O	-5.03	114.41	120.10
3	F	151	ARG	CG-CD-NE	-5.03	100.94	112.00
1	A	490	GLY	CA-C-O	-5.02	115.58	120.75

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	A	450	ASP	CA
1	D	450	ASP	CA

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	123[B]	GLU	Peptide

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	4639	0	4438	61	0
1	D	4423	0	4292	26	0
2	B	3485	0	3548	29	0
2	E	3574	0	3636	39	0
3	C	2063	0	1998	19	0
3	F	2081	0	2045	18	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
4	C	1	0	0	0	0
4	D	2	0	0	0	0
4	E	1	0	0	0	0
4	F	1	0	0	0	0
5	A	62	0	43	1	0
5	D	62	0	43	1	0
6	A	21	0	17	3	0
6	D	21	0	17	2	0
7	A	7	0	4	0	0
7	D	7	0	4	0	0
8	A	8	0	5	0	0
8	B	4	0	2	0	0
8	C	4	0	3	1	0
9	A	7	0	10	0	0
9	C	7	0	10	0	0
10	A	1	0	0	0	0
11	D	4	0	6	0	0
11	F	8	0	12	0	0
12	A	533	0	0	5	0
12	B	470	0	0	7	0
12	C	271	0	0	6	0
12	D	547	0	0	9	0
12	E	426	0	0	18	0
12	F	269	0	0	9	0
All	All	23013	0	20133	173	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 4.

All (173) 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:169[A]:ASN:ND2	1:A:172:ILE:HD13	1.49	1.27
2:B:322[B]:ARG:NH2	3:C:67[B]:ARG:HG3	1.58	1.19

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:126[B]:PRO:CB	1:A:175[B]:GLU:HG2	1.93	0.99
2:E:27:LEU:CD2	2:E:246[B]:MET:HE1	1.93	0.97
1:A:249:GLY:O	2:E:369[B]:GLY:HA3	1.65	0.95
2:E:27:LEU:HD22	2:E:246[B]:MET:HE1	1.48	0.94
1:A:169[A]:ASN:ND2	1:A:172:ILE:CD1	2.29	0.94
1:A:122[B]:LYS:HA	12:A:3785:HOH:O	1.68	0.93
1:A:126[B]:PRO:HB2	1:A:175[B]:GLU:HG2	1.50	0.93
3:F:67[A]:ARG:HG2	3:F:67[A]:ARG:HH11	1.30	0.92
2:B:322[B]:ARG:NH2	3:C:67[B]:ARG:CG	2.39	0.85
2:E:27:LEU:HD22	2:E:246[B]:MET:CE	2.09	0.83
1:A:240[B]:LYS:HE3	12:F:1132:HOH:O	1.78	0.82
1:D:24:THR:HG23	12:F:1497:HOH:O	1.82	0.79
1:A:120[B]:LEU:HD21	1:A:241[B]:GLN:NE2	1.97	0.78
2:B:37[B]:SER:HB3	2:B:424[B]:GLU:OE1	1.84	0.77
3:F:132[A]:LYS:HD2	12:F:1990[A]:HOH:O	1.83	0.76
1:A:120[B]:LEU:HD11	1:A:241[B]:GLN:OE1	1.89	0.73
1:D:357[A]:LYS:HE2	1:D:372[A]:ASP:OD2	1.89	0.73
12:E:862:HOH:O	3:F:59:MET:HE1	1.88	0.73
1:A:352[A]:GLU:N	1:A:352[A]:GLU:OE1	2.21	0.72
2:E:27:LEU:HD22	2:E:246[B]:MET:SD	2.29	0.72
1:D:42[A]:ASN:ND2	12:D:1802:HOH:O	2.24	0.71
2:B:322[B]:ARG:CZ	3:C:67[B]:ARG:HG3	2.21	0.70
1:A:169[A]:ASN:HD22	1:A:172:ILE:HD13	1.56	0.70
1:A:351:LYS:HD3	1:A:352[A]:GLU:OE1	1.91	0.70
1:A:126[B]:PRO:HB3	1:A:175[B]:GLU:HG2	1.71	0.69
3:F:67[A]:ARG:HH11	3:F:67[A]:ARG:CG	2.03	0.69
1:A:169[A]:ASN:CG	1:A:172:ILE:HD13	2.18	0.67
3:C:45:PRO:HB3	12:C:3636:HOH:O	1.94	0.67
1:A:113[B]:HIS:HE1	12:A:731:HOH:O	1.80	0.65
3:F:132[A]:LYS:HE2	12:F:1692:HOH:O	1.96	0.65
2:B:3[A]:LYS:HE2	2:B:234:GLU:OE1	1.96	0.64
1:A:60:ILE:HD12	12:D:3878:HOH:O	1.97	0.64
1:A:351:LYS:CD	1:A:352[A]:GLU:OE1	2.45	0.64
2:B:118[B]:SER:HB3	12:B:1533:HOH:O	1.97	0.64
1:D:330:PHE:CE2	6:D:553[A]:TP7:H71C	2.33	0.64
1:D:268:PRO:HB3	12:E:1668:HOH:O	1.97	0.63
2:E:21:GLN:NE2	12:E:4171:HOH:O	2.32	0.63
1:D:330:PHE:CD2	1:D:482[A]:VAL:HG11	2.35	0.62
1:A:240[B]:LYS:HA	12:F:1186:HOH:O	1.99	0.61
2:B:188:PRO:HD3	12:E:1304:HOH:O	2.01	0.61
1:D:45[B]:LYS:HE3	12:D:1271:HOH:O	2.00	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:61[A]:LYS:HE3	12:E:2470:HOH:O	2.02	0.60
1:A:111[B]:HIS:O	1:A:115[B]:VAL:HG23	2.02	0.60
3:C:45:PRO:HD3	12:C:3778:HOH:O	2.02	0.60
3:C:179:LYS:HG3	12:C:4195:HOH:O	2.01	0.59
2:B:322[B]:ARG:HH21	3:C:67[B]:ARG:HG3	1.64	0.59
3:F:54:PRO:HD2	3:F:59:MET:HE3	1.85	0.59
2:E:118[B]:SER:HB3	12:E:2658:HOH:O	2.03	0.59
1:A:172:ILE:O	1:A:173[A]:ALA:C	2.44	0.59
2:E:95:VAL:HG21	2:E:119[B]:ALA:HB3	1.85	0.58
2:E:322[A]:ARG:CZ	3:F:67[A]:ARG:HD2	2.33	0.58
1:D:194[B]:GLU:HG2	12:D:3701:HOH:O	2.03	0.58
3:C:10:LYS:HE3	12:C:3969:HOH:O	2.05	0.57
1:A:126[B]:PRO:CB	1:A:175[B]:GLU:CG	2.77	0.57
2:E:27:LEU:HD21	2:E:246[B]:MET:HE1	1.85	0.57
2:E:261[B]:LYS:HG2	12:F:3664:HOH:O	2.05	0.56
1:A:119[B]:ARG:NH1	1:A:250:ASP:OD2	2.38	0.56
2:B:405[A]:MET:HG3	1:D:115:VAL:HG22	1.88	0.56
1:A:120[B]:LEU:CD2	1:A:241[B]:GLN:NE2	2.67	0.56
1:A:122[B]:LYS:O	1:A:123[B]:GLU:HB2	2.06	0.55
2:E:344[A]:LEU:HB3	2:E:345:PRO:HD2	1.89	0.55
1:A:194[B]:GLU:HG2	12:A:2095:HOH:O	2.07	0.55
1:A:330:PHE:CE2	6:A:553[A]:TP7:H71C	2.43	0.54
3:F:247:ASN:C	3:F:247:ASN:HD22	2.14	0.54
1:D:330:PHE:CD2	1:D:482[A]:VAL:CG1	2.91	0.54
3:F:67[A]:ARG:HG2	3:F:67[A]:ARG:NH1	2.11	0.54
3:C:61:GLU:HB2	3:C:67[A]:ARG:NH2	2.23	0.54
2:B:424[A]:GLU:HG3	12:B:3930:HOH:O	2.08	0.54
1:A:242[B]:ALA:HB2	3:F:84:TYR:CE1	2.43	0.53
1:A:120[B]:LEU:CD1	1:A:241[B]:GLN:OE1	2.55	0.53
2:E:299:LEU:CD2	12:E:2973:HOH:O	2.57	0.53
1:D:387[A]:GLU:HB2	12:D:3567[A]:HOH:O	2.09	0.53
2:E:61[B]:LYS:CE	12:E:2444:HOH:O	2.57	0.52
1:A:328:VAL:HB	5:D:552:F43:H9A1	1.91	0.51
1:D:172[A]:ILE:HD12	12:D:2242:HOH:O	2.10	0.51
1:A:125[B]:THR:HB	1:A:126[B]:PRO:CD	2.41	0.51
2:E:372[B]:PRO:HG2	2:E:397:MET:SD	2.50	0.51
3:F:67[A]:ARG:CG	3:F:67[A]:ARG:NH1	2.67	0.51
1:A:248:THR:HG22	2:E:365[B]:SER:O	2.10	0.51
1:A:352[A]:GLU:OE1	1:A:352[A]:GLU:CA	2.59	0.50
2:B:42[A]:ILE:HG13	2:B:425:PHE:CE1	2.47	0.50
2:B:322[B]:ARG:HH21	3:C:67[B]:ARG:CG	2.18	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:125[B]:THR:HB	1:A:126[B]:PRO:HD2	1.92	0.50
1:A:481:ASN:HA	6:A:553[A]:TP7:S7	2.51	0.50
12:E:3631[A]:HOH:O	3:F:72:PRO:HG3	2.11	0.50
1:A:122[B]:LYS:HE2	1:A:239[B]:TYR:O	2.11	0.50
2:B:58:LYS:HE2	12:B:3633:HOH:O	2.11	0.50
2:B:246[A]:MET:HE3	2:B:429:LEU:HD12	1.94	0.49
1:A:120[B]:LEU:CD2	1:A:241[B]:GLN:CD	2.85	0.49
1:A:387[B]:GLU:HG3	12:A:1069:HOH:O	2.11	0.49
2:E:27:LEU:CD2	2:E:246[B]:MET:CE	2.72	0.49
1:D:154:HIS:NE2	1:D:545[A]:LEU:HD21	2.28	0.49
2:B:439:ILE:HD12	2:B:443:ILE:HD11	1.94	0.49
3:C:132:LYS:HD2	12:C:4201:HOH:O	2.11	0.49
12:B:3948[A]:HOH:O	3:C:67[A]:ARG:HD3	2.13	0.49
1:A:113[B]:HIS:CE1	12:A:731:HOH:O	2.61	0.49
1:A:330:PHE:CZ	6:A:553[A]:TP7:H71C	2.48	0.49
2:B:401:ALA:O	3:C:59:MET:HE1	2.13	0.49
2:E:374:ILE:C	2:E:374:ILE:HD12	2.38	0.49
1:D:154:HIS:CE1	1:D:545[A]:LEU:HD21	2.48	0.48
5:A:1:F43:H9A1	1:D:328:VAL:HB	1.96	0.48
1:A:126[B]:PRO:O	1:A:130:THR:OG1	2.26	0.48
1:A:169[A]:ASN:HD21	1:A:172:ILE:CD1	2.20	0.48
2:E:370[B]:GLY:HA3	2:E:374:ILE:HG12	1.95	0.48
1:A:357:LYS:NZ	1:A:372[B]:ASP:OD1	2.46	0.48
1:A:120[B]:LEU:HD21	1:A:241[B]:GLN:CD	2.39	0.47
3:C:153:LYS:NZ	8:C:1:ACT:H2	2.29	0.47
1:A:242[A]:ALA:HB2	3:F:84:TYR:CE1	2.50	0.47
1:D:330:PHE:CE2	1:D:482[A]:VAL:CG1	2.98	0.47
2:E:424[B]:GLU:HG3	12:E:3642:HOH:O	2.13	0.47
1:A:126[B]:PRO:HG2	1:A:175[B]:GLU:CD	2.39	0.47
1:A:229:MET:SD	2:E:367[B]:TYR:CE1	3.08	0.46
2:B:95:VAL:HG21	2:B:119[B]:ALA:HB3	1.95	0.46
2:B:401:ALA:O	3:C:59:MET:CE	2.64	0.46
12:B:2205:HOH:O	2:E:188:PRO:HD3	2.15	0.46
3:C:61:GLU:H	3:C:61:GLU:HG2	1.39	0.46
3:C:84:TYR:CE1	1:D:242:ALA:HB2	2.50	0.46
1:D:191:ASP:HB2	12:D:3703:HOH:O	2.14	0.46
1:A:128[B]:THR:O	1:A:129[B]:ILE:C	2.57	0.46
1:A:172:ILE:HD12	1:A:172:ILE:N	2.31	0.46
1:A:73:GLN:HB2	1:A:80:TYR:CE2	2.51	0.46
3:C:62:PRO:HD2	12:C:3269:HOH:O	2.15	0.46
1:A:126[B]:PRO:HB2	1:A:175[B]:GLU:CG	2.35	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:113[B]:LEU:HD23	2:B:113[B]:LEU:C	2.41	0.45
1:A:242[B]:ALA:HB3	1:A:245:GLU:OE2	2.16	0.44
2:E:58[A]:LYS:HE3	2:E:58[A]:LYS:HB2	1.42	0.44
3:F:247:ASN:C	3:F:247:ASN:ND2	2.74	0.44
2:E:283:LYS:HG3	12:E:4160:HOH:O	2.18	0.43
2:B:246[A]:MET:CE	2:B:429:LEU:HD12	2.47	0.43
2:E:299:LEU:HD23	12:E:2973:HOH:O	2.17	0.43
2:E:299:LEU:HD22	12:E:2973:HOH:O	2.18	0.43
1:A:114[A]:ALA:O	1:A:118[A]:LYS:HD3	2.18	0.43
1:A:135:THR:HG21	1:A:237[B]:SER:OG	2.19	0.43
3:F:228:VAL:HG22	12:F:4180:HOH:O	2.19	0.43
3:F:132[A]:LYS:CE	12:F:1692:HOH:O	2.63	0.43
3:F:207[A]:GLU:HG3	12:F:3759[A]:HOH:O	2.18	0.43
2:B:29:PRO:O	2:E:123[B]:VAL:HG11	2.18	0.42
1:A:351:LYS:HD2	1:A:352[A]:GLU:OE1	2.17	0.42
2:B:214:LEU:HB2	2:B:428:PRO:HG3	2.01	0.42
2:E:283:LYS:HG2	12:E:4240:HOH:O	2.19	0.42
2:B:236[C]:MET:HE2	2:B:236[C]:MET:HB2	1.73	0.42
2:B:374:ILE:HD12	2:B:374:ILE:C	2.45	0.42
2:E:122[B]:ASP:HB2	12:E:1158:HOH:O	2.19	0.42
12:B:769:HOH:O	2:E:183:GLN:HG2	2.20	0.42
1:A:330:PHE:CD2	1:A:482[A]:VAL:HG11	2.55	0.42
2:B:246[B]:MET:HB3	2:B:246[B]:MET:HE2	1.39	0.42
2:E:61[B]:LYS:HE2	12:E:2444:HOH:O	2.19	0.42
2:E:362:PHE:O	2:E:369[A]:GLY:HA3	2.19	0.42
2:E:61[A]:LYS:CE	12:E:2470:HOH:O	2.65	0.42
3:C:56:LEU:O	3:C:59:MET:HB2	2.19	0.41
2:E:362:PHE:CE1	2:E:367[B]:TYR:HB3	2.55	0.41
1:A:115[B]:VAL:HG22	2:E:405[B]:MET:HE1	2.02	0.41
1:D:114:ALA:HA	1:D:118[A]:LYS:HE3	2.03	0.41
1:D:183:ASP:OD2	1:D:186[B]:LYS:HG3	2.20	0.41
2:E:61[B]:LYS:HE3	12:E:2370:HOH:O	2.21	0.41
2:B:199:HIS:CE1	2:B:415[B]:ILE:HD12	2.56	0.41
1:D:330:PHE:HE2	6:D:553[A]:TP7:H71C	1.84	0.41
1:A:132:TYR:HA	1:A:238[B]:ALA:CB	2.51	0.41
2:B:299:LEU:HD22	12:B:2183:HOH:O	2.19	0.41
1:A:544:ALA:HB2	12:D:3604[A]:HOH:O	2.21	0.41
1:D:46[B]:GLU:HG3	12:D:696:HOH:O	2.20	0.41
1:D:332:GLN:HA	1:D:335:THR:OG1	2.21	0.41
1:A:106:ILE:HB	1:A:261:ILE:HB	2.03	0.40
1:D:117:GLU:HB2	1:D:118[A]:LYS:HE3	2.02	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:116[B]:ILE:HG23	1:A:122[B]:LYS:HB2	2.03	0.40
2:B:123[B]:VAL:HG12	2:E:36[B]:LYS:HA	2.02	0.40
2:B:67:CYS:HB3	1:D:505:PHE:CE1	2.56	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	595/549 (108%)	570 (96%)	24 (4%)	1 (0%)	43	21
1	D	571/549 (104%)	548 (96%)	22 (4%)	1 (0%)	43	21
2	B	469/442 (106%)	462 (98%)	7 (2%)	0	100	100
2	E	482/442 (109%)	473 (98%)	9 (2%)	0	100	100
3	C	256/248 (103%)	249 (97%)	7 (3%)	0	100	100
3	F	260/248 (105%)	255 (98%)	5 (2%)	0	100	100
All	All	2633/2478 (106%)	2557 (97%)	74 (3%)	2 (0%)	48	22

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	325	SER
1	D	325	SER

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	481/434 (111%)	472 (98%)	9 (2%)	50	17
1	D	463/434 (107%)	458 (99%)	5 (1%)	65	38
2	B	369/341 (108%)	366 (99%)	3 (1%)	73	50
2	E	378/341 (111%)	371 (98%)	7 (2%)	50	17
3	C	226/216 (105%)	223 (99%)	3 (1%)	61	31
3	F	230/216 (106%)	217 (94%)	13 (6%)	18	1
All	All	2147/1982 (108%)	2107 (98%)	40 (2%)	59	17

All (40) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17[A]	SER
1	A	17[B]	SER
1	A	118[A]	LYS
1	A	118[B]	LYS
1	A	126[A]	PRO
1	A	126[B]	PRO
1	A	352[A]	GLU
1	A	352[B]	GLU
1	A	450	ASP
2	B	3[A]	LYS
2	B	3[B]	LYS
2	B	97	GLU
3	C	59	MET
3	C	61	GLU
3	C	150	VAL
1	D	118[A]	LYS
1	D	118[B]	LYS
1	D	352[A]	GLU
1	D	352[B]	GLU
1	D	450	ASP
2	E	58[A]	LYS
2	E	58[B]	LYS
2	E	98	ASP
2	E	126	GLU
2	E	185	LEU
2	E	374	ILE
2	E	440	LYS
3	F	57[A]	GLU

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Mol	Chain	Res	Type
3	F	57[B]	GLU
3	F	61	GLU
3	F	67[A]	ARG
3	F	67[B]	ARG
3	F	121	GLN
3	F	148[A]	SER
3	F	148[B]	SER
3	F	150	VAL
3	F	186	MET
3	F	207[A]	GLU
3	F	207[B]	GLU
3	F	247	ASN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	42	ASN
1	A	437	GLN
2	B	102	ASN
2	B	115	GLN
2	B	404	GLN
3	C	121	GLN
1	D	317	GLN
1	D	437	GLN
2	E	102	ASN
2	E	115	GLN
3	F	121	GLN
3	F	247	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

10 non-standard protein/DNA/RNA residues 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
1	SMC	A	452	1	5,6,7	1.13	0	3,6,8	1.81	1 (33%)
1	SMC	D	452	1	5,6,7	1.06	0	3,6,8	2.41	1 (33%)
1	AGM	D	271	1	10,11,12	1.61	2 (20%)	7,13,15	1.41	1 (14%)
1	MGN	A	400	1	6,9,10	1.76	3 (50%)	7,12,14	1.68	1 (14%)
1	MGN	D	400	1	6,9,10	1.75	2 (33%)	7,12,14	1.26	1 (14%)
1	GL3	D	445	1	2,3,4	2.23	1 (50%)	1,2,4	0.13	0
1	AGM	A	271	1	10,11,12	1.37	2 (20%)	7,13,15	1.43	1 (14%)
1	GL3	A	445	1	2,3,4	2.12	1 (50%)	1,2,4	0.30	0
1	MHS	D	257	1	10,11,12	2.42	4 (40%)	5,14,16	7.08	3 (60%)
1	MHS	A	257	1	10,11,12	2.28	6 (60%)	5,14,16	10.50	3 (60%)

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
1	SMC	A	452	1	-	1/3/5/7	-
1	SMC	D	452	1	-	1/3/5/7	-
1	AGM	D	271	1	-	2/10/11/13	-
1	MGN	A	400	1	-	0/7/9/12	-
1	MGN	D	400	1	-	0/7/9/12	-
1	GL3	D	445	1	-	0/1/1/2	-
1	AGM	A	271	1	-	2/10/11/13	-
1	GL3	A	445	1	-	1/1/1/2	-
1	MHS	D	257	1	-	0/5/6/8	0/1/1/1
1	MHS	A	257	1	-	0/5/6/8	0/1/1/1

All (21) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	257	MHS	CD2-NE2	4.46	1.45	1.37
1	A	257	MHS	CE1-NE2	3.66	1.41	1.32
1	D	400	MGN	O-C	3.49	1.31	1.20
1	D	257	MHS	CE1-NE2	3.34	1.40	1.32
1	A	257	MHS	CM-ND1	3.29	1.53	1.46

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	271	AGM	CB-CA	3.21	1.58	1.53
1	D	445	GL3	C-S	-3.11	1.67	1.80
1	A	445	GL3	C-S	-2.99	1.68	1.80
1	D	257	MHS	CE1-ND1	2.96	1.43	1.35
1	D	257	MHS	CD2-CG	2.71	1.40	1.36
1	A	257	MHS	CE1-ND1	2.70	1.42	1.35
1	A	400	MGN	CB1-CA	2.69	1.58	1.55
1	D	271	AGM	CG-CB	2.64	1.60	1.53
1	A	257	MHS	CG-ND1	-2.58	1.33	1.38
1	A	257	MHS	CD2-CG	2.48	1.40	1.36
1	A	257	MHS	O-C	2.38	1.29	1.20
1	A	400	MGN	CB1-CG	2.32	1.58	1.53
1	A	400	MGN	O-C	2.26	1.27	1.20
1	A	271	AGM	CZ-NH2	2.11	1.39	1.32
1	A	271	AGM	CB-CA	2.09	1.56	1.53
1	D	400	MGN	CB1-CG	2.03	1.57	1.53

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	257	MHS	ND1-CE1-NE2	-22.25	99.69	112.94
1	D	257	MHS	ND1-CE1-NE2	-15.02	104.00	112.94
1	A	257	MHS	CM-ND1-CE1	-5.22	116.51	126.28
1	A	257	MHS	CD2-NE2-CE1	5.14	111.96	105.24
1	D	257	MHS	CM-ND1-CE1	-4.23	118.38	126.28
1	D	452	SMC	CA-CB-SG	-3.72	108.03	114.04
1	A	400	MGN	CB1-CG-CD	-3.61	104.92	112.13
1	A	452	SMC	CA-CB-SG	-2.91	109.34	114.04
1	A	271	AGM	NE1-CZ-NH2	-2.56	116.19	120.58
1	D	271	AGM	CG-CD-NE1	-2.38	106.33	110.42
1	D	400	MGN	CB1-CA-C	-2.33	102.46	108.47
1	D	257	MHS	CD2-NE2-CE1	2.18	108.10	105.24

There are no chirality outliers.

All (7) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	452	SMC	CA-CB-SG-CS
1	D	452	SMC	CA-CB-SG-CS
1	A	445	GL3	S-C-CA-N
1	A	271	AGM	CE2-CD-NE1-CZ
1	D	271	AGM	CE2-CD-NE1-CZ

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Mol	Chain	Res	Type	Atoms
1	A	271	AGM	NE1-CD-CG-CB
1	D	271	AGM	NE1-CD-CG-CB

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 25 ligands modelled in this entry, 10 are monoatomic - leaving 15 for Mogul analysis.

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$
11	EDO	F	251	-	3,3,3	0.57	0	2,2,2	0.72	0
5	F43	D	552	1,7	63,71,71	2.46	20 (31%)	73,118,118	1.68	21 (28%)
9	PEG	C	251	-	6,6,6	0.48	0	5,5,5	0.67	0
9	PEG	A	557	-	6,6,6	0.44	0	5,5,5	0.70	0
7	COM	A	554	5	6,6,6	1.58	1 (16%)	8,8,8	0.89	0
11	EDO	F	252	-	3,3,3	0.59	0	2,2,2	0.63	0
6	TP7	A	553[A]	-	19,20,20	1.03	1 (5%)	24,26,26	1.13	1 (4%)
7	COM	D	554	5	6,6,6	0.65	0	8,8,8	0.61	0
8	ACT	A	555[B]	-	3,3,3	0.68	0	3,3,3	1.28	0
8	ACT	A	556[B]	-	3,3,3	1.11	0	3,3,3	0.87	0
8	ACT	C	1	-	3,3,3	0.99	0	3,3,3	1.53	1 (33%)
11	EDO	D	555	-	3,3,3	0.41	0	2,2,2	0.37	0
6	TP7	D	553[A]	-	19,20,20	0.97	1 (5%)	24,26,26	1.34	3 (12%)
5	F43	A	1	1,7	63,71,71	2.57	13 (20%)	73,118,118	1.63	18 (24%)
8	ACT	B	446[B]	-	3,3,3	1.25	0	3,3,3	1.20	0

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
11	EDO	F	251	-	-	1/1/1/1	-
5	F43	D	552	1,7	-	9/28/185/185	-
9	PEG	C	251	-	-	2/4/4/4	-
9	PEG	A	557	-	-	3/4/4/4	-
7	COM	A	554	5	-	0/4/4/4	-
11	EDO	F	252	-	-	1/1/1/1	-
6	TP7	A	553[A]	-	-	0/24/24/24	-
7	COM	D	554	5	-	0/4/4/4	-
11	EDO	D	555	-	-	1/1/1/1	-
6	TP7	D	553[A]	-	-	1/24/24/24	-
5	F43	A	1	1,7	-	8/28/185/185	-

All (36) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	A	1	F43	NI-NA	9.34	2.11	1.89
5	A	1	F43	NI-NB	9.33	2.11	1.89
5	D	552	F43	NI-NB	8.72	2.10	1.89
5	D	552	F43	NI-NA	7.83	2.08	1.89
5	A	1	F43	NI-ND	7.21	2.06	1.89
5	A	1	F43	CHB-C1B	6.54	1.57	1.53
5	D	552	F43	NI-ND	6.45	2.05	1.89
5	D	552	F43	CHB-C1B	5.56	1.57	1.53
5	A	1	F43	CHA-C4D	5.20	1.58	1.53
5	D	552	F43	C3C-C4C	4.31	1.57	1.50
5	D	552	F43	C4A-NA	3.59	1.54	1.49
5	A	1	F43	CHC-C4B	3.45	1.48	1.39
5	A	1	F43	C3C-C4C	3.26	1.55	1.50
5	D	552	F43	C5C-C2C	3.12	1.58	1.53
6	D	553[A]	TP7	P-O4P	3.02	1.64	1.59
5	D	552	F43	CAA-C3A	2.98	1.58	1.53
7	A	554	COM	C2-S2	-2.94	1.73	1.77
5	A	1	F43	CHB-C4A	2.91	1.55	1.51
5	D	552	F43	CHA-C4D	2.83	1.55	1.53
5	D	552	F43	CHC-C4B	2.81	1.47	1.39
5	D	552	F43	OBD-CAD	2.64	1.30	1.22
5	A	1	F43	OEB-CCB	-2.51	1.22	1.30
6	A	553[A]	TP7	P-O3P	-2.39	1.45	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	D	552	F43	C8C-C3C	2.36	1.58	1.54
5	A	1	F43	C4C-NC	2.31	1.39	1.35
5	A	1	F43	OCD-CAD	-2.30	1.23	1.30
5	D	552	F43	C3A-C4A	2.28	1.57	1.53
5	D	552	F43	C9B-C2B	2.23	1.58	1.54
5	D	552	F43	C1C-NC	2.22	1.42	1.37
5	D	552	F43	CHD-C1D	2.21	1.47	1.43
5	A	1	F43	C4A-NA	2.21	1.52	1.49
5	D	552	F43	CAA-CBA	2.16	1.59	1.52
5	D	552	F43	CAB-C3B	2.13	1.59	1.54
5	D	552	F43	ODA-CCA	-2.10	1.23	1.30
5	A	1	F43	OCC-CAC	2.03	1.28	1.22
5	D	552	F43	C2A-C3A	-2.01	1.51	1.54

All (44) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	A	1	F43	O8D-C7D-C6D	-3.59	114.99	120.87
5	D	552	F43	O8D-C7D-C6D	-3.53	115.07	120.87
5	A	1	F43	C5D-C2D-C1D	3.43	114.91	110.43
5	D	552	F43	C2C-C5C-C6C	-3.40	107.58	113.95
5	A	1	F43	OBC-CAC-C9C	3.36	124.62	114.00
5	D	552	F43	C2B-C1B-NB	3.28	106.73	101.86
5	D	552	F43	C6D-C7D-CHD	3.27	122.98	116.94
5	D	552	F43	OCC-CAC-C9C	-3.22	112.86	123.09
5	A	1	F43	OCC-CAC-C9C	-3.11	113.22	123.09
5	D	552	F43	C1D-CHD-C4C	-3.09	116.60	125.28
6	A	553[A]	TP7	CB-CA-N	2.98	117.99	111.54
5	A	1	F43	C3D-C4D-ND	2.95	106.93	102.34
5	D	552	F43	C3A-C2A-C1A	2.95	102.93	99.97
5	A	1	F43	C2C-C5C-C6C	-2.86	108.59	113.95
5	D	552	F43	C5D-C2D-C1D	2.77	114.04	110.43
5	A	1	F43	CAB-C3B-C2B	-2.73	112.97	119.00
5	D	552	F43	C9A-C2A-C3A	2.69	116.86	112.99
6	D	553[A]	TP7	O1-C1-N	2.63	127.41	122.95
5	D	552	F43	CAB-C3B-C2B	-2.61	113.25	119.00
6	D	553[A]	TP7	C5-C6-C7	2.60	117.71	113.09
5	D	552	F43	ODB-CCB-CBB	-2.58	114.92	123.09
5	A	1	F43	ODB-CCB-CBB	-2.56	114.96	123.09
5	A	1	F43	C2B-C3B-C4B	-2.53	98.81	101.64
5	D	552	F43	CHA-C4D-C3D	-2.53	110.78	117.90
5	D	552	F43	C4B-CHC-C1C	2.51	129.90	125.84

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	D	552	F43	OBC-CAC-C9C	2.50	121.91	114.00
5	A	1	F43	C9A-C2A-C1A	2.48	113.49	107.54
5	A	1	F43	O7C-C6C-C5C	-2.43	115.38	122.84
5	A	1	F43	C1B-C2B-C3B	2.37	104.97	101.51
5	D	552	F43	OCD-CAD-C9D	2.36	121.33	114.00
5	A	1	F43	OCD-CAD-C9D	2.34	121.28	114.00
5	D	552	F43	C2D-C1D-CHD	-2.30	119.00	121.85
5	D	552	F43	O7C-C6C-C5C	-2.27	115.86	122.84
6	D	553[A]	TP7	O4P-P-O1P	-2.24	101.34	109.33
5	A	1	F43	C4B-CHC-C1C	2.23	129.45	125.84
5	A	1	F43	C3B-C4B-CHC	-2.20	118.64	123.33
5	D	552	F43	C5C-C2C-C3C	-2.20	109.61	115.05
5	D	552	F43	O8C-C6C-C5C	2.18	120.77	114.00
5	D	552	F43	C3D-C4D-ND	2.17	105.71	102.34
5	D	552	F43	C4A-NA-C1A	-2.15	106.16	109.08
5	A	1	F43	O8C-C6C-C5C	2.13	120.62	114.00
5	A	1	F43	OBD-CAD-C9D	-2.06	116.53	122.84
5	A	1	F43	C9B-C2B-C8B	-2.05	105.45	110.61
8	C	1	ACT	OXT-C-O	-2.05	114.43	122.03

There are no chirality outliers.

All (26) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
9	A	557	PEG	O1-C1-C2-O2
5	A	1	F43	C3A-CAA-CBA-CCA
5	D	552	F43	C3A-CAA-CBA-CCA
9	A	557	PEG	O2-C3-C4-O4
9	C	251	PEG	O2-C3-C4-O4
11	F	252	EDO	O1-C1-C2-O2
9	C	251	PEG	O1-C1-C2-O2
11	F	251	EDO	O1-C1-C2-O2
6	D	553[A]	TP7	C1-C2-C3-C4
9	A	557	PEG	C1-C2-O2-C3
11	D	555	EDO	O1-C1-C2-O2
5	A	1	F43	CAA-CBA-CCA-OEA
5	D	552	F43	CAA-CBA-CCA-OEA
5	D	552	F43	CAB-CBB-CCB-OEB
5	D	552	F43	CAA-CBA-CCA-ODA
5	A	1	F43	CAB-CBB-CCB-OEB
5	A	1	F43	CAA-CBA-CCA-ODA
5	A	1	F43	CAB-CBB-CCB-ODB

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Mol	Chain	Res	Type	Atoms
5	D	552	F43	CAB-CBB-CCB-ODB
5	A	1	F43	C2C-C5C-C6C-O8C
5	A	1	F43	C8C-C9C-CAC-OCC
5	A	1	F43	C3D-C9D-CAD-OB
5	D	552	F43	C3D-C9D-CAD-OB
5	D	552	F43	C3D-C9D-CAD-OC
5	D	552	F43	C8C-C9C-CAC-OCC
5	D	552	F43	C2C-C5C-C6C-O8C

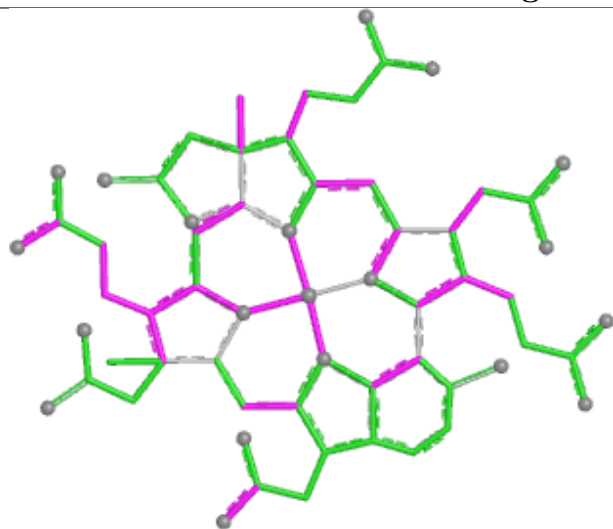
There are no ring outliers.

5 monomers are involved in 8 short contacts:

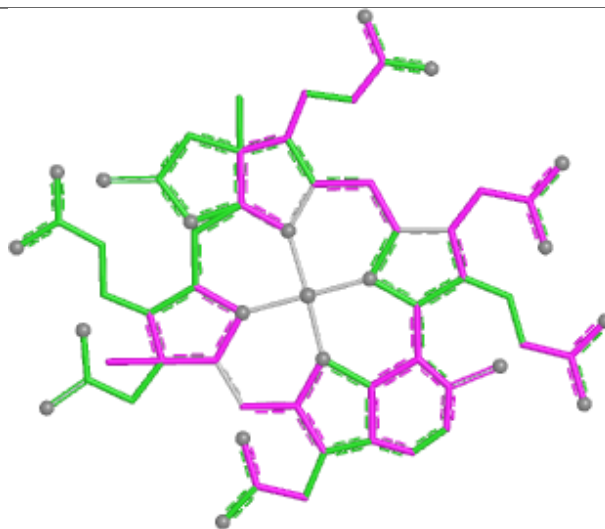
Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	D	552	F43	1	0
6	A	553[A]	TP7	3	0
8	C	1	ACT	1	0
6	D	553[A]	TP7	2	0
5	A	1	F43	1	0

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.

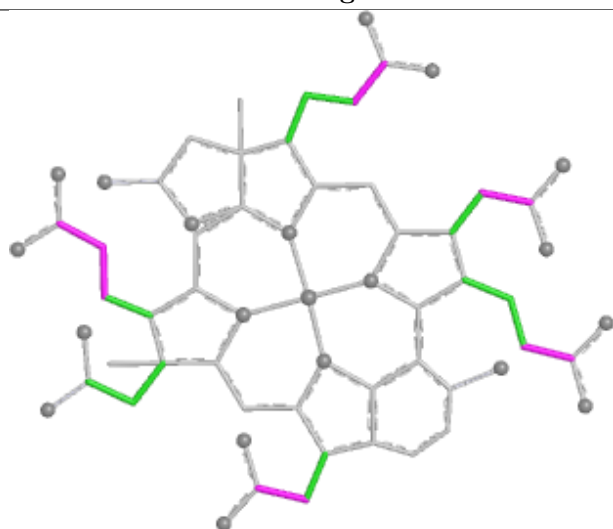
Ligand F43 D 552



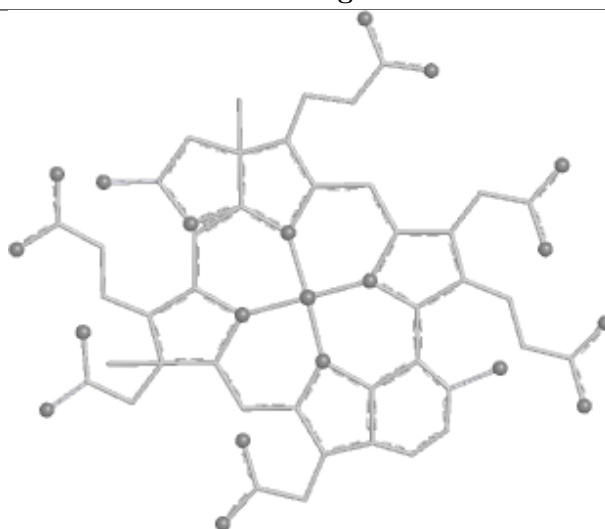
Bond lengths



Bond angles

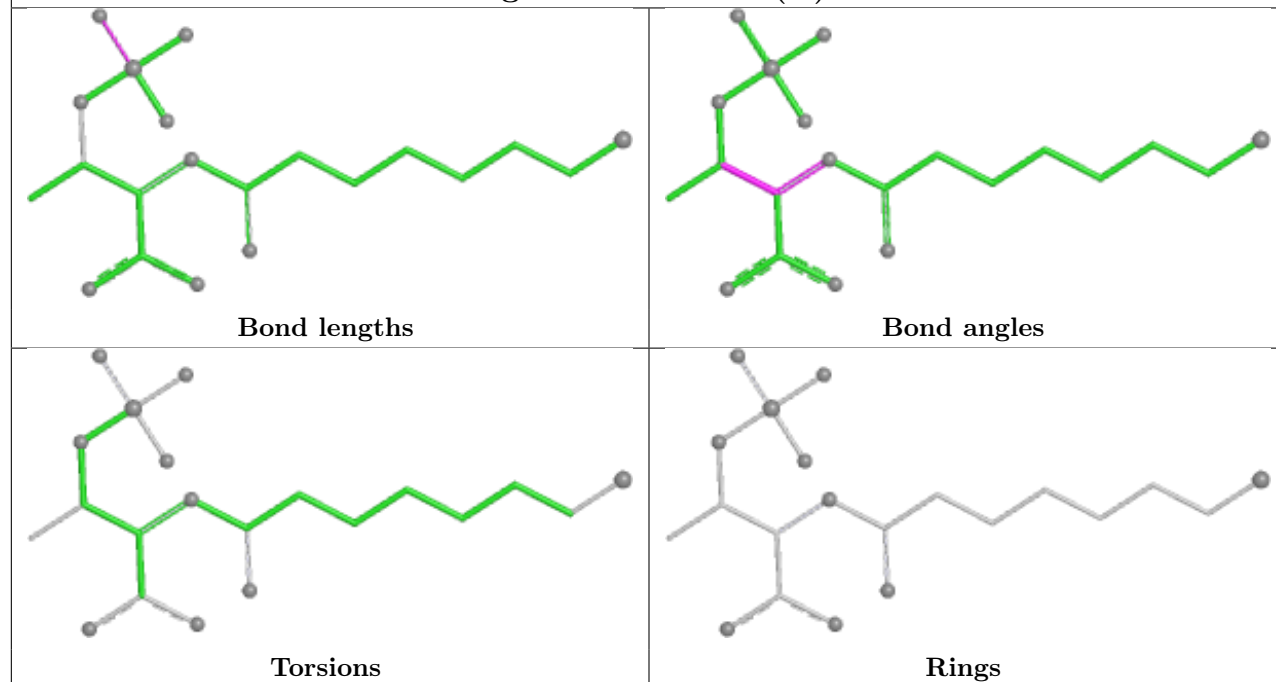


Torsions

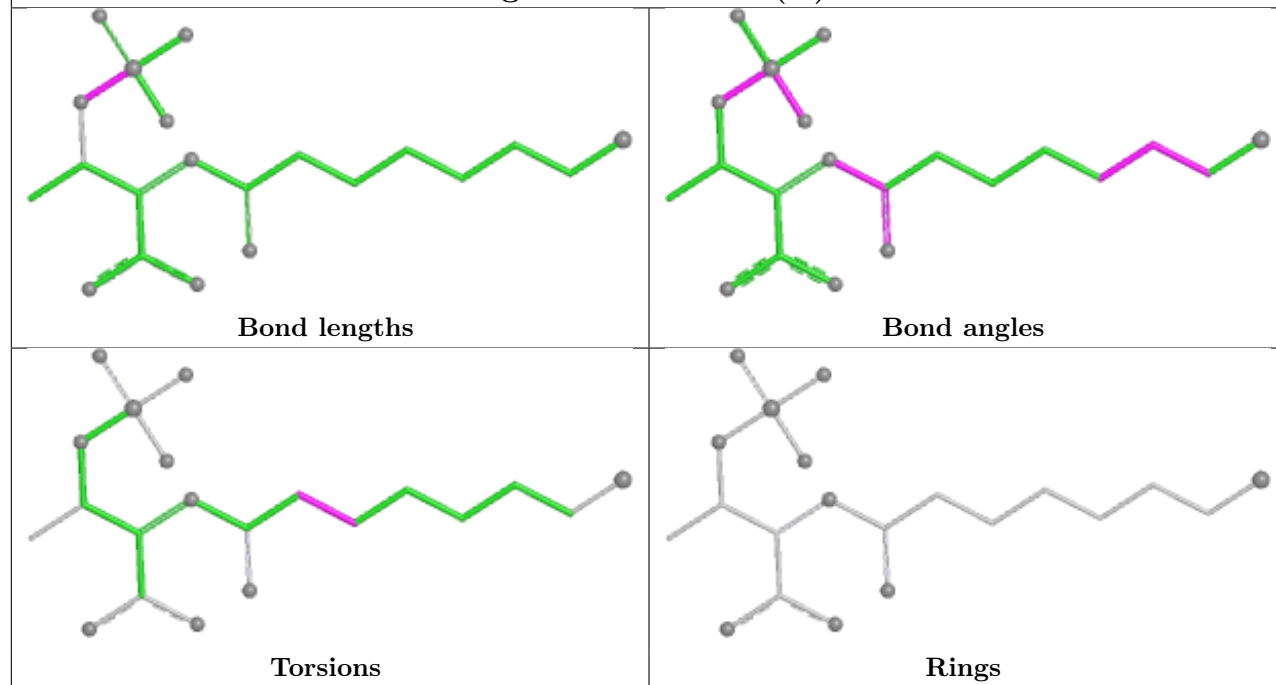


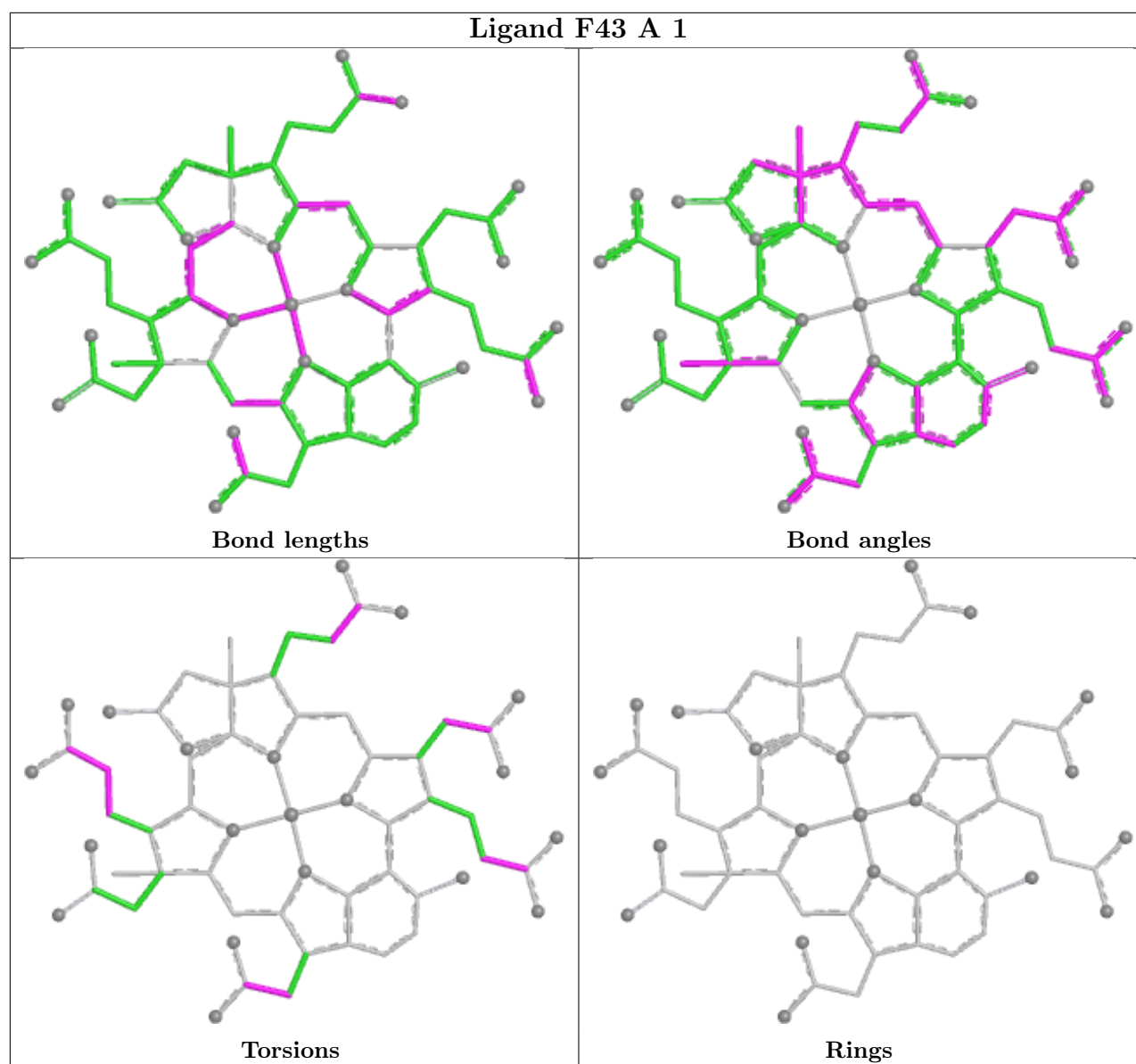
Rings

Ligand TP7 A 553 (A)



Ligand TP7 D 553 (A)





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	543/549 (98%)	-0.85	0 100 100	4, 8, 16, 35	54 (9%)
1	D	543/549 (98%)	-0.88	2 (0%) 88 91	4, 9, 18, 39	30 (5%)
2	B	442/442 (100%)	-0.80	0 100 100	4, 11, 19, 39	28 (6%)
2	E	442/442 (100%)	-0.70	1 (0%) 91 93	4, 11, 22, 41	41 (9%)
3	C	246/248 (99%)	-0.63	4 (1%) 70 73	5, 12, 28, 53	12 (4%)
3	F	246/248 (99%)	-0.57	4 (1%) 70 73	5, 12, 32, 56	16 (6%)
All	All	2462/2478 (99%)	-0.77	11 (0%) 88 91	4, 10, 20, 56	181 (7%)

All (11) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	E	98	ASP	3.2
3	C	59	MET	3.1
3	F	62	PRO	2.6
3	F	60	ASP	2.5
3	C	62	PRO	2.4
3	F	45	PRO	2.4
1	D	549	ALA	2.3
3	F	59	MET	2.3
1	D	24	THR	2.1
3	C	60	ASP	2.1
3	C	45	PRO	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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($\text{\AA}^2$)	Q<0.9
1	MHS	A	257	11/12	0.96	0.06	14,16,21,24	0
1	MHS	D	257	11/12	0.96	0.06	10,13,19,21	0
1	MGN	A	400	10/11	0.98	0.03	5,7,8,8	0
1	AGM	A	271	12/13	0.98	0.03	5,6,7,7	0
1	AGM	D	271	12/13	0.98	0.03	5,6,7,7	0
1	SMC	A	452	7/8	0.99	0.03	6,7,9,10	0
1	MGN	D	400	10/11	0.99	0.03	5,6,7,8	0
1	SMC	D	452	7/8	0.99	0.04	6,7,8,10	0
1	GL3	D	445	4/5	1.00	0.02	5,6,6,6	0
1	GL3	A	445	4/5	1.00	0.03	6,6,6,7	0

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($\text{\AA}^2$)	Q<0.9
11	EDO	F	252	4/4	0.85	0.09	30,30,36,39	0
8	ACT	C	1	4/4	0.86	0.11	26,28,31,34	0
9	PEG	C	251	7/7	0.87	0.13	36,38,44,45	0
11	EDO	F	251	4/4	0.87	0.09	31,32,33,37	0
9	PEG	A	557	7/7	0.87	0.09	28,31,35,37	0
11	EDO	D	555	4/4	0.88	0.11	40,43,43,45	0
8	ACT	A	555[B]	4/4	0.89	0.11	14,15,17,18	4
8	ACT	A	556[B]	4/4	0.95	0.10	15,15,17,17	4
8	ACT	B	446[B]	4/4	0.95	0.07	13,14,14,16	4
6	TP7	D	553[A]	21/21	0.95	0.07	4,6,8,18	21
4	MG	B	445	1/1	0.95	0.12	25,25,25,25	1
4	MG	A	552[A]	1/1	0.96	0.06	13,13,13,13	1
4	MG	B	444	1/1	0.97	0.09	26,26,26,26	0
6	TP7	A	553[A]	21/21	0.97	0.06	4,7,9,12	21
4	MG	F	250	1/1	0.98	0.06	14,14,14,14	0
4	MG	C	250	1/1	0.98	0.05	16,16,16,16	0
4	MG	D	1	1/1	0.98	0.16	23,23,23,23	0
4	MG	D	551	1/1	0.98	0.18	29,29,29,29	0
5	F43	D	552	62/62	0.99	0.03	4,6,8,12	0

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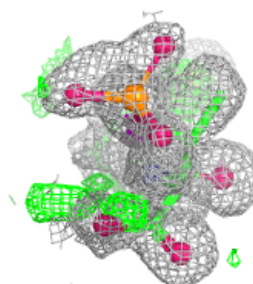
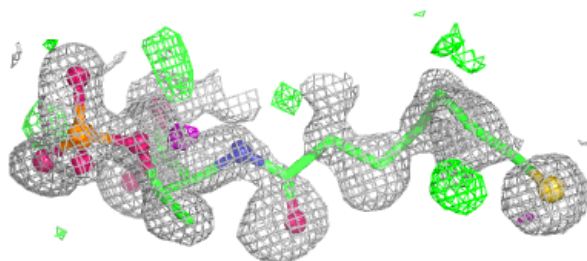
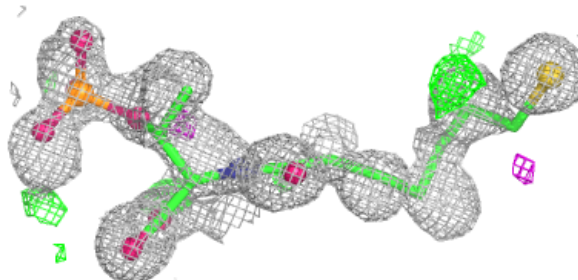
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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
10	ZN	A	558	1/1	0.99	0.03	11,11,11,11	1
4	MG	E	444	1/1	0.99	0.11	17,17,17,17	0
4	MG	A	551[B]	1/1	0.99	0.06	18,18,18,18	1
5	F43	A	1	62/62	0.99	0.03	4,6,8,12	0
7	COM	A	554	7/7	1.00	0.03	6,7,8,9	0
7	COM	D	554	7/7	1.00	0.03	7,7,8,9	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.

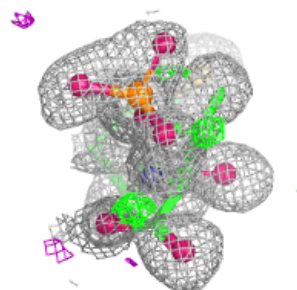
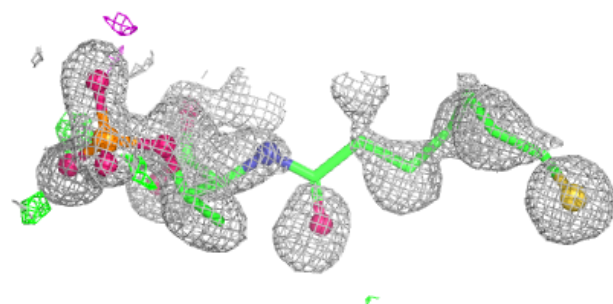
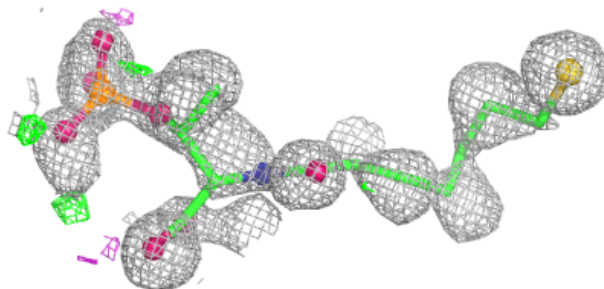
Electron density around TP7 D 553 (A):

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



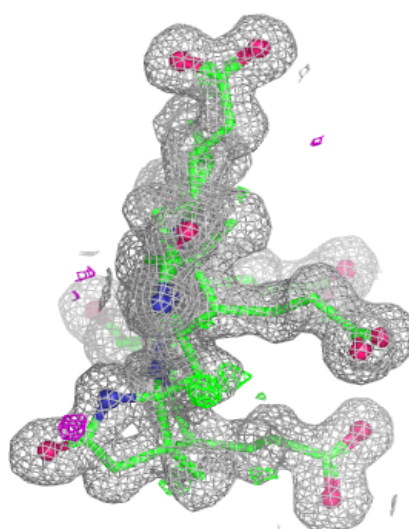
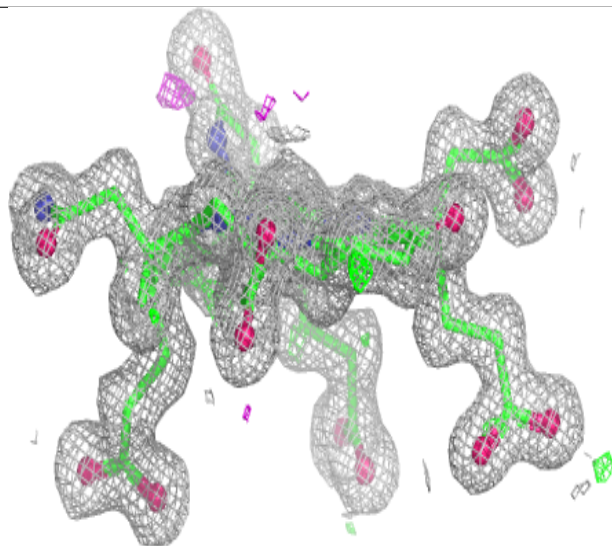
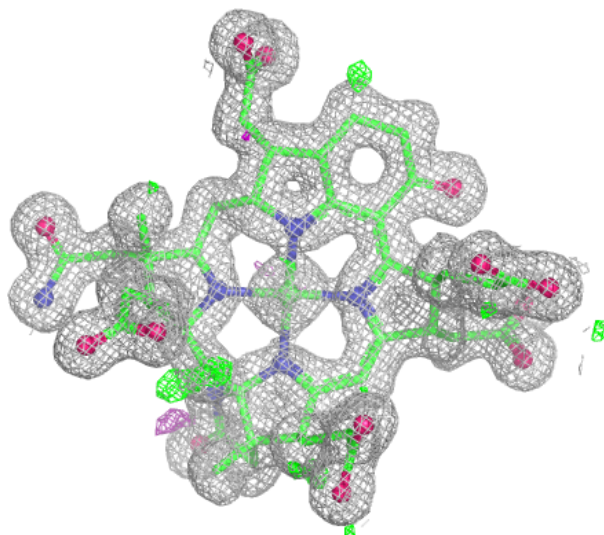
Electron density around TP7 A 553 (A):

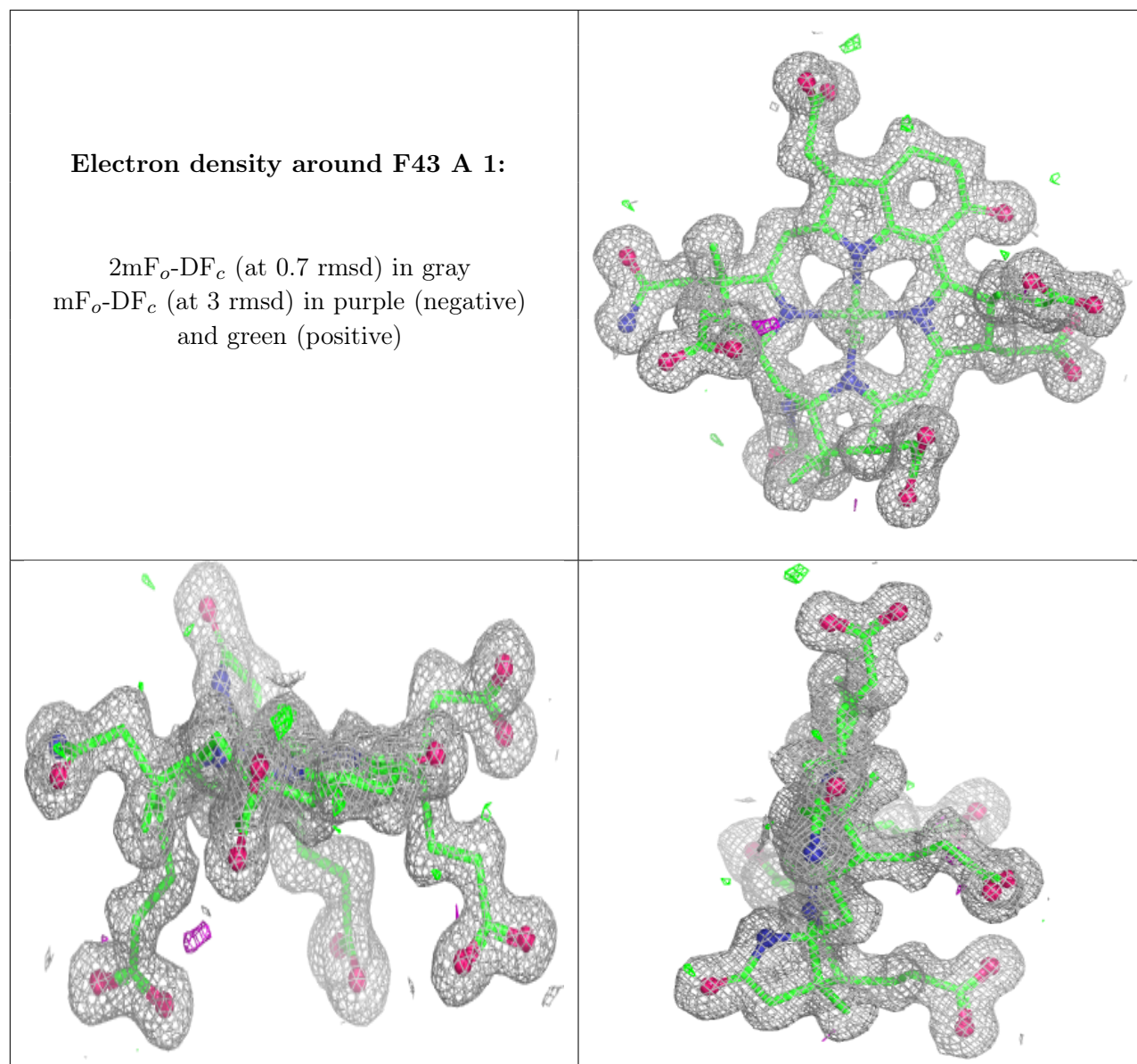
$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



Electron density around F43 D 552:

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





6.5 Other polymers ⓘ

There are no such residues in this entry.