Full wwPDB X-ray Structure Validation Report ⓘ

Nov 11, 2024 – 04:39 AM EST

PDB ID	:	3W5B
Title	:	Crystal structure of the recombinant SERCA1a (calcium pump of fast twitch skeletal muscle) in the E1.Mg2+ state
Authors	:	Toyoshima, C.; Iwasawa, S.; Ogawa, H.; Hirata, A.; Tsueda, J.; Inesi, G.
Deposited on	:	2013-01-27
Resolution	:	3.20 Å(reported)

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

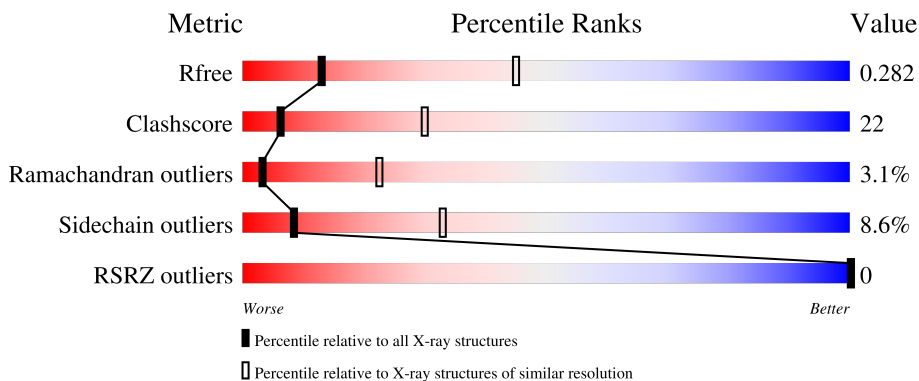|		
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

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 3.20 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	Percentile Ranks	Value
Rfree		0.282
Clashscore		22
Ramachandran outliers		3.1%
Sidechain outliers		8.6%
RSRZ outliers		0

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	164625	1370 (3.20-3.20)
Clashscore	180529	1497 (3.20-3.20)
Ramachandran outliers	177936	1479 (3.20-3.20)
Sidechain outliers	177891	1478 (3.20-3.20)
RSRZ outliers	164620	1371 (3.20-3.20)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	1000	54% 40% 5%

2 Entry composition ⓘ

There are 6 unique types of molecules in this entry. The entry contains 7813 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 SERCA1a.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	997	Total 7689	C 4888	N 1290	O 1454	S 57	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-5	SER	-	expression tag	UNP B6CAM1
A	-4	ASP	-	expression tag	UNP B6CAM1
A	-3	ASN	-	expression tag	UNP B6CAM1
A	-2	ALA	-	expression tag	UNP B6CAM1
A	-1	ILE	-	expression tag	UNP B6CAM1
A	0	ALA	-	expression tag	UNP B6CAM1

- Molecule 2 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total 1	Na 1	0	0

- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	2	Total 2	Mg 2	0	0

- Molecule 4 is 2',3'-O-[(1r)-2,4,6-trinitrocyclohexa-2,5-diene-1,1-diyl]adenosine 5'-(dihydrogen phosphate) (three-letter code: TM1) (formula: $C_{16}H_{15}N_8O_{13}P$).

TM1
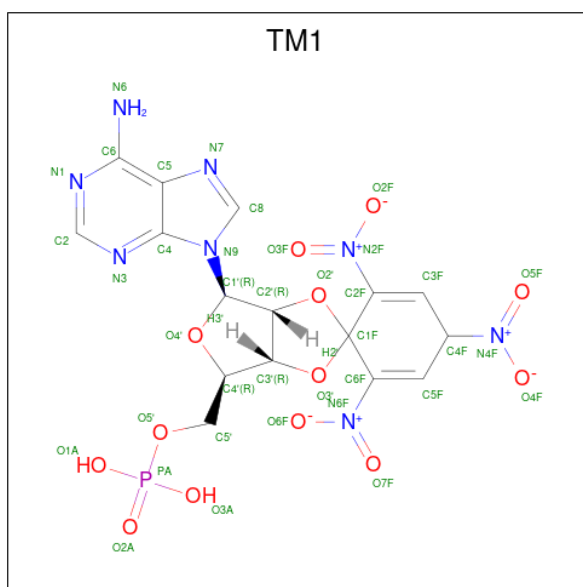
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			38	16	8	13	1		

- Molecule 5 is PHOSPHATIDYLETHANOLAMINE (three-letter code: PTY) (formula: $C_{40}H_{80}NO_8P$).
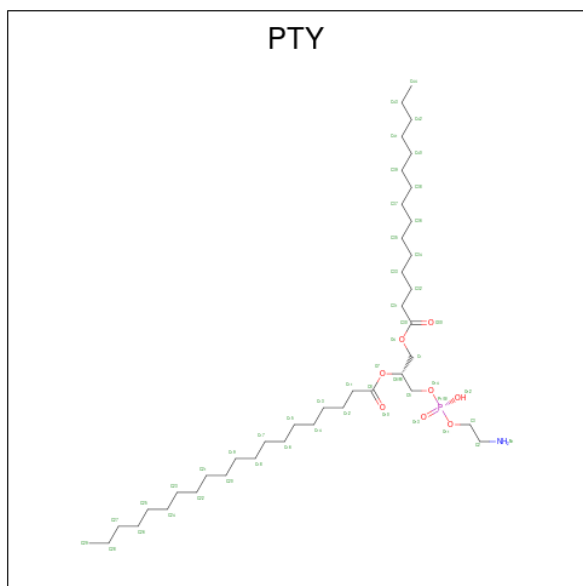
PTY

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total	C	N	O	P	0	0
			19	9	1	8	1		
5	A	1	Total	C	N	O	P	0	0
			19	9	1	8	1		

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
5	A	1	Total 19	C 9	N 1	O 8	P 1	0	0
5	A	1	Total 19	C 9	N 1	O 8	P 1	0	0

• Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	7	Total 7	O 7	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: SERCA1a

Chain A:
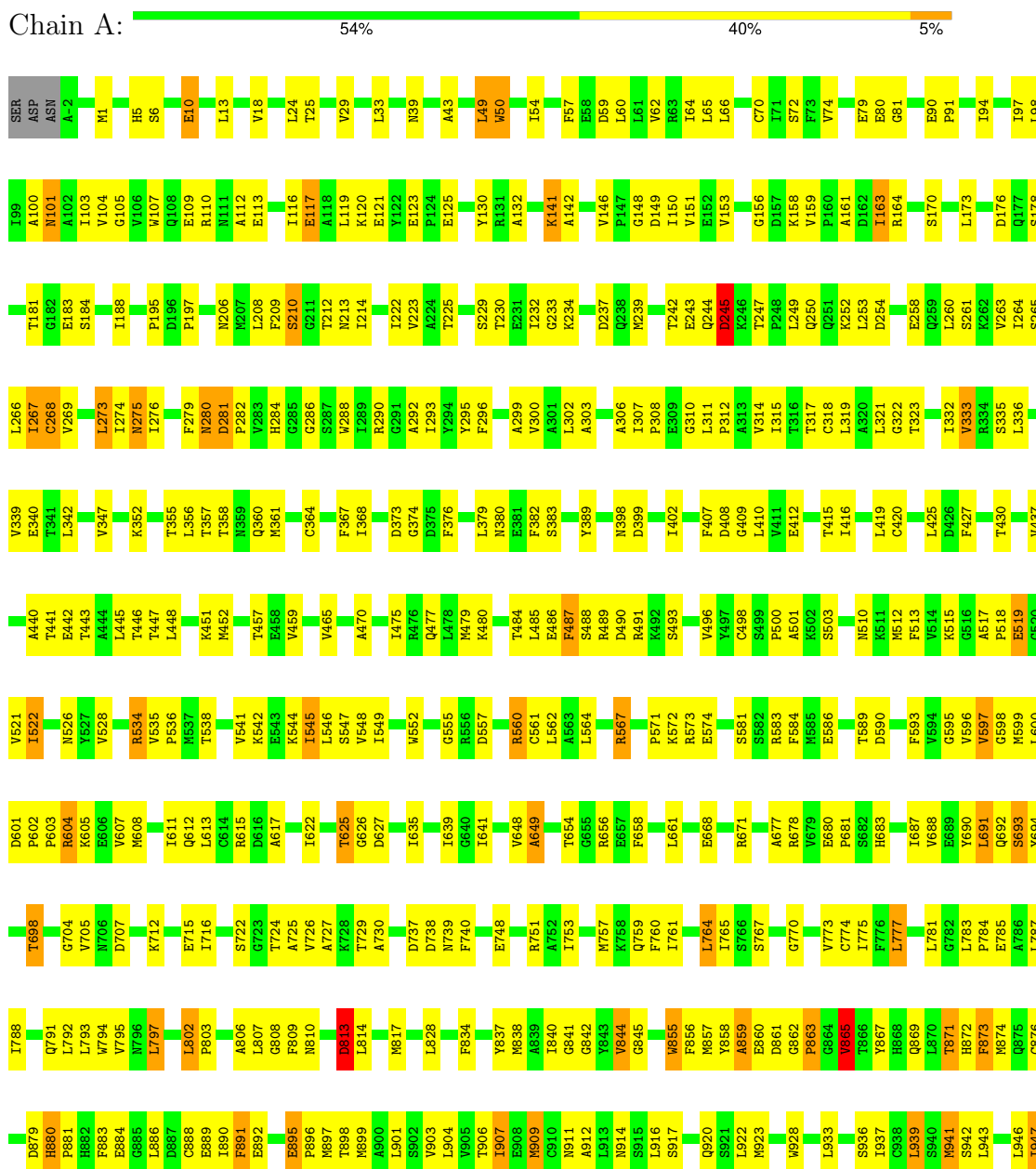
V950 D951 P952 L953 P954 M955 I956 F957 K958 L959 L962 Q966 V970 I973 S974 L975 P976 V977 I978 D981 E982 K985 F986 R989 N990 Y991 L992 E993 G994

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	186.79Å 55.29Å 178.28Å 90.00° 118.18° 90.00°	Depositor
Resolution (Å)	15.00 – 3.20 15.00 – 3.20	Depositor EDS
% Data completeness (in resolution range)	98.2 (15.00-3.20) 97.2 (15.00-3.20)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.01 (at 3.00Å)	Xtriage
Refinement program	CNS, REFMAC 5.6.0117	Depositor
R, R_{free}	0.268 , 0.298 0.254 , 0.282	Depositor DCC
R_{free} test set	1323 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å^2)	65.4	Xtriage
Anisotropy	0.355	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.21 , 75.9	EDS
L-test for twinning[2]	$< |L| > = 0.41, < L^2 > = 0.23$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	7813	wwPDB-VP
Average B, all atoms (Å^2)	153.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.97% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.

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

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: MG, NA, TM1, PTY

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	0.54	6/7830 (0.1%)	0.66	1/10617 (0.0%)

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	50	TRP	CD2-CE2	5.27	1.47	1.41
1	A	364	CYS	CB-SG	-5.16	1.73	1.81
1	A	552	TRP	CD2-CE2	5.06	1.47	1.41
1	A	855	TRP	CD2-CE2	5.03	1.47	1.41
1	A	928	TRP	CD2-CE2	5.02	1.47	1.41
1	A	288	TRP	CD2-CE2	5.01	1.47	1.41

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	364	CYS	CA-CB-SG	-5.07	104.87	114.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	7689	0	7785	342	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	1	0	0	0	0
3	A	2	0	0	0	0
4	A	38	0	12	2	0
5	A	76	0	44	1	0
6	A	7	0	0	0	0
All	All	7813	0	7841	343	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 22.

All (343) 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:795:VAL:HG11	1:A:904:LEU:HD23	1.32	1.11
1:A:802:LEU:HB2	1:A:803:PRO:HD3	1.36	1.06
1:A:560:ARG:HG2	1:A:560:ARG:HH11	1.18	1.02
1:A:100:ALA:HB3	1:A:797:LEU:HD11	1.52	0.91
1:A:484:THR:HG22	1:A:496:VAL:HG12	1.54	0.90
1:A:773:VAL:HG23	1:A:845:GLY:HA3	1.56	0.87
1:A:79:GLU:HG2	1:A:80:GLU:H	1.39	0.85
1:A:209:PHE:O	1:A:212:THR:HG22	1.77	0.85
1:A:252:LYS:HE3	1:A:828:LEU:HB3	1.59	0.84
1:A:770:GLY:HA3	1:A:844:VAL:HG22	1.58	0.83
1:A:49:LEU:HD12	1:A:49:LEU:H	1.41	0.83
1:A:253:LEU:HD13	1:A:315:ILE:HD11	1.61	0.82
1:A:683:HIS:O	1:A:687:ILE:HG12	1.79	0.81
1:A:100:ALA:HA	1:A:103:ILE:HG12	1.63	0.80
1:A:855:TRP:CZ2	1:A:863:PRO:HD2	2.17	0.79
1:A:604:ARG:HH11	1:A:604:ARG:HG2	1.45	0.79
1:A:604:ARG:HH11	1:A:604:ARG:CG	1.96	0.79
1:A:163:ILE:HG13	1:A:208:LEU:HB2	1.67	0.76
1:A:770:GLY:HA3	1:A:844:VAL:CG2	2.14	0.76
1:A:560:ARG:HG2	1:A:560:ARG:NH1	1.90	0.76
1:A:869:GLN:NE2	1:A:872:HIS:H	1.84	0.74
1:A:420:CYS:HB3	1:A:515:LYS:HE2	1.68	0.73
1:A:541:VAL:O	1:A:545:ILE:HG13	1.88	0.73
1:A:909:MET:HG3	1:A:937:ILE:HG23	1.69	0.73
1:A:368:ILE:HD13	1:A:409:GLY:HA3	1.70	0.72
1:A:389:TYR:OH	1:A:440:ALA:HB1	1.87	0.72
1:A:442:GLU:O	1:A:445:LEU:HB2	1.89	0.72
1:A:909:MET:CE	1:A:937:ILE:HA	2.19	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:947:ILE:HD12	1:A:953:LEU:HD23	1.71	0.71
1:A:542:LYS:HA	1:A:545:ILE:HD12	1.73	0.71
1:A:869:GLN:NE2	1:A:871:THR:HB	2.06	0.71
1:A:292:ALA:O	1:A:296:PHE:HB2	1.91	0.70
1:A:691:LEU:HD23	1:A:698:THR:HG21	1.74	0.70
1:A:57:PHE:CE1	1:A:98:LEU:HB3	2.28	0.69
1:A:560:ARG:HH11	1:A:560:ARG:CG	2.01	0.69
1:A:876:CYS:O	1:A:880:HIS:HB3	1.92	0.69
1:A:856:PHE:O	1:A:865:VAL:HA	1.92	0.69
1:A:561:CYS:HB3	1:A:598:GLY:HA2	1.74	0.69
1:A:787:LEU:HD21	1:A:901:LEU:HB2	1.74	0.68
1:A:802:LEU:HB2	1:A:803:PRO:CD	2.20	0.68
1:A:855:TRP:O	1:A:859:ALA:HB2	1.93	0.68
1:A:869:GLN:HE21	1:A:872:HIS:H	1.41	0.68
1:A:656:ARG:HH11	1:A:656:ARG:HG2	1.59	0.68
1:A:783:LEU:HD12	1:A:784:PRO:HD2	1.76	0.68
1:A:274:ILE:HG13	1:A:275:ASN:HD22	1.58	0.67
1:A:416:ILE:HA	1:A:513:PHE:HD2	1.58	0.67
1:A:909:MET:HE3	1:A:937:ILE:HA	1.77	0.67
1:A:347:VAL:HB	1:A:698:THR:HG23	1.77	0.66
1:A:970:VAL:O	1:A:973:ILE:HG22	1.96	0.66
1:A:357:THR:HB	1:A:602:PRO:O	1.95	0.66
1:A:113:GLU:HA	1:A:116:ILE:HD12	1.77	0.66
1:A:950:VAL:O	1:A:954:PRO:HD2	1.96	0.65
1:A:321:LEU:HD23	1:A:808:GLY:O	1.97	0.65
1:A:541:VAL:HG12	1:A:545:ILE:HD11	1.79	0.65
1:A:518:PRO:O	1:A:519:GLU:C	2.35	0.64
1:A:496:VAL:CG2	1:A:513:PHE:HB2	2.28	0.64
1:A:788:ILE:HG12	1:A:791:GLN:CD	2.17	0.64
1:A:263:VAL:O	1:A:267:ILE:HG12	1.97	0.64
1:A:380:ASN:HB3	1:A:382:PHE:HE1	1.63	0.64
1:A:213:ASN:HB3	1:A:726:VAL:HG22	1.80	0.64
1:A:534:ARG:O	1:A:534:ARG:HG2	1.97	0.64
1:A:604:ARG:HG2	1:A:604:ARG:NH1	2.13	0.63
1:A:260:LEU:O	1:A:264:ILE:HG12	1.98	0.63
1:A:841:GLY:O	1:A:844:VAL:HG22	1.99	0.63
1:A:957:PHE:HB3	1:A:959:LEU:HD12	1.80	0.63
1:A:357:THR:HA	1:A:603:PRO:HA	1.80	0.62
1:A:680:GLU:HB3	1:A:681:PRO:HD2	1.81	0.62
1:A:791:GLN:HB3	1:A:901:LEU:HD12	1.81	0.62
1:A:303:ALA:O	1:A:307:ILE:HB	2.00	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:25:THR:HA	1:A:132:ALA:HB3	1.82	0.61
1:A:253:LEU:HD22	1:A:311:LEU:HB3	1.81	0.61
1:A:725:ALA:O	1:A:729:THR:HG23	2.00	0.61
1:A:276:ILE:HG22	1:A:279:PHE:CE2	2.35	0.61
1:A:379:LEU:HD12	1:A:548:VAL:HG21	1.81	0.61
1:A:153:VAL:HB	1:A:214:ILE:HG13	1.82	0.61
1:A:244:GLN:O	1:A:245:ASP:HB2	2.00	0.60
1:A:188:ILE:HD12	1:A:188:ILE:H	1.65	0.60
1:A:855:TRP:C	1:A:859:ALA:HB2	2.21	0.60
1:A:975:LEU:N	1:A:976:PRO:HD2	2.15	0.60
1:A:72:SER:HB3	1:A:293:ILE:HG21	1.83	0.60
1:A:560:ARG:O	1:A:599:MET:HG3	2.02	0.60
1:A:947:ILE:HD11	1:A:957:PHE:CD1	2.37	0.60
1:A:869:GLN:HE22	1:A:871:THR:HB	1.65	0.59
1:A:72:SER:HB3	1:A:293:ILE:CG2	2.32	0.59
1:A:317:THR:O	1:A:321:LEU:HD13	2.02	0.59
1:A:793:LEU:O	1:A:797:LEU:HB2	2.03	0.59
1:A:567:ARG:NH2	1:A:571:PRO:HD3	2.18	0.59
1:A:49:LEU:H	1:A:49:LEU:CD1	2.12	0.59
1:A:161:ALA:HA	1:A:210:SER:HB2	1.85	0.59
1:A:496:VAL:HG23	1:A:513:PHE:HB2	1.85	0.59
1:A:416:ILE:HA	1:A:513:PHE:CD2	2.38	0.58
1:A:705:VAL:HG13	1:A:726:VAL:HG11	1.84	0.58
1:A:814:LEU:HD13	1:A:920:GLN:HG3	1.86	0.58
1:A:942:SER:O	1:A:946:LEU:HG	2.03	0.58
1:A:123:GLU:OE1	1:A:332:ILE:HG21	2.04	0.58
1:A:311:LEU:O	1:A:314:VAL:HG12	2.04	0.58
1:A:953:LEU:O	1:A:956:ILE:HG12	2.04	0.58
1:A:274:ILE:HG13	1:A:275:ASN:ND2	2.18	0.58
1:A:764:LEU:O	1:A:767:SER:OG	2.22	0.58
1:A:39:ASN:HB3	1:A:142:ALA:O	2.03	0.58
1:A:895:GLU:HB2	1:A:896:PRO:HD3	1.86	0.58
1:A:373:ASP:HB3	1:A:376:PHE:HB2	1.85	0.57
1:A:668:GLU:O	1:A:671:ARG:HG2	2.05	0.57
1:A:107:TRP:HZ3	1:A:110:ARG:NH2	2.01	0.57
1:A:604:ARG:HB2	1:A:607:VAL:HG23	1.85	0.57
1:A:368:ILE:HG22	1:A:595:GLY:HA3	1.86	0.56
1:A:888:CYS:C	1:A:890:ILE:H	2.08	0.56
1:A:29:VAL:O	1:A:33:LEU:HB2	2.05	0.56
1:A:253:LEU:CD2	1:A:311:LEU:HB3	2.35	0.56
1:A:909:MET:HE2	1:A:937:ILE:HA	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:90:GLU:HB3	1:A:91:PRO:HD3	1.86	0.56
1:A:159:VAL:HG12	1:A:161:ALA:O	2.05	0.56
1:A:230:THR:HG22	1:A:232:ILE:H	1.70	0.56
1:A:888:CYS:O	1:A:891:PHE:CD2	2.60	0.55
1:A:986:PHE:HD1	1:A:989:ARG:HH21	1.55	0.55
1:A:97:ILE:HG12	1:A:797:LEU:HD12	1.88	0.55
1:A:415:THR:HG22	1:A:419:LEU:HD12	1.89	0.55
1:A:941:MET:HA	1:A:941:MET:CE	2.37	0.55
1:A:427:PHE:HD2	1:A:465:VAL:HG22	1.72	0.55
1:A:544:LYS:O	1:A:545:ILE:C	2.45	0.55
1:A:500:PRO:HG2	1:A:503:SER:HB3	1.87	0.55
1:A:770:GLY:HA2	1:A:773:VAL:HG22	1.89	0.55
1:A:678:ARG:HD2	4:A:1004:TM1:C2	2.37	0.54
1:A:781:LEU:O	1:A:871:THR:HG23	2.07	0.54
1:A:748:GLU:HB2	1:A:817:MET:HE2	1.90	0.54
1:A:361:MET:HG2	1:A:441:THR:HA	1.89	0.54
1:A:617:ALA:HB1	1:A:751:ARG:NH2	2.23	0.54
1:A:79:GLU:HG2	1:A:80:GLU:N	2.16	0.54
1:A:100:ALA:HA	1:A:103:ILE:CG1	2.36	0.54
1:A:611:ILE:HD13	1:A:641:ILE:HG13	1.90	0.53
1:A:265:SER:O	1:A:268:CYS:HB3	2.07	0.53
1:A:57:PHE:HE1	1:A:98:LEU:HB3	1.73	0.53
1:A:119:LEU:HD21	1:A:323:THR:HG22	1.91	0.53
1:A:252:LYS:CE	1:A:828:LEU:HB3	2.35	0.53
1:A:380:ASN:HB3	1:A:382:PHE:CE1	2.41	0.53
1:A:690:TYR:HA	1:A:693:SER:OG	2.09	0.53
1:A:884:GLU:H	1:A:886:LEU:HG	1.74	0.53
1:A:873:PHE:CE1	1:A:891:PHE:HB3	2.44	0.53
1:A:178:SER:HB2	1:A:184:SER:HA	1.91	0.53
1:A:281:ASP:CG	1:A:282:PRO:HD2	2.29	0.53
1:A:564:LEU:HD11	1:A:597:VAL:HG22	1.90	0.53
1:A:148:GLY:H	1:A:223:VAL:HB	1.74	0.52
1:A:379:LEU:CD1	1:A:548:VAL:HG21	2.39	0.52
1:A:688:VAL:HG12	1:A:692:GLN:NE2	2.24	0.52
1:A:447:THR:HG22	1:A:451:LYS:HE3	1.91	0.52
1:A:912:ALA:HB1	1:A:933:LEU:HD11	1.91	0.52
1:A:290:ARG:HB2	1:A:290:ARG:CZ	2.39	0.52
1:A:415:THR:CG2	1:A:419:LEU:HD12	2.39	0.52
1:A:947:ILE:HD11	1:A:957:PHE:HD1	1.75	0.52
1:A:97:ILE:HG21	1:A:793:LEU:HB3	1.92	0.51
1:A:500:PRO:HD2	1:A:510:ASN:ND2	2.25	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:528:VAL:HG21	1:A:541:VAL:HG11	1.93	0.51
1:A:319:LEU:HB3	1:A:336:LEU:HD22	1.92	0.51
1:A:419:LEU:O	1:A:496:VAL:HG21	2.09	0.51
1:A:276:ILE:HG22	1:A:279:PHE:HE2	1.73	0.51
1:A:581:SER:HA	1:A:584:PHE:CD2	2.45	0.51
1:A:903:VAL:HG21	1:A:973:ILE:HG21	1.92	0.51
1:A:398:ASN:O	1:A:399:ASP:HB3	2.11	0.51
1:A:807:LEU:HG	1:A:810:ASN:HD21	1.76	0.51
1:A:266:LEU:C	1:A:268:CYS:H	2.14	0.51
1:A:269:VAL:HG12	1:A:269:VAL:O	2.11	0.51
1:A:904:LEU:O	1:A:907:ILE:HG22	2.10	0.51
1:A:583:ARG:O	1:A:586:GLU:HB3	2.11	0.51
1:A:892:GLU:O	1:A:958:LYS:NZ	2.37	0.51
1:A:60:LEU:O	1:A:64:ILE:HD13	2.11	0.50
1:A:658:PHE:O	1:A:661:LEU:HB2	2.12	0.50
1:A:510:ASN:N	1:A:510:ASN:HD22	2.08	0.50
1:A:911:ASN:HA	1:A:914:ASN:ND2	2.25	0.50
1:A:130:TYR:HB2	1:A:150:ILE:HB	1.93	0.50
1:A:65:LEU:HB2	1:A:300:VAL:CG1	2.41	0.50
1:A:210:SER:HB3	1:A:230:THR:CG2	2.42	0.50
1:A:974:SER:C	1:A:976:PRO:HD2	2.32	0.50
1:A:712:LYS:HG3	1:A:730:ALA:HB1	1.92	0.50
1:A:412:GLU:O	1:A:416:ILE:HG13	2.10	0.50
1:A:10:GLU:OE1	1:A:13:LEU:HD12	2.12	0.50
1:A:939:LEU:O	1:A:943:LEU:HD13	2.12	0.50
1:A:125:GLU:O	1:A:141:LYS:HA	2.10	0.49
1:A:572:LYS:C	1:A:574:GLU:H	2.16	0.49
1:A:522:ILE:HG22	1:A:542:LYS:HZ3	1.78	0.49
1:A:307:ILE:HG13	1:A:308:PRO:HD2	1.94	0.49
1:A:333:VAL:HG11	1:A:339:VAL:HG12	1.95	0.49
1:A:977:VAL:HG13	1:A:978:ILE:N	2.27	0.49
1:A:978:ILE:O	1:A:982:GLU:HB2	2.13	0.49
1:A:748:GLU:HB2	1:A:817:MET:CE	2.42	0.49
1:A:739:ASN:OD1	1:A:740:PHE:N	2.46	0.49
1:A:62:VAL:HG13	1:A:98:LEU:HD13	1.95	0.49
1:A:600:LEU:HD12	1:A:601:ASP:H	1.78	0.48
1:A:774:CYS:SG	1:A:775:ILE:HD12	2.53	0.48
5:A:1006:PTY:HC21	5:A:1006:PTY:HC51	1.95	0.48
1:A:873:PHE:CZ	1:A:891:PHE:HB3	2.48	0.48
1:A:601:ASP:CG	1:A:601:ASP:O	2.52	0.48
1:A:958:LYS:O	1:A:958:LYS:HG3	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:855:TRP:O	1:A:855:TRP:CG	2.66	0.48
1:A:13:LEU:HD22	1:A:18:VAL:O	2.12	0.48
1:A:358:THR:HB	1:A:360:GLN:HG2	1.94	0.48
1:A:367:PHE:HA	1:A:380:ASN:O	2.14	0.48
1:A:448:LEU:O	1:A:452:MET:HG3	2.14	0.48
1:A:785:GLU:CD	1:A:785:GLU:H	2.16	0.48
1:A:173:LEU:O	1:A:188:ILE:HA	2.14	0.47
1:A:355:THR:HG22	1:A:740:PHE:HB2	1.96	0.47
1:A:795:VAL:HG11	1:A:904:LEU:CD2	2.23	0.47
1:A:946:LEU:O	1:A:953:LEU:HD22	2.14	0.47
1:A:402:ILE:HD13	1:A:407:PHE:CE1	2.49	0.47
1:A:639:ILE:HD11	1:A:641:ILE:HD12	1.96	0.47
1:A:181:THR:HG23	1:A:183:GLU:H	1.79	0.47
1:A:244:GLN:O	1:A:245:ASP:CB	2.62	0.47
1:A:626:GLY:O	1:A:678:ARG:HD3	2.13	0.47
1:A:546:LEU:HD23	1:A:549:ILE:HD12	1.96	0.47
1:A:656:ARG:HG2	1:A:656:ARG:NH1	2.27	0.47
1:A:342:LEU:HD12	1:A:716:ILE:HD13	1.97	0.47
1:A:13:LEU:HD23	1:A:222:ILE:HD12	1.97	0.47
1:A:275:ASN:HD22	1:A:275:ASN:N	2.13	0.47
1:A:806:ALA:HB1	1:A:933:LEU:HA	1.97	0.47
1:A:917:SER:CB	1:A:920:GLN:HB2	2.45	0.47
1:A:24:LEU:HD13	1:A:149:ASP:HA	1.97	0.47
1:A:125:GLU:OE2	1:A:158:LYS:NZ	2.49	0.46
1:A:488:SER:O	1:A:490:ASP:N	2.48	0.46
1:A:549:ILE:HG23	1:A:561:CYS:SG	2.55	0.46
1:A:625:THR:OG1	1:A:626:GLY:N	2.49	0.46
1:A:176:ASP:HB3	1:A:213:ASN:HB2	1.98	0.46
1:A:249:LEU:O	1:A:249:LEU:HD23	2.15	0.46
1:A:880:HIS:N	1:A:881:PRO:CD	2.78	0.46
1:A:6:SER:OG	1:A:197:PRO:HA	2.15	0.46
1:A:250:GLN:HG3	1:A:315:ILE:HG21	1.96	0.46
1:A:626:GLY:N	4:A:1004:TM1:O2A	2.49	0.46
1:A:794:TRP:HZ2	1:A:943:LEU:HB3	1.80	0.46
1:A:70:CYS:O	1:A:74:VAL:HG23	2.16	0.46
1:A:810:ASN:OD1	1:A:916:LEU:HD23	2.16	0.46
1:A:230:THR:HG21	1:A:232:ILE:HG22	1.97	0.46
1:A:322:GLY:HA2	1:A:753:ILE:HD11	1.98	0.46
1:A:855:TRP:HZ2	1:A:863:PRO:HD2	1.77	0.46
1:A:869:GLN:HE21	1:A:872:HIS:N	2.09	0.46
1:A:210:SER:HB3	1:A:230:THR:HG21	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:339:VAL:HG23	1:A:340:GLU:N	2.31	0.46
1:A:398:ASN:O	1:A:399:ASP:CB	2.63	0.46
1:A:104:VAL:HA	1:A:107:TRP:HB3	1.98	0.45
1:A:535:VAL:HB	1:A:536:PRO:HD2	1.99	0.45
1:A:692:GLN:HG2	1:A:715:GLU:OE2	2.16	0.45
1:A:722:SER:OG	1:A:738:ASP:OD2	2.34	0.45
1:A:737:ASP:OD1	1:A:739:ASN:HB3	2.17	0.45
1:A:777:LEU:HD12	1:A:777:LEU:HA	1.78	0.45
1:A:561:CYS:CB	1:A:598:GLY:HA2	2.46	0.45
1:A:342:LEU:HA	1:A:716:ILE:HD11	1.98	0.45
1:A:611:ILE:O	1:A:615:ARG:HG3	2.16	0.45
1:A:230:THR:CG2	1:A:232:ILE:HG22	2.46	0.45
1:A:678:ARG:HG3	1:A:678:ARG:HH11	1.80	0.45
1:A:791:GLN:O	1:A:795:VAL:HG23	2.17	0.45
1:A:407:PHE:HB2	1:A:410:LEU:HG	1.99	0.45
1:A:544:LYS:O	1:A:547:SER:N	2.49	0.45
1:A:962:LEU:HD13	1:A:966:GLN:HB2	1.98	0.45
1:A:688:VAL:HG12	1:A:692:GLN:HE21	1.81	0.45
1:A:479:MET:HE3	1:A:498:CYS:HB2	1.99	0.45
1:A:151:VAL:HB	1:A:163:ILE:HG21	1.99	0.44
1:A:379:LEU:HD23	1:A:379:LEU:HA	1.63	0.44
1:A:479:MET:CE	1:A:498:CYS:HB2	2.47	0.44
1:A:704:GLY:O	1:A:707:ASP:HB2	2.18	0.44
1:A:117:GLU:O	1:A:120:LYS:HG3	2.18	0.44
1:A:593:PHE:CE1	1:A:596:VAL:HG23	2.53	0.44
1:A:268:CYS:SG	1:A:299:ALA:HB1	2.58	0.44
1:A:275:ASN:HB3	1:A:295:TYR:CE1	2.52	0.44
1:A:488:SER:C	1:A:490:ASP:H	2.20	0.44
1:A:600:LEU:HD12	1:A:601:ASP:N	2.33	0.44
1:A:352:LYS:HA	1:A:356:LEU:HD12	1.98	0.44
1:A:607:VAL:O	1:A:608:MET:C	2.56	0.44
1:A:50:TRP:O	1:A:54:ILE:HG13	2.18	0.44
1:A:487:PHE:CG	1:A:488:SER:N	2.86	0.44
1:A:991:TYR:HD2	1:A:992:LEU:HG	1.83	0.44
1:A:66:LEU:CD1	1:A:94:ILE:HG22	2.48	0.43
1:A:367:PHE:CD2	1:A:379:LEU:HD22	2.53	0.43
1:A:561:CYS:HB2	1:A:597:VAL:O	2.18	0.43
1:A:480:LYS:O	1:A:498:CYS:HA	2.18	0.43
1:A:627:ASP:O	1:A:677:ALA:HB1	2.18	0.43
1:A:572:LYS:C	1:A:574:GLU:N	2.70	0.43
1:A:888:CYS:O	1:A:890:ILE:N	2.52	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:981:ASP:OD1	1:A:985:LYS:HE2	2.17	0.43
1:A:974:SER:O	1:A:977:VAL:HG12	2.18	0.43
1:A:161:ALA:CA	1:A:210:SER:HB2	2.48	0.43
1:A:336:LEU:HD23	1:A:336:LEU:HA	1.88	0.43
1:A:24:LEU:HD22	1:A:149:ASP:HB3	2.00	0.43
1:A:105:GLY:O	1:A:109:GLU:HG3	2.19	0.43
1:A:121:GLU:O	1:A:121:GLU:HG2	2.19	0.43
1:A:284:HIS:O	1:A:290:ARG:HD2	2.18	0.43
1:A:443:THR:O	1:A:446:THR:N	2.51	0.43
1:A:555:GLY:C	1:A:557:ASP:H	2.21	0.43
1:A:164:ARG:NH2	1:A:206:ASN:HD22	2.17	0.43
1:A:249:LEU:HD23	1:A:249:LEU:C	2.39	0.43
1:A:572:LYS:O	1:A:574:GLU:N	2.51	0.43
1:A:857:MET:SD	1:A:867:TYR:O	2.77	0.43
1:A:100:ALA:CB	1:A:797:LEU:HD11	2.37	0.43
1:A:229:SER:O	1:A:234:LYS:HE2	2.19	0.43
1:A:336:LEU:O	1:A:339:VAL:HG22	2.18	0.43
1:A:352:LYS:HD2	1:A:635:ILE:HD13	2.01	0.43
1:A:856:PHE:CZ	1:A:896:PRO:HG2	2.54	0.43
1:A:230:THR:HB	1:A:233:GLY:H	1.84	0.42
1:A:339:VAL:CG2	1:A:340:GLU:N	2.81	0.42
1:A:897:MET:C	1:A:899:MET:H	2.23	0.42
1:A:367:PHE:HD2	1:A:379:LEU:HD22	1.84	0.42
1:A:477:GLN:O	1:A:501:ALA:HB2	2.19	0.42
1:A:765:ILE:HG21	1:A:837:TYR:HD2	1.84	0.42
1:A:488:SER:OG	1:A:491:ARG:NH1	2.49	0.42
1:A:517:ALA:HA	1:A:518:PRO:HD3	1.83	0.42
1:A:605:LYS:H	1:A:605:LYS:HG3	1.44	0.42
1:A:761:ILE:HG23	1:A:765:ILE:HD13	2.01	0.42
1:A:859:ALA:HB3	1:A:865:VAL:HG22	2.01	0.42
1:A:311:LEU:N	1:A:312:PRO:HD2	2.35	0.42
1:A:239:MET:CG	1:A:242:THR:HG23	2.50	0.42
1:A:258:GLU:O	1:A:261:SER:HB3	2.19	0.42
1:A:280:ASN:O	1:A:286:GLY:HA2	2.19	0.42
1:A:318:CYS:SG	1:A:757:MET:HA	2.59	0.42
1:A:415:THR:HA	1:A:475:ILE:HD13	2.02	0.42
1:A:690:TYR:O	1:A:694:TYR:HD2	2.02	0.42
1:A:65:LEU:HB2	1:A:300:VAL:HG12	2.01	0.42
1:A:840:ILE:O	1:A:844:VAL:HG13	2.19	0.42
1:A:156:GLY:HA3	1:A:724:THR:HG22	2.02	0.42
1:A:319:LEU:HD22	1:A:339:VAL:CG2	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:510:ASN:ND2	1:A:510:ASN:N	2.68	0.42
1:A:526:ASN:HD22	1:A:590:ASP:HA	1.85	0.42
1:A:773:VAL:HG21	1:A:842:GLY:HA2	2.01	0.42
1:A:112:ALA:O	1:A:116:ILE:HG13	2.20	0.42
1:A:239:MET:HG2	1:A:242:THR:HG23	2.00	0.42
1:A:250:GLN:CG	1:A:315:ILE:HG21	2.50	0.41
1:A:314:VAL:CG1	1:A:315:ILE:N	2.83	0.41
1:A:188:ILE:HD12	1:A:188:ILE:N	2.35	0.41
1:A:517:ALA:O	1:A:521:VAL:HG23	2.21	0.41
1:A:66:LEU:HD13	1:A:98:LEU:HD12	2.02	0.41
1:A:64:ILE:HG22	1:A:65:LEU:N	2.36	0.41
1:A:163:ILE:CG1	1:A:208:LEU:HB2	2.45	0.41
1:A:813:ASP:HB3	1:A:814:LEU:H	1.55	0.41
1:A:273:LEU:O	1:A:276:ILE:HG23	2.21	0.41
1:A:487:PHE:HA	1:A:493:SER:O	2.21	0.41
1:A:648:VAL:O	1:A:649:ALA:C	2.58	0.41
1:A:879:ASP:C	1:A:881:PRO:HD2	2.41	0.41
1:A:347:VAL:HG13	1:A:622:ILE:CD1	2.51	0.41
1:A:485:LEU:HD22	1:A:584:PHE:CE1	2.56	0.41
1:A:724:THR:OG1	1:A:727:ALA:HB2	2.21	0.41
1:A:950:VAL:HG12	1:A:952:PRO:HD2	2.03	0.41
1:A:101:ASN:HD22	1:A:101:ASN:HA	1.69	0.40
1:A:352:LYS:HA	1:A:356:LEU:HB2	2.03	0.40
1:A:855:TRP:O	1:A:859:ALA:CB	2.68	0.40
1:A:802:LEU:CB	1:A:803:PRO:HD3	2.23	0.40
1:A:807:LEU:C	1:A:809:PHE:H	2.25	0.40
1:A:860:GLU:C	1:A:862:GLY:H	2.24	0.40
1:A:834:PHE:O	1:A:838:MET:HG2	2.21	0.40

There are no symmetry-related clashes.

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	995/1000 (100%)	828 (83%)	136 (14%)	31 (3%)	3 22

All (31) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	245	ASP
1	A	519	GLU
1	A	813	ASP
1	A	871	THR
1	A	170	SER
1	A	489	ARG
1	A	889	GLU
1	A	43	ALA
1	A	210	SER
1	A	267	ILE
1	A	306	ALA
1	A	470	ALA
1	A	573	ARG
1	A	802	LEU
1	A	195	PRO
1	A	859	ALA
1	A	861	ASP
1	A	863	PRO
1	A	430	THR
1	A	764	LEU
1	A	459	VAL
1	A	487	PHE
1	A	545	ILE
1	A	649	ALA
1	A	895	GLU
1	A	310	GLY
1	A	81	GLY
1	A	953	LEU
1	A	880	HIS
1	A	374	GLY
1	A	865	VAL

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	841/844 (100%)	769 (91%)	72 (9%)	8	33

All (72) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	5	HIS
1	A	10	GLU
1	A	49	LEU
1	A	59	ASP
1	A	101	ASN
1	A	117	GLU
1	A	141	LYS
1	A	146	VAL
1	A	163	ILE
1	A	225	THR
1	A	237	ASP
1	A	243	GLU
1	A	245	ASP
1	A	247	THR
1	A	254	ASP
1	A	268	CYS
1	A	273	LEU
1	A	275	ASN
1	A	280	ASN
1	A	281	ASP
1	A	302	LEU
1	A	333	VAL
1	A	335	SER
1	A	383	SER
1	A	408	ASP
1	A	425	LEU
1	A	437	VAL
1	A	457	THR
1	A	486	GLU
1	A	512	MET
1	A	522	ILE
1	A	534	ARG
1	A	538	THR
1	A	560	ARG

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Mol	Chain	Res	Type
1	A	562	LEU
1	A	567	ARG
1	A	589	THR
1	A	597	VAL
1	A	604	ARG
1	A	612	GLN
1	A	613	LEU
1	A	625	THR
1	A	654	THR
1	A	691	LEU
1	A	693	SER
1	A	698	THR
1	A	759	GLN
1	A	760	PHE
1	A	777	LEU
1	A	792	LEU
1	A	797	LEU
1	A	813	ASP
1	A	844	VAL
1	A	858	TYR
1	A	865	VAL
1	A	873	PHE
1	A	874	MET
1	A	883	PHE
1	A	891	PHE
1	A	898	THR
1	A	906	THR
1	A	907	ILE
1	A	909	MET
1	A	922	LEU
1	A	923	MET
1	A	936	SER
1	A	939	LEU
1	A	941	MET
1	A	947	ILE
1	A	955	MET
1	A	957	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	38	HIS

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Mol	Chain	Res	Type
1	A	101	ASN
1	A	114	ASN
1	A	244	GLN
1	A	275	ASN
1	A	280	ASN
1	A	330	ASN
1	A	359	ASN
1	A	360	GLN
1	A	461	ASN
1	A	510	ASN
1	A	526	ASN
1	A	692	GLN
1	A	869	GLN
1	A	875	GLN
1	A	919	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 ⓘ

Of 8 ligands modelled in this entry, 3 are monoatomic - leaving 5 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
5	PTY	A	1007	-	18,18,49	1.64	2 (11%)	21,23,54	1.37	3 (14%)
4	TM1	A	1004	-	32,42,42	3.57	14 (43%)	33,66,66	3.97	13 (39%)
5	PTY	A	1006	-	18,18,49	1.80	2 (11%)	21,23,54	1.69	3 (14%)
5	PTY	A	1005	-	18,18,49	1.70	2 (11%)	21,23,54	1.51	3 (14%)
5	PTY	A	1008	-	18,18,49	1.88	2 (11%)	21,23,54	1.52	3 (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	PTY	A	1007	-	-	7/20/20/53	-
4	TM1	A	1004	-	-	5/12/68/68	0/5/5/5
5	PTY	A	1006	-	-	9/20/20/53	-
5	PTY	A	1005	-	-	5/20/20/53	-
5	PTY	A	1008	-	-	10/20/20/53	-

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1004	TM1	C5F-C6F	13.63	1.52	1.33
4	A	1004	TM1	O2'-C1F	6.54	1.50	1.41
5	A	1008	PTY	O7-C8	6.21	1.48	1.35
5	A	1006	PTY	O7-C8	5.90	1.48	1.35
5	A	1005	PTY	O7-C8	5.78	1.48	1.35
5	A	1007	PTY	O7-C8	5.56	1.47	1.35
4	A	1004	TM1	O3'-C1F	5.41	1.49	1.41
4	A	1004	TM1	C3F-C2F	4.85	1.40	1.33
4	A	1004	TM1	C3'-C4'	-4.29	1.41	1.52
4	A	1004	TM1	C4F-C3F	-3.89	1.39	1.50
4	A	1004	TM1	C2-N3	3.53	1.37	1.32
4	A	1004	TM1	C4-N3	3.40	1.40	1.35
4	A	1004	TM1	C5'-C4'	3.20	1.61	1.51
5	A	1008	PTY	O4-C30	3.15	1.48	1.33
4	A	1004	TM1	C1'-N9	3.04	1.57	1.49
4	A	1004	TM1	C2-N1	3.03	1.39	1.33
5	A	1006	PTY	O4-C30	2.99	1.47	1.33
5	A	1005	PTY	O4-C30	2.98	1.47	1.33
5	A	1007	PTY	O4-C30	2.84	1.47	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1004	TM1	O7F-N6F	-2.40	1.18	1.22
4	A	1004	TM1	O6F-N6F	-2.08	1.21	1.35
4	A	1004	TM1	C4F-C5F	-2.02	1.44	1.50

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	A	1004	TM1	O5'-C5'-C4'	11.70	148.85	108.99
4	A	1004	TM1	C4'-O4'-C1'	11.68	120.62	109.92
4	A	1004	TM1	O3'-C1F-C6F	-7.03	100.85	110.47
4	A	1004	TM1	O2'-C2'-C3'	6.28	113.64	103.63
4	A	1004	TM1	O2'-C1F-C2F	-5.73	102.63	110.47
5	A	1006	PTY	O7-C8-C11	5.50	120.90	111.09
4	A	1004	TM1	N3-C2-N1	-5.38	121.38	128.67
5	A	1005	PTY	O7-C8-C11	4.83	119.71	111.09
4	A	1004	TM1	O4'-C1'-C2'	-4.32	99.24	106.61
4	A	1004	TM1	C2'-C3'-C4'	4.25	113.64	103.78
4	A	1004	TM1	C1F-O2'-C2'	-3.83	99.11	107.85
5	A	1007	PTY	O7-C8-C11	3.76	117.79	111.09
5	A	1008	PTY	O4-C1-C6	3.62	118.84	108.40
5	A	1008	PTY	O7-C8-C11	3.35	117.06	111.09
5	A	1005	PTY	C1-O4-C30	3.09	124.69	117.08
5	A	1006	PTY	O4-C1-C6	2.95	116.91	108.40
5	A	1008	PTY	C5-C6-C1	-2.85	105.14	111.78
4	A	1004	TM1	O2'-C2'-C1'	2.80	117.97	109.86
5	A	1006	PTY	O7-C8-O10	-2.67	117.84	122.99
4	A	1004	TM1	O4'-C4'-C5'	2.59	117.63	109.33
4	A	1004	TM1	O3'-C3'-C2'	2.54	107.68	103.63
5	A	1007	PTY	C5-C6-C1	-2.36	106.27	111.78
5	A	1007	PTY	C1-O4-C30	2.33	122.82	117.08
4	A	1004	TM1	O3'-C1F-C2F	2.09	113.33	110.47
5	A	1005	PTY	O7-C8-O10	-2.01	119.12	122.99

There are no chirality outliers.

All (36) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	A	1004	TM1	C5'-O5'-PA-O1A
4	A	1004	TM1	C5'-O5'-PA-O2A
4	A	1004	TM1	C5'-O5'-PA-O3A
5	A	1005	PTY	C11-C8-O7-C6
5	A	1005	PTY	C3-O11-P1-O13

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Mol	Chain	Res	Type	Atoms
5	A	1006	PTY	C11-C8-O7-C6
5	A	1006	PTY	C3-O11-P1-O12
5	A	1006	PTY	C3-O11-P1-O13
5	A	1006	PTY	C3-O11-P1-O14
5	A	1007	PTY	N1-C2-C3-O11
5	A	1007	PTY	C11-C8-O7-C6
5	A	1007	PTY	C3-O11-P1-O12
5	A	1007	PTY	C3-O11-P1-O14
5	A	1008	PTY	O4-C1-C6-O7
5	A	1008	PTY	C3-O11-P1-O14
5	A	1005	PTY	O10-C8-O7-C6
5	A	1006	PTY	O10-C8-O7-C6
5	A	1007	PTY	O10-C8-O7-C6
5	A	1008	PTY	C11-C8-O7-C6
5	A	1006	PTY	C31-C30-O4-C1
5	A	1008	PTY	O10-C8-O7-C6
5	A	1008	PTY	C31-C30-O4-C1
5	A	1006	PTY	O30-C30-O4-C1
5	A	1008	PTY	O30-C30-O4-C1
5	A	1008	PTY	O4-C1-C6-C5
5	A	1007	PTY	O14-C5-C6-C1
5	A	1008	PTY	O14-C5-C6-C1
5	A	1007	PTY	O14-C5-C6-O7
5	A	1008	PTY	O14-C5-C6-O7
5	A	1006	PTY	O4-C1-C6-C5
5	A	1006	PTY	O4-C1-C6-O7
5	A	1005	PTY	C3-O11-P1-O14
5	A	1008	PTY	C6-C5-O14-P1
5	A	1005	PTY	O14-C5-C6-O7
4	A	1004	TM1	C3F-C4F-N4F-O5F
4	A	1004	TM1	C5F-C4F-N4F-O5F

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1004	TM1	2	0
5	A	1006	PTY	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will

also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand PTY A 1007

Bond lengths

Bond angles

Torsions

Rings

Ligand TM1 A 1004

Bond lengths

Bond angles

Torsions

Rings

Ligand PTY A 1006

Bond lengths

Bond angles

Torsions

Rings

Ligand PTY A 1005

Bond lengths

Bond angles

Torsions

Rings

Ligand PTY A 1008

Bond lengths

Bond angles

Torsions

Rings
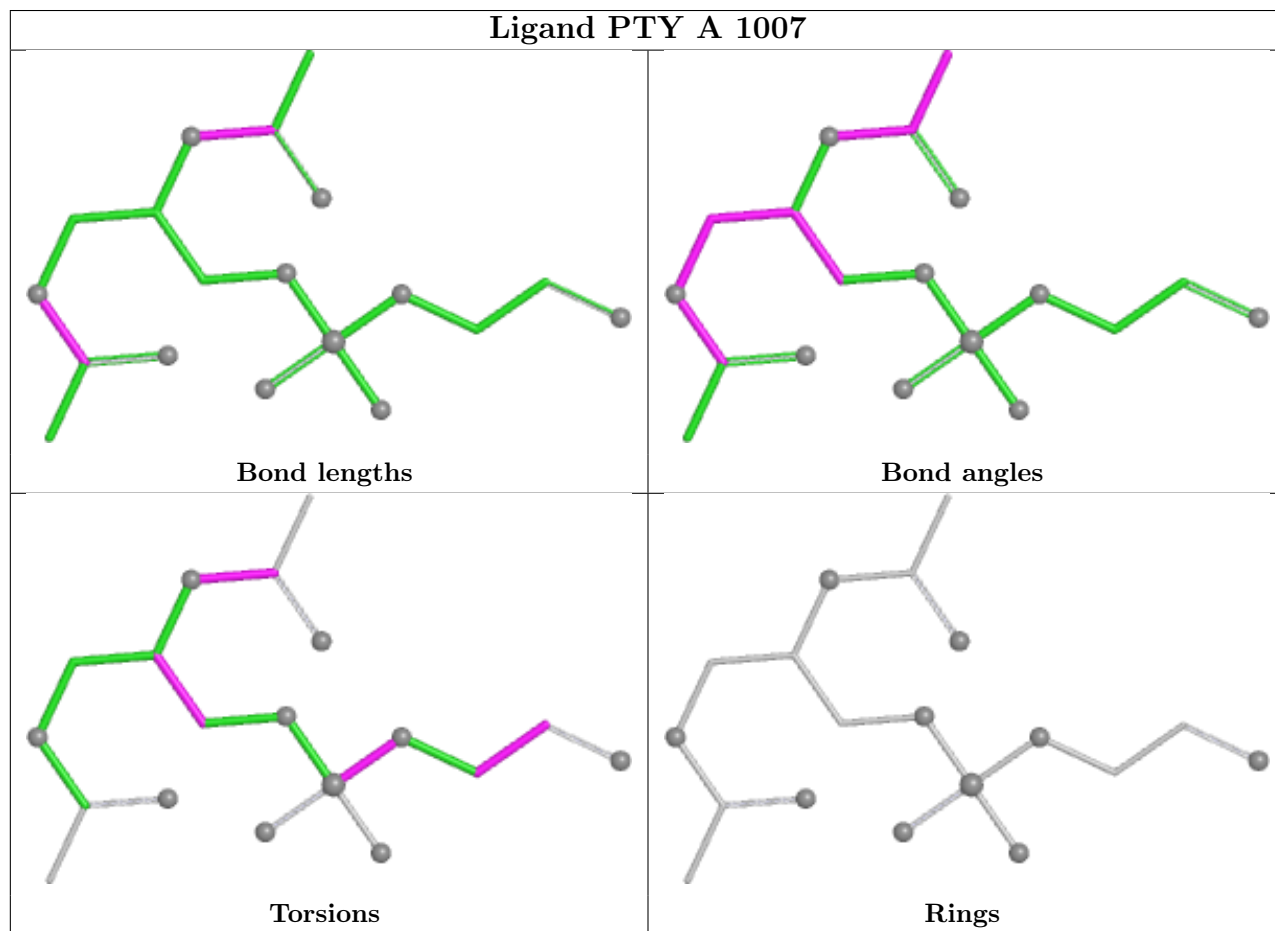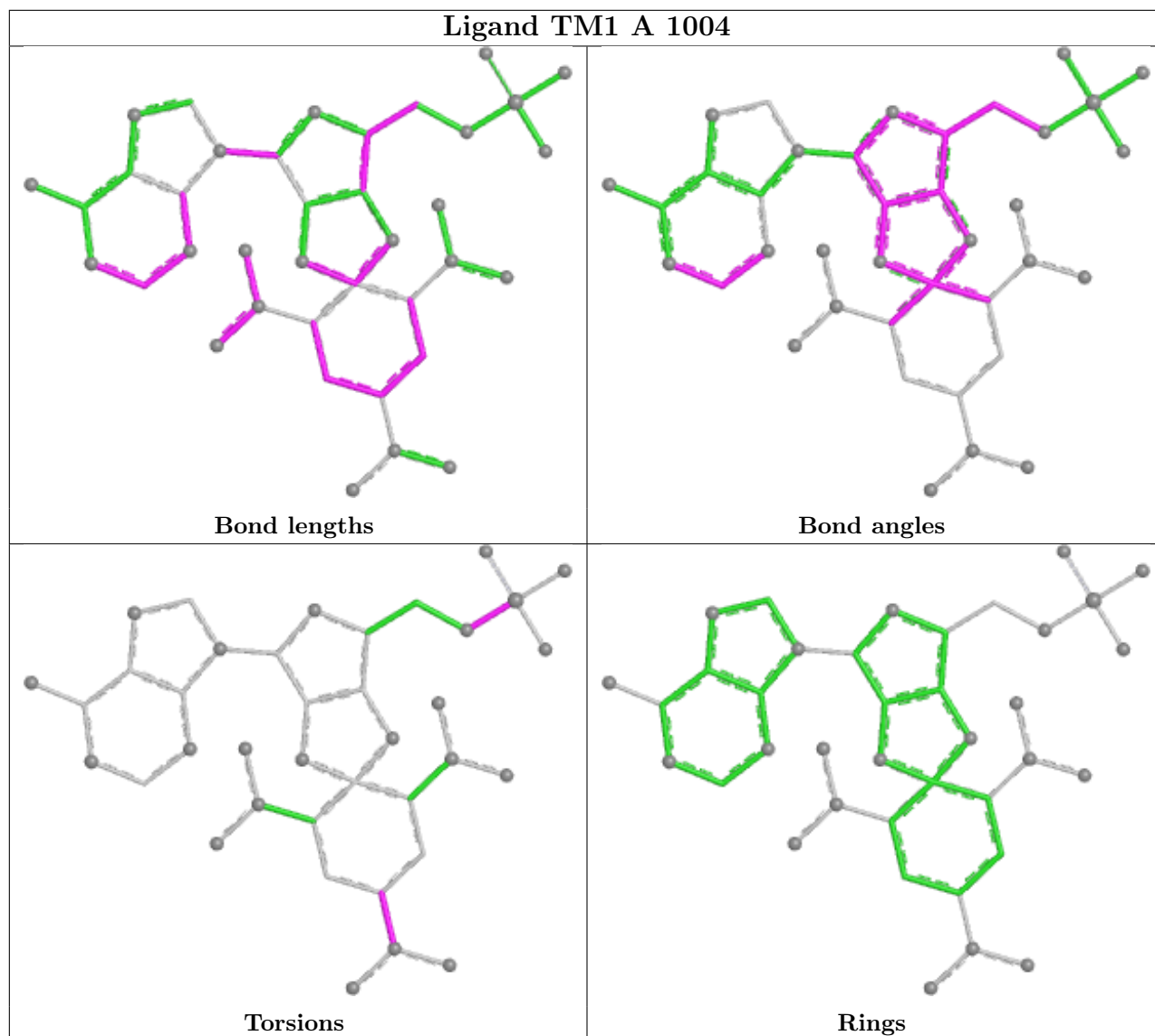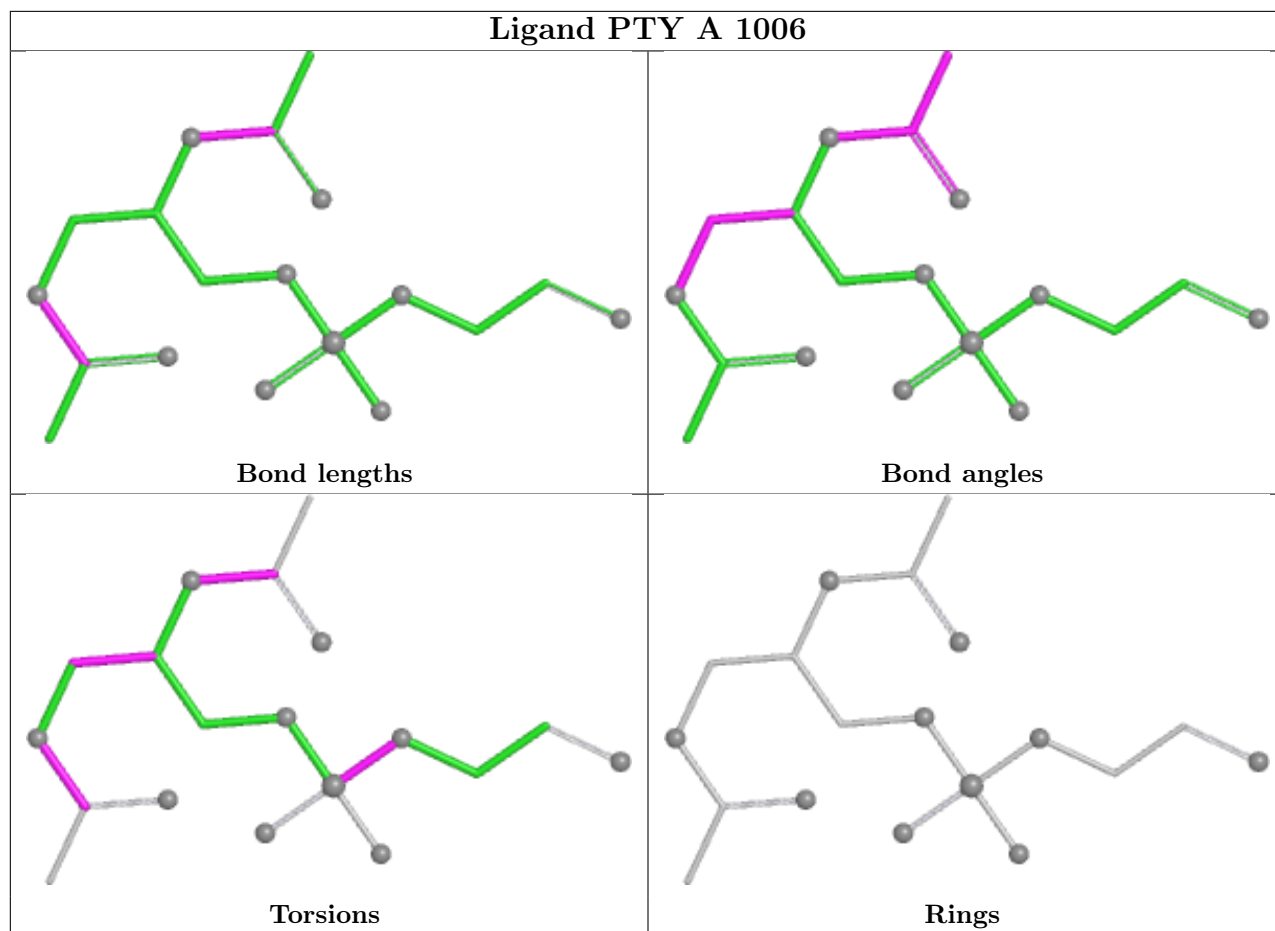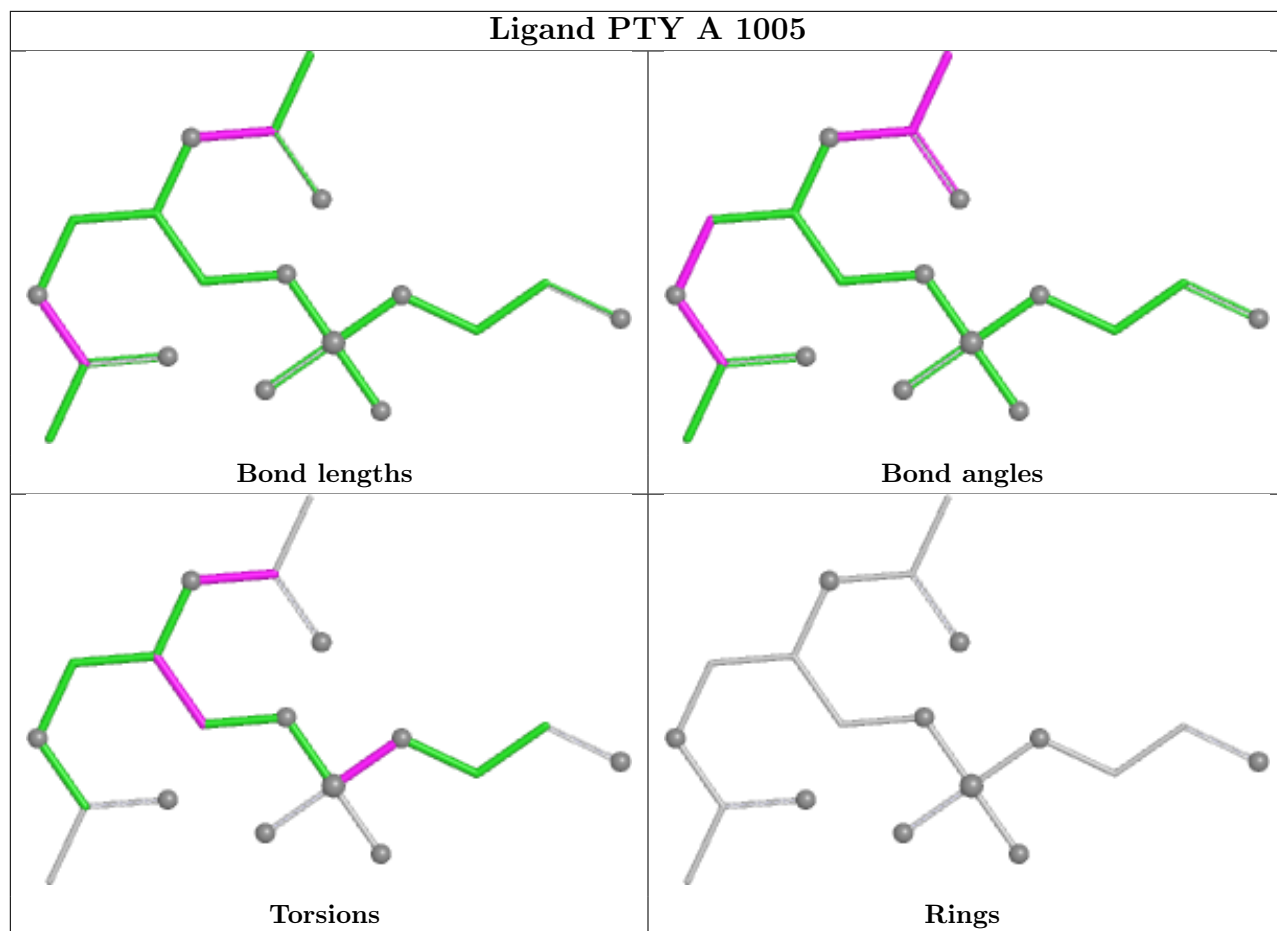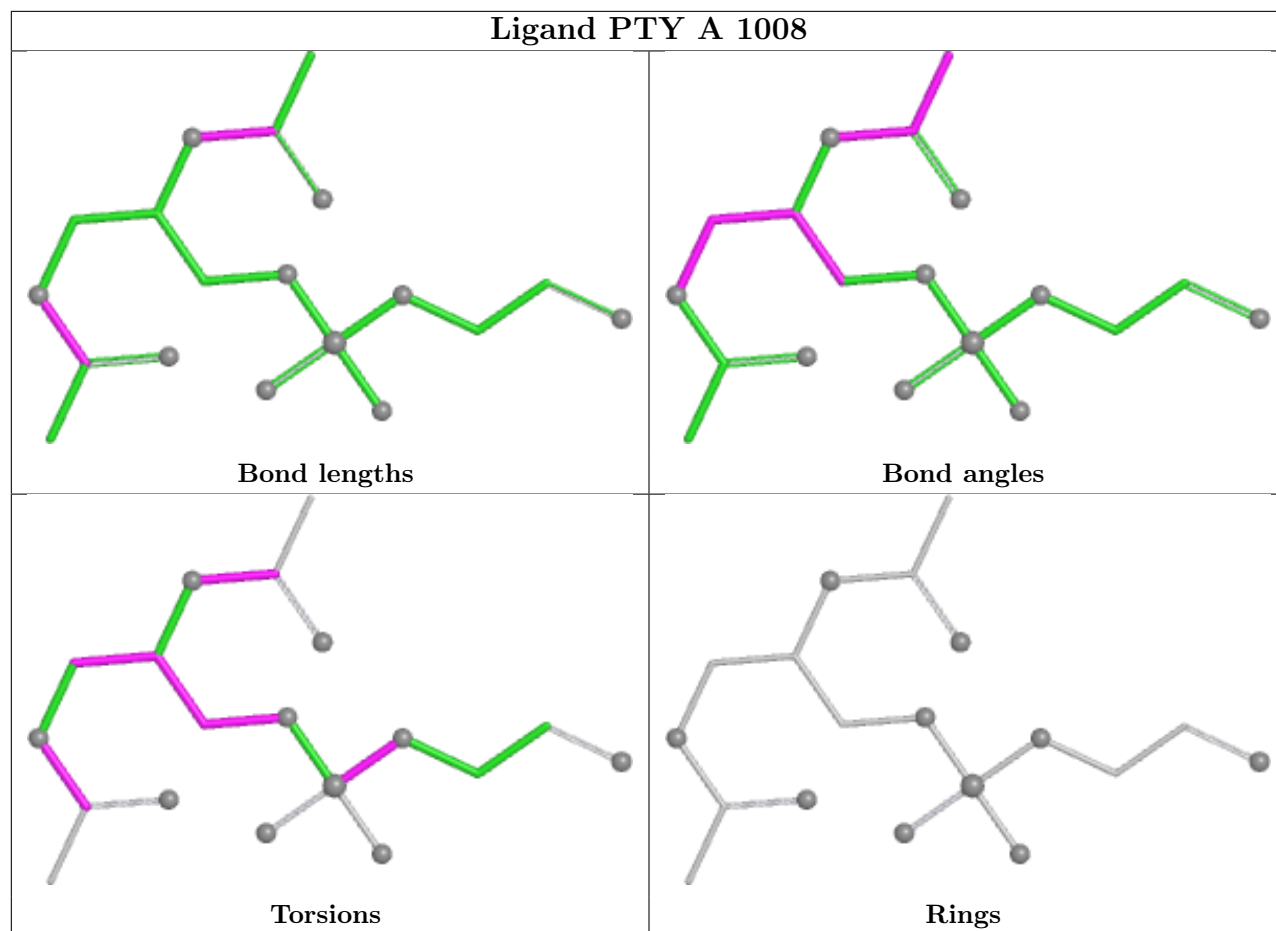
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

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	997/1000 (99%)	-0.73	0	100	100	68, 151, 230, 306	0

There are no RSRZ outliers to report.

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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
5	PTY	A	1007	19/50	0.51	0.10	135,167,186,187	0
5	PTY	A	1008	19/50	0.65	0.10	125,145,162,168	0
5	PTY	A	1005	19/50	0.73	0.13	103,155,174,174	0
5	PTY	A	1006	19/50	0.81	0.09	111,148,185,197	0
4	TM1	A	1004	38/38	0.86	0.11	98,108,125,128	0
3	MG	A	1003	1/1	0.94	0.12	20,20,20,20	0
2	NA	A	1001	1/1	0.94	0.23	8,8,8,8	0
3	MG	A	1002	1/1	0.99	0.15	4,4,4,4	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.
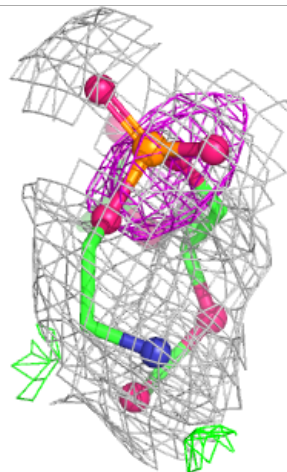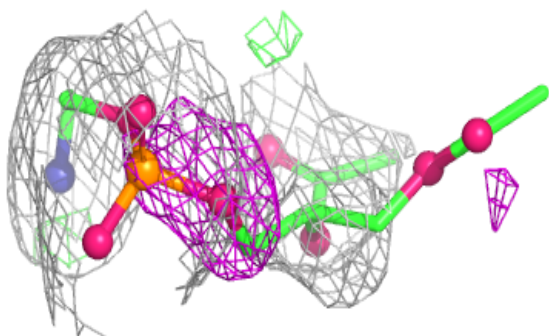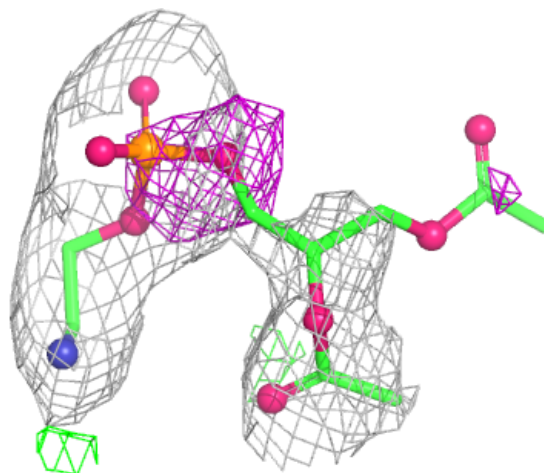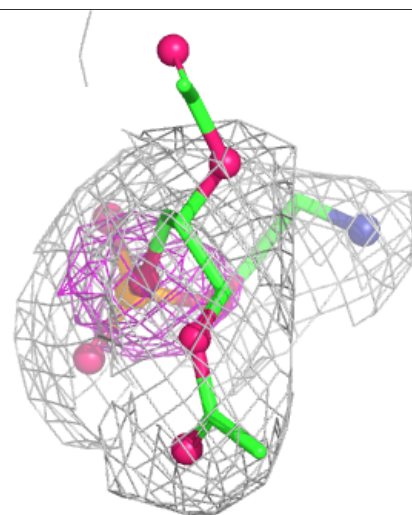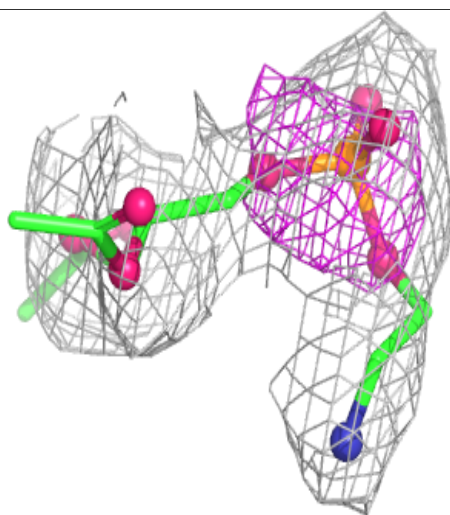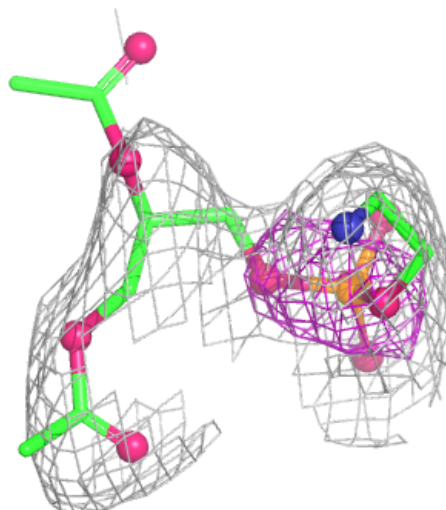
Electron density around PTY A 1007:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
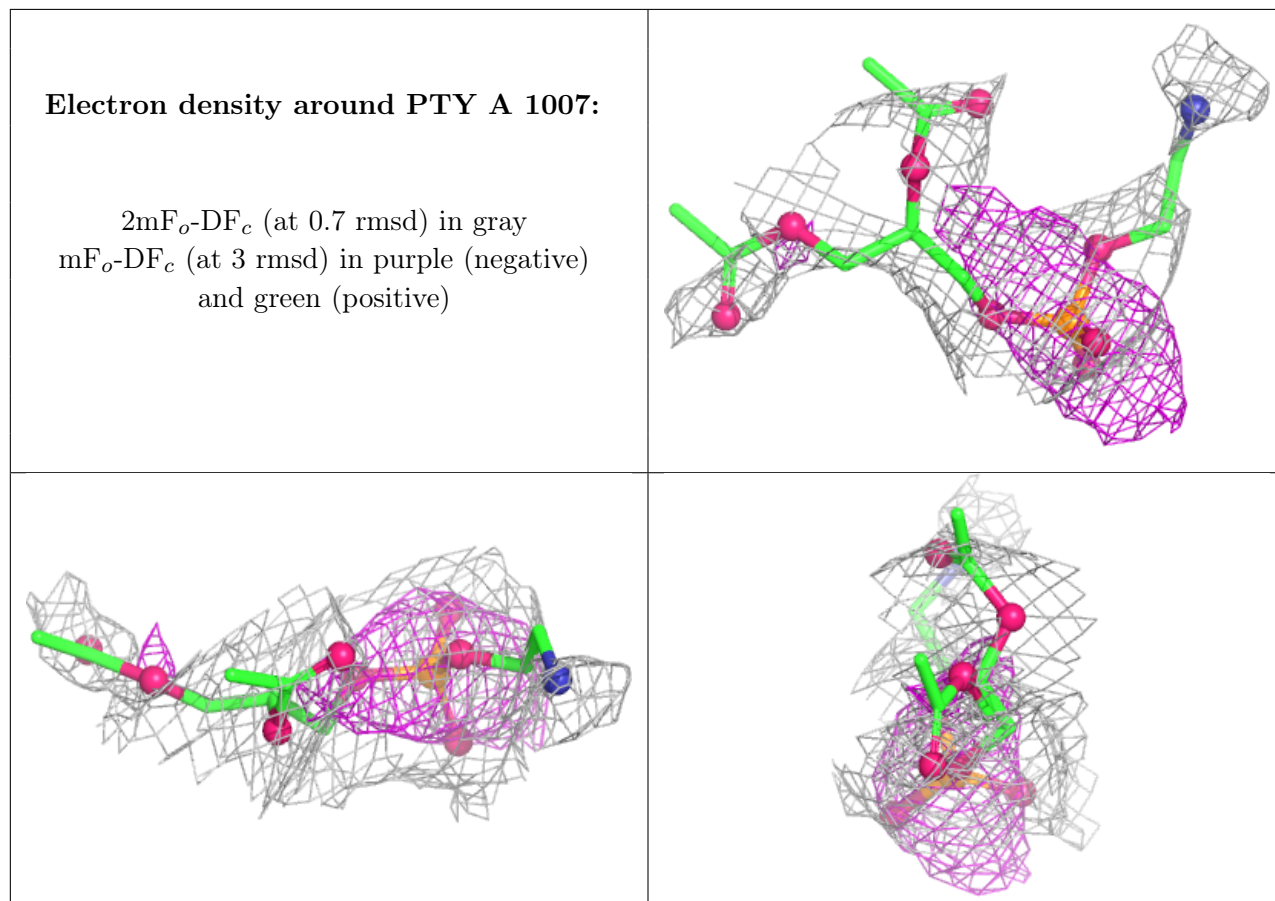
Electron density around PTY A 1008:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)
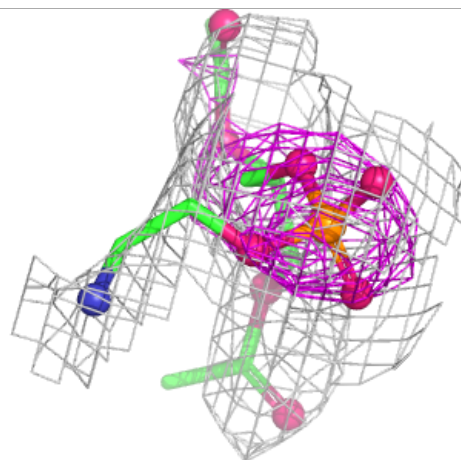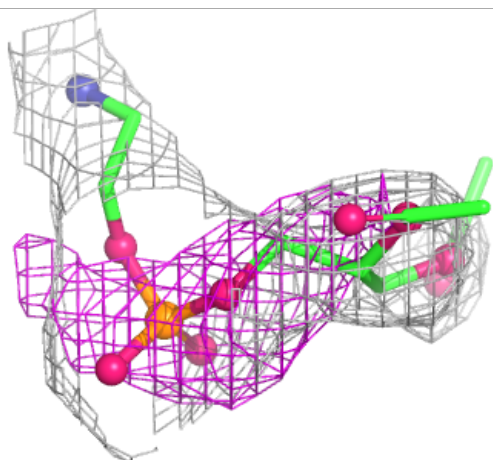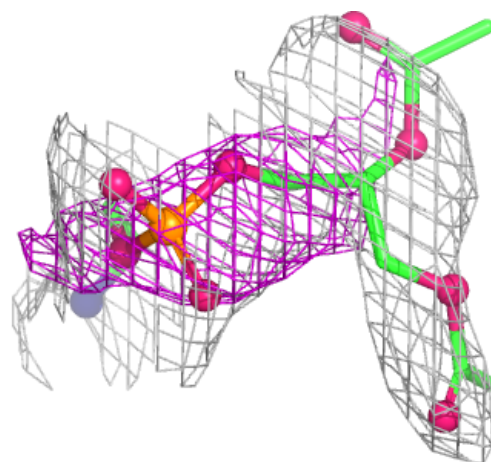
Electron density around PTY A 1005:
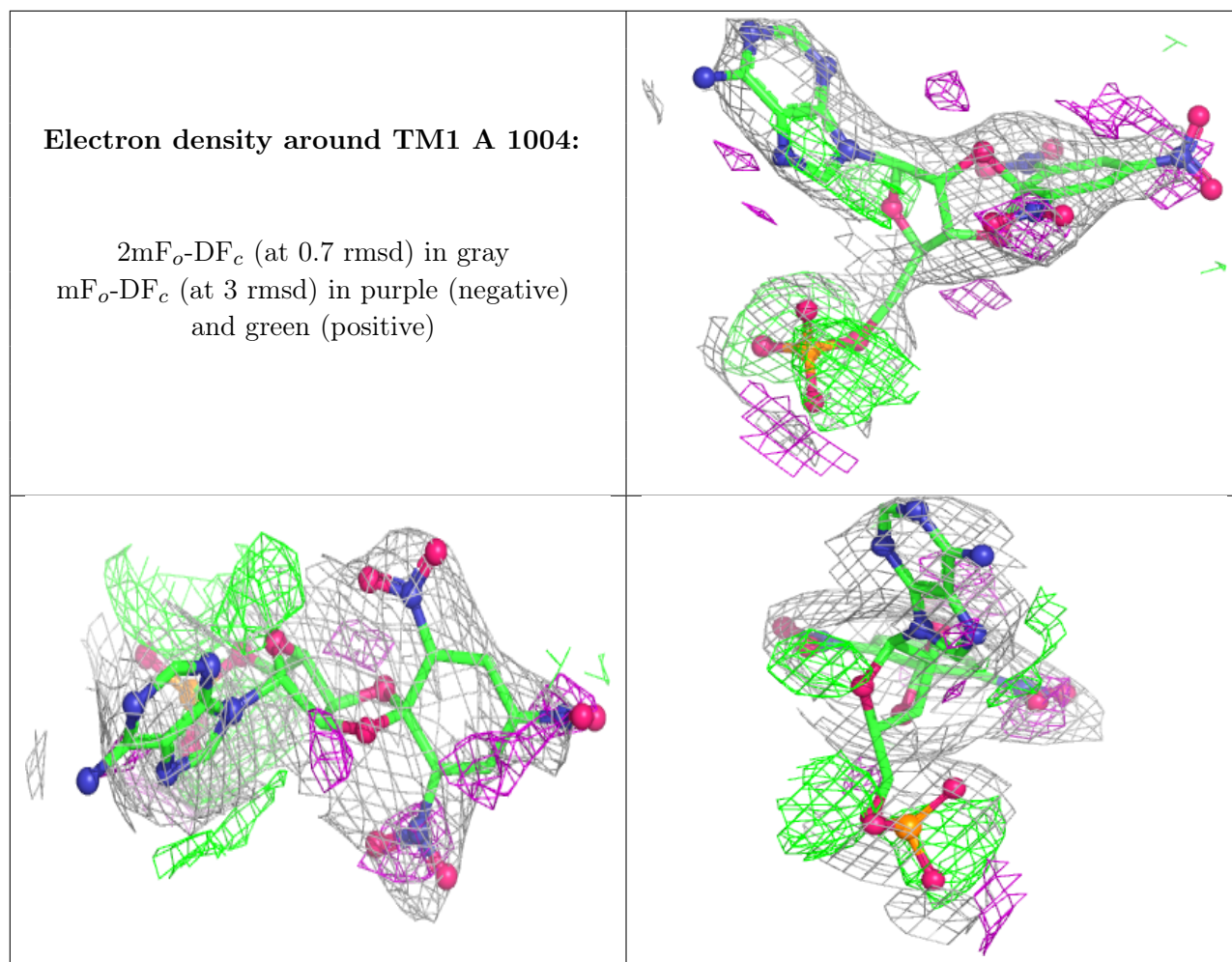
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

Electron density around PTY A 1006:

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

Electron density around TM1 A 1004:

$2mF_o$-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.