Full wwPDB X-ray Structure Validation Report ⓘ

May 25, 2020 – 03:32 pm BST

PDB ID	:	6QNX
Title	:	Structure of the SA2/SCC1/CTCF complex
Authors	:	Li, Y.; Muir, K.W.; Panne, D.
Deposited on	:	2019-02-12
Resolution	:	2.70 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

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

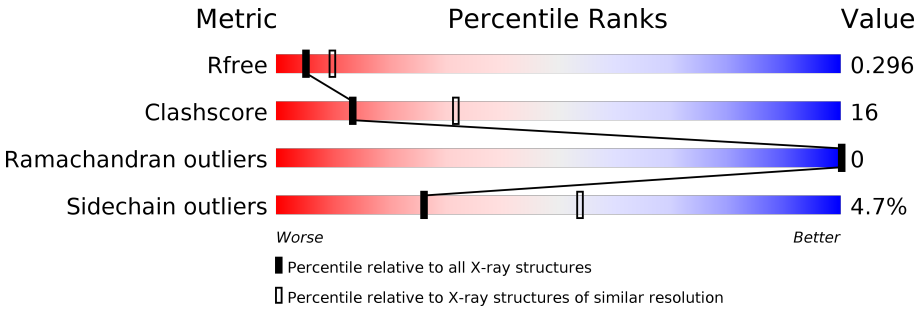
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.70 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on 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%

Mol	Chain	Length	Quality of chain
1	A	1231	50% 24% . 25%
2	B	631	9% . 88%
3	C	727	. 99%

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 16469 atoms, of which 8240 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 Cohesin subunit SA-2.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	928	Total	C	H	N	O	S	0	0	0
			15088	4808	7539	1258	1428	55			

- Molecule 2 is a protein called Double-strand-break repair protein rad21 homolog.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
2	B	74	Total	C	H	N	O	S	0	0	0
			1235	385	639	101	107	3			

- Molecule 3 is a protein called Transcriptional repressor CTCF.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	9	Total	C	H	N	O	0	0	0
			140	50	62	9	19			

- Molecule 4 is water.

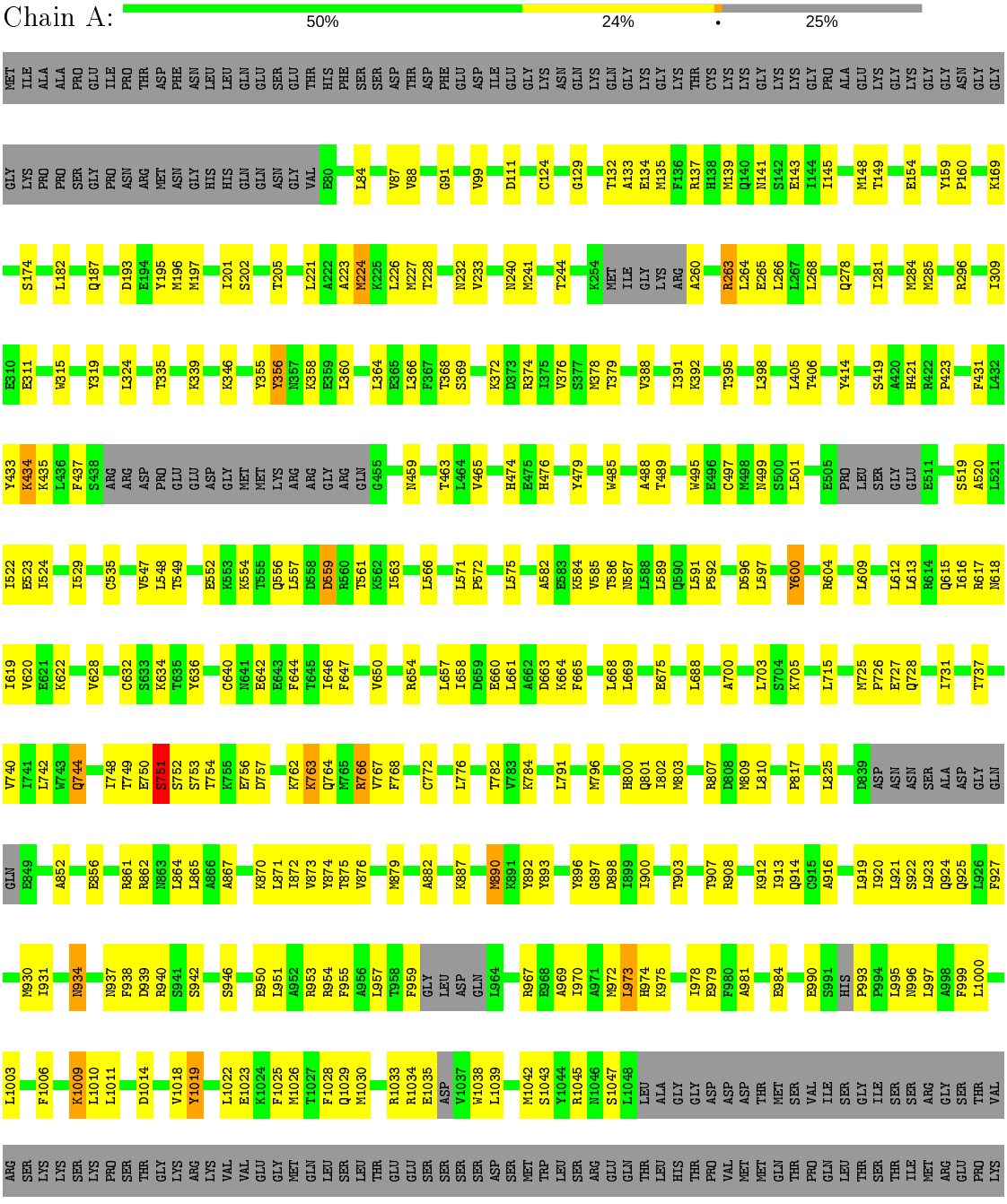
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	6	Total	O	0	0
			6	6		

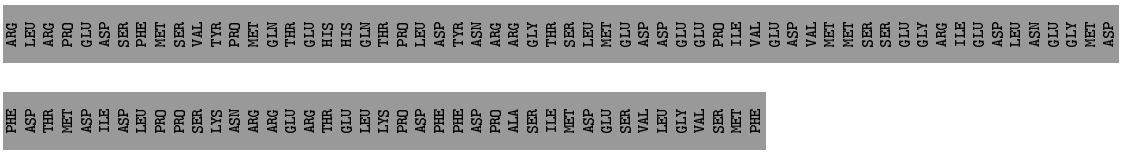
3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA 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. 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. 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: Cohesin subunit SA-2

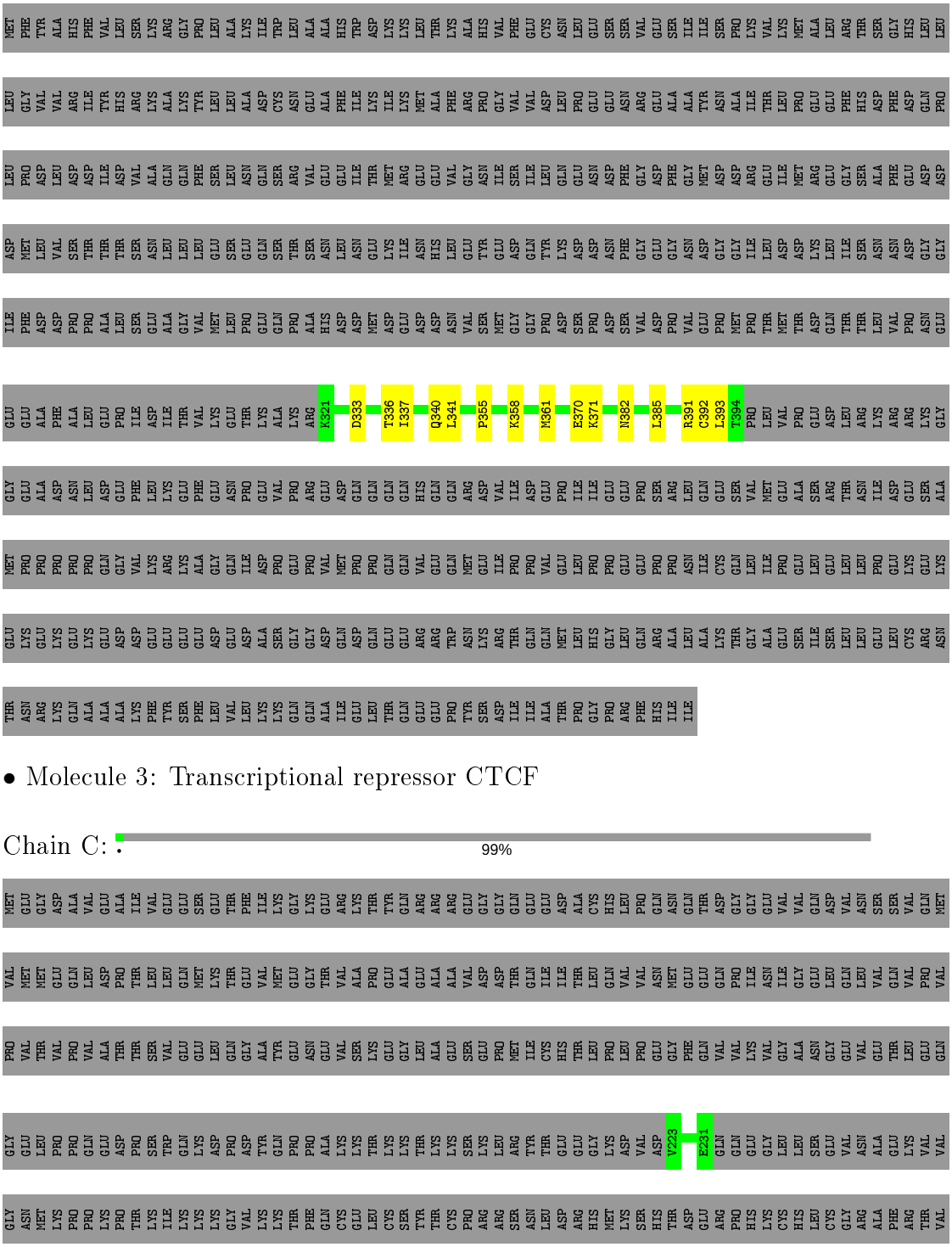
Chain A:





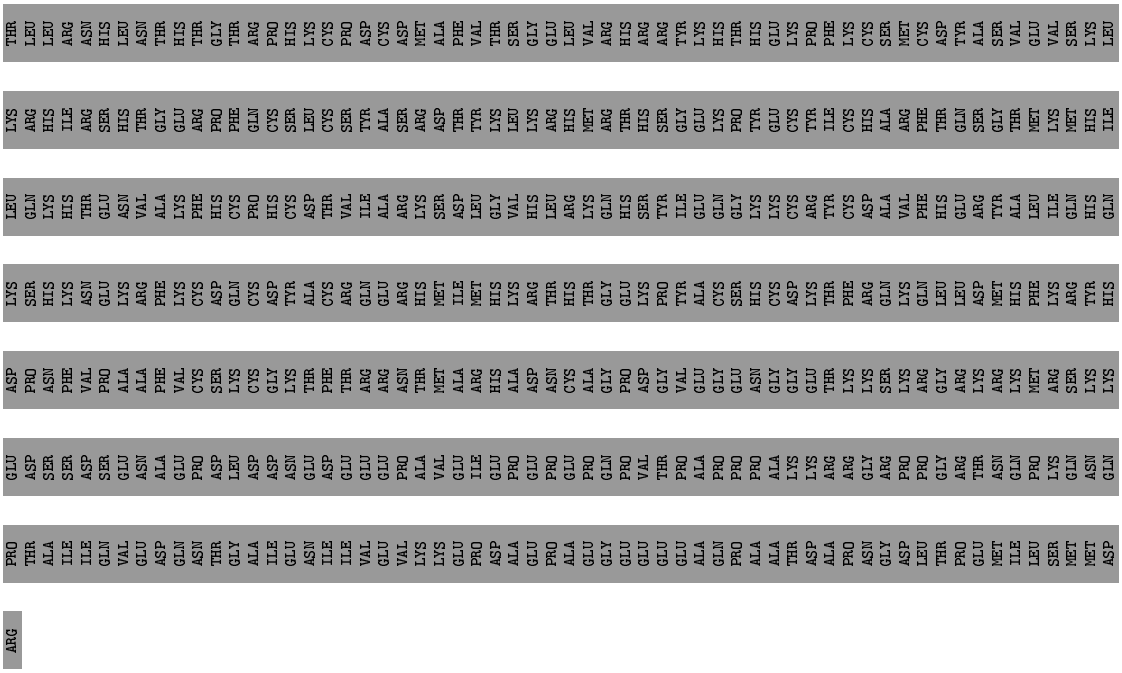
• Molecule 2: Double-strand-break repair protein rad21 homolog

Chain B:



• Molecule 3: Transcriptional repressor CTCF

Chain C:


THR LEU LEU ARG ASN HIS LEU ASN THR HIS THR GLY THR ARG PRO HIS LYS CYS PRO ASP CYS ASP MET ALA PHE VAL THR SER GLY GLU LEU VAL ARG HIS ARG ARG TYR LYS HIS THR HIS GLU LYS PRO PHE LYS CYS SER MET CYS ASP TYR ALA SER VAL GLU VAL SER LYS LEU
LYS ARG HIS ILE ARG SER HIS THR GLY GLU ARG PRO PHE GLN CYS SER LEU CYS SER TYR ALA SER ARG ASP THR TYR LYS LEU LYS ARG HIS MET ARG THR HIS SER GLY GLU LYS PRO TYR GLU CYS TYR ILE CYS HIS ALA ARG PHE THR GLN SER GLY THR MET LYS MET HIS ILE
LEU GLN LYS HIS THR GLU ASN VAL ALA LYS PHE HIS CYS PRO HIS CYS ASP THR VAL ILE ALA ARG LYS SER ASP LEU GLY VAL HIS LEU ARG LYS GLN HIS SER TYR ILE GLU GLN GLY LYS LYS CYS ARG TYR CYS ASP ALA VAL PHE HIS GLU ARG ALA TYR ALA LEU ILE GLN HIS GLN
LYS SER HIS LYS ASN GLU LYS ARG PHE LYS CYS ASP GLN CYS ASP TYR ALA CYS ARG GLN GLU ARG HIS MET ILE MET HIS LYS ARG THR HIS THR GLY GLU LYS PRO TYR ALA CYS SER HIS CYS ASP LYS THR PHE ARG GLN LYS GLN LEU LEU ASP MET HIS PHE LYS ARG TYR HIS
ASP PRO ASN PHE VAL PRO ALA ALA PHE VAL CYS SER LYS CYS GLY LYS THR PHE THR ARG ARG ASN THR MET ALA ARG HIS ALA ASP ASN CYS ALA GLY PRO ASP GLY VAL GLU GLY GLU ASN GLY GLY GLU THR LYS LYS SER LYS ARG GLY ARG LYS MET ARG SER LYS LYS
GLU ASP SER SER ASP SER GLU ASN ALA GLU PRO ASP LEU ASP ASP ASN GLU ASP GLU GLU GLU PRO ALA PRO GLU PRO GLU PRO GLU PRO GLN PRO VAL THR PRO ALA PRO PRO PRO ALA LYS LYS ARG ARG GLY ARG PRO PRO GLY ARG THR ASN GLN PRO LYS GLN ASN GLN
PRO THR ALA ILE ILE GLN VAL GLU ASP GLN ASN THR GLY ALA ILE GLU ASN ILE ILE VAL GLU VAL LYS LYS GLU PRO ASP ALA GLU PRO GLU GLU GLU GLU GLU GLU ALA GLN PRO ALA ALA ALA THR ASP ALA PRO ASN GLY ASP LEU THR PRO GLU MET ILE LEU SER MET MET ASP
ARG

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	79.03Å 107.25Å 176.49Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.80 – 2.70 47.19 – 2.46	Depositor EDS
% Data completeness (in resolution range)	99.6 (45.80-2.70) 99.1 (47.19-2.46)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	0.96 (at 2.45Å)	Xtriage
Refinement program	PHENIX	Depositor
R, R_{free}	(Not available) , (Not available) 0.276 , 0.296	Depositor DCC
R_{free} test set	2741 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	75.9	Xtriage
Anisotropy	0.297	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.38 , 61.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	16469	wwPDB-VP
Average B, all atoms (Å^2)	110.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.14% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

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

5 Model quality

5.1 Standard geometry

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	0.52	1/7677 (0.0%)	0.69	9/10341 (0.1%)
2	B	0.41	0/606	0.63	0/818
3	C	0.33	0/79	0.36	0/106
All	All	0.51	1/8362 (0.0%)	0.68	9/11265 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	1039	LEU	C-N	9.34	1.51	1.34

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	227	MET	CA-CB-CG	-8.54	98.79	113.30
1	A	997	LEU	CB-CG-CD2	-7.02	99.07	111.00
1	A	224	MET	CG-SD-CE	6.80	111.08	100.20
1	A	973	LEU	CB-CG-CD2	6.36	121.81	111.00
1	A	221	LEU	CB-CG-CD2	6.31	121.73	111.00
1	A	227	MET	CB-CG-SD	6.28	131.22	112.40
1	A	559	ASP	CB-CG-OD1	6.11	123.80	118.30
1	A	997	LEU	CB-CG-CD1	5.98	121.17	111.00
1	A	360	LEU	CA-CB-CG	5.95	128.99	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	751	SER	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	7549	7539	7538	259	1
2	B	596	639	639	12	0
3	C	78	62	62	0	0
4	A	6	0	0	2	0
All	All	8229	8240	8239	263	1

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 16.

All (263) 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:187:GLN:O	4:A:1301:HOH:O	1.82	0.96
1:A:993:PRO:N	1:A:1038:TRP:CZ2	2.37	0.91
1:A:803:MET:HA	1:A:807:ARG:HB2	1.54	0.90
1:A:224:MET:CE	1:A:315:TRP:CH2	2.58	0.87
1:A:224:MET:HE2	1:A:315:TRP:CH2	2.11	0.86
1:A:993:PRO:HD3	1:A:1038:TRP:NE1	1.91	0.84
1:A:642:GLU:HG2	1:A:647:PHE:CE2	2.14	0.82
1:A:547:VAL:HG12	1:A:548:LEU:H	1.46	0.80
1:A:993:PRO:N	1:A:1038:TRP:HZ2	1.80	0.79
1:A:201:ILE:O	1:A:205:THR:HG22	1.82	0.79
1:A:501:LEU:O	1:A:501:LEU:HD23	1.83	0.78
1:A:224:MET:CE	1:A:315:TRP:CZ2	2.66	0.78
1:A:197:MET:HB3	1:A:284:MET:HE2	1.64	0.78
1:A:228:THR:OG1	1:A:311:GLU:OE1	2.03	0.77
1:A:642:GLU:HG2	1:A:647:PHE:HE2	1.47	0.76
1:A:224:MET:CE	1:A:315:TRP:HH2	1.99	0.75
1:A:224:MET:HE3	1:A:315:TRP:CZ2	2.22	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:519:SER:HB3	1:A:584:LYS:HE3	1.70	0.74
1:A:134:GLU:OE1	1:A:137:ARG:NH1	2.20	0.74
1:A:934:ASN:OD1	1:A:934:ASN:N	2.21	0.73
1:A:993:PRO:HD3	1:A:1038:TRP:HE1	1.50	0.73
1:A:927:PHE:CD1	1:A:999:PHE:HD1	2.07	0.72
1:A:571:LEU:HD23	1:A:612:LEU:HD22	1.72	0.71
1:A:364:LEU:O	1:A:368:THR:HG23	1.90	0.71
1:A:908:ARG:HG2	1:A:912:LYS:HD3	1.69	0.71
1:A:572:PRO:HG3	1:A:612:LEU:HB2	1.72	0.71
1:A:913:ILE:HD11	1:A:972:MET:HB3	1.73	0.70
1:A:975:LYS:HA	1:A:978:ILE:HG12	1.72	0.70
1:A:600:TYR:HB3	1:A:646:ILE:HD11	1.73	0.70
1:A:796:MET:HE2	1:A:871:LEU:HD23	1.74	0.69
1:A:920:ILE:HD13	1:A:923:LEU:HD12	1.73	0.69
1:A:1014:ASP:O	1:A:1018:VAL:HG13	1.91	0.69
1:A:437:PHE:HE1	1:A:463:THR:HB	1.57	0.69
1:A:376:VAL:O	1:A:379:THR:HG23	1.93	0.68
1:A:664:LYS:O	1:A:668:LEU:HD12	1.93	0.68
1:A:974:HIS:O	1:A:978:ILE:HG23	1.93	0.68
1:A:224:MET:HE2	1:A:315:TRP:CZ2	2.29	0.68
1:A:240:ASN:O	1:A:244:THR:HG23	1.94	0.68
1:A:111:ASP:OD1	1:A:195:TYR:OH	2.11	0.67
1:A:609:LEU:HD21	1:A:646:ILE:HG21	1.77	0.66
1:A:309:ILE:HG13	1:A:335:THR:HG21	1.77	0.66
1:A:646:ILE:HG22	1:A:650:VAL:HG23	1.76	0.66
1:A:920:ILE:HG12	1:A:973:LEU:HD11	1.78	0.66
1:A:613:LEU:HD11	1:A:650:VAL:HG22	1.77	0.66
1:A:355:TYR:OH	1:A:368:THR:HG21	1.96	0.65
1:A:620:VAL:HG12	1:A:632:CYS:SG	2.36	0.65
1:A:921:LEU:HD13	1:A:921:LEU:O	1.96	0.65
1:A:993:PRO:CD	1:A:1038:TRP:CZ2	2.79	0.65
1:A:224:MET:HE2	1:A:315:TRP:HH2	1.61	0.65
1:A:391:ILE:O	1:A:395:THR:HG23	1.96	0.64
1:A:715:LEU:HD21	1:A:725:MET:SD	2.37	0.64
1:A:927:PHE:CD1	1:A:999:PHE:CD1	2.84	0.64
1:A:575:LEU:HD12	1:A:612:LEU:HD11	1.78	0.64
1:A:398:LEU:HD12	1:A:405:LEU:HD12	1.80	0.64
1:A:984:GLU:HB3	1:A:995:LEU:HD12	1.80	0.63
1:A:575:LEU:HD12	1:A:612:LEU:CD1	2.27	0.63
1:A:921:LEU:HA	1:A:924:GLN:HB2	1.81	0.63
1:A:993:PRO:HD3	1:A:1038:TRP:CE2	2.34	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1010:LEU:HD21	1:A:1018:VAL:HG11	1.80	0.63
1:A:398:LEU:CD1	1:A:405:LEU:HD12	2.28	0.63
1:A:609:LEU:HD22	1:A:646:ILE:HD13	1.81	0.62
1:A:993:PRO:CA	1:A:1038:TRP:CZ2	2.83	0.61
1:A:942:SER:O	1:A:946:SER:OG	2.13	0.61
1:A:646:ILE:HG22	1:A:646:ILE:O	2.01	0.61
1:A:970:ILE:HD12	1:A:973:LEU:HD23	1.82	0.61
1:A:772:CYS:CB	1:A:791:LEU:HD13	2.31	0.61
1:A:970:ILE:O	1:A:973:LEU:HB3	2.01	0.60
1:A:414:TYR:OH	1:A:435:LYS:HG2	2.01	0.60
1:A:1010:LEU:HD21	1:A:1018:VAL:CG1	2.31	0.60
1:A:224:MET:HE3	1:A:315:TRP:HZ2	1.62	0.60
1:A:241:MET:HE1	1:A:278:GLN:HB2	1.84	0.60
1:A:791:LEU:HD23	1:A:825:LEU:HD21	1.83	0.60
1:A:796:MET:CE	1:A:871:LEU:HD23	2.33	0.59
1:A:547:VAL:HG12	1:A:548:LEU:N	2.17	0.59
1:A:124:CYS:O	1:A:160:PRO:HG2	2.01	0.59
1:A:556:GLN:HG2	1:A:556:GLN:O	2.03	0.58
1:A:87:VAL:O	1:A:91:GLY:N	2.37	0.57
1:A:763:LYS:O	1:A:767:VAL:HG12	2.04	0.57
1:A:993:PRO:CD	1:A:1038:TRP:CE2	2.87	0.57
1:A:405:LEU:O	1:A:406:THR:HB	2.03	0.57
1:A:575:LEU:CD1	1:A:612:LEU:HD11	2.34	0.57
1:A:589:LEU:HD11	1:A:619:ILE:HD12	1.87	0.57
1:A:981:ALA:HA	1:A:996:ASN:HB2	1.84	0.57
1:A:879:MET:HE1	1:A:914:GLN:C	2.25	0.57
1:A:197:MET:HB3	1:A:284:MET:CE	2.34	0.56
1:A:522:ILE:HG13	1:A:523:GLU:H	1.69	0.56
1:A:589:LEU:HD11	1:A:619:ILE:CD1	2.36	0.56
1:A:522:ILE:HG13	1:A:523:GLU:N	2.21	0.56
1:A:1023:GLU:HA	1:A:1026:MET:HG2	1.87	0.56
1:A:597:LEU:HB2	1:A:644:PHE:CD1	2.41	0.56
1:A:264:LEU:HD12	1:A:265:GLU:N	2.22	0.55
1:A:900:ILE:O	1:A:903:THR:HG22	2.06	0.55
1:A:1026:MET:O	1:A:1026:MET:HG3	2.06	0.55
1:A:132:THR:HG23	1:A:135:MET:HE3	1.89	0.55
1:A:727:GLU:HG3	1:A:728:GLN:N	2.22	0.55
1:A:913:ILE:HD11	1:A:972:MET:CB	2.36	0.55
1:A:586:THR:HG22	1:A:628:VAL:HA	1.88	0.54
1:A:973:LEU:HD21	1:A:1006:PHE:CD2	2.42	0.54
1:A:1019:TYR:HA	1:A:1022:LEU:HB3	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:873:VAL:HG23	1:A:874:TYR:CD2	2.42	0.54
1:A:754:THR:HG21	1:A:757:ASP:HB2	1.90	0.54
1:A:978:ILE:HG13	1:A:979:GLU:H	1.73	0.54
1:A:749:THR:HG23	1:A:750:GLU:H	1.73	0.53
1:A:950:GLU:OE1	1:A:950:GLU:HA	2.07	0.53
1:A:665:PHE:O	1:A:669:LEU:HD23	2.08	0.53
1:A:887:LYS:NZ	1:A:925:GLN:OE1	2.27	0.53
1:A:374:ARG:HG3	1:A:378:MET:CE	2.38	0.53
1:A:921:LEU:HD22	1:A:924:GLN:HB2	1.90	0.53
1:A:224:MET:HG3	1:A:311:GLU:CB	2.39	0.53
1:A:557:LEU:O	1:A:561:THR:HG23	2.08	0.52
1:A:549:THR:N	1:A:552:GLU:OE1	2.40	0.52
1:A:913:ILE:HD12	1:A:969:ALA:HA	1.90	0.52
1:A:975:LYS:O	1:A:975:LYS:HG3	2.10	0.52
1:A:559:ASP:O	1:A:563:ILE:HG13	2.09	0.52
1:A:1019:TYR:O	1:A:1023:GLU:N	2.38	0.52
1:A:600:TYR:CB	1:A:646:ILE:HD11	2.39	0.52
1:A:753:SER:OG	1:A:754:THR:HG22	2.08	0.51
1:A:776:LEU:O	1:A:776:LEU:HD23	2.11	0.51
1:A:751:SER:OG	1:A:809:MET:CE	2.58	0.51
1:A:88:VAL:HG13	1:A:174:SER:HB3	1.93	0.51
1:A:867:ALA:HA	1:A:870:LYS:HE2	1.93	0.51
1:A:803:MET:HA	1:A:807:ARG:CB	2.34	0.51
1:A:395:THR:HG22	1:A:431:PHE:HD2	1.74	0.50
1:A:772:CYS:HB3	1:A:791:LEU:HD13	1.92	0.50
1:A:129:GLY:HA3	1:A:148:MET:HE3	1.93	0.50
1:A:920:ILE:CG1	1:A:973:LEU:HD11	2.40	0.50
1:A:281:ILE:O	1:A:285:MET:HG3	2.12	0.50
1:A:1019:TYR:HD1	1:A:1023:GLU:OE2	1.95	0.50
1:A:356:TYR:O	1:A:356:TYR:HD1	1.95	0.49
1:A:609:LEU:CD2	1:A:646:ILE:HG21	2.41	0.49
1:A:916:ALA:HB1	1:A:973:LEU:HD13	1.93	0.49
1:A:1000:LEU:HD22	1:A:1003:LEU:HD23	1.94	0.49
1:A:582:ALA:O	1:A:586:THR:HG23	2.11	0.49
1:A:566:LEU:O	1:A:566:LEU:HD23	2.12	0.49
1:A:737:THR:HG21	1:A:768:PHE:CD1	2.47	0.49
1:A:742:LEU:HB3	2:B:385:LEU:HD22	1.95	0.49
1:A:890:MET:HB2	1:A:951:LEU:HD13	1.93	0.49
1:A:715:LEU:HD23	1:A:715:LEU:O	2.13	0.48
1:A:800:HIS:NE2	1:A:875:THR:OG1	2.45	0.48
1:A:224:MET:CE	1:A:315:TRP:HZ2	2.18	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:495:TRP:O	1:A:499:ASN:N	2.35	0.48
1:A:196:MET:HG3	4:A:1304:HOH:O	2.13	0.48
1:A:903:THR:O	1:A:907:THR:HG23	2.13	0.48
1:A:801:GLN:O	1:A:807:ARG:NH2	2.46	0.48
1:A:223:ALA:O	1:A:226:LEU:HB3	2.14	0.48
1:A:374:ARG:HG3	1:A:378:MET:HE2	1.95	0.48
1:A:547:VAL:CG1	1:A:548:LEU:H	2.22	0.48
1:A:1018:VAL:HG23	1:A:1019:TYR:N	2.28	0.48
2:B:337:ILE:O	2:B:341:LEU:HG	2.13	0.48
1:A:196:MET:HG3	1:A:197:MET:N	2.28	0.48
1:A:465:VAL:HG22	1:A:524:ILE:HD12	1.96	0.47
1:A:802:ILE:HG12	1:A:802:ILE:O	2.14	0.47
1:A:324:LEU:HA	1:A:324:LEU:HD12	1.73	0.47
1:A:762:LYS:HE3	1:A:766:ARG:HH12	1.78	0.47
1:A:421:HIS:CD2	1:A:423:PRO:HD2	2.49	0.47
1:A:908:ARG:CZ	1:A:912:LYS:HZ2	2.27	0.47
1:A:339:LYS:HE2	2:B:340:GLN:HG2	1.96	0.47
1:A:748:ILE:HG22	1:A:810:LEU:HD21	1.97	0.47
1:A:993:PRO:HA	1:A:1038:TRP:CH2	2.50	0.47
1:A:861:ARG:HA	1:A:864:LEU:HD12	1.97	0.47
1:A:1026:MET:HB2	1:A:1030:MET:HE2	1.96	0.47
1:A:763:LYS:HG3	1:A:764:GLN:N	2.29	0.47
1:A:139:MET:HG2	1:A:143:GLU:HB2	1.98	0.46
1:A:99:VAL:CG1	1:A:182:LEU:HA	2.45	0.46
2:B:333:ASP:CG	2:B:336:THR:HG23	2.35	0.46
1:A:658:ILE:HD13	1:A:703:LEU:CD2	2.44	0.46
1:A:772:CYS:HB2	1:A:791:LEU:HD13	1.97	0.46
1:A:133:ALA:O	1:A:137:ARG:HG3	2.15	0.46
1:A:465:VAL:HG13	1:A:520:ALA:HB3	1.98	0.46
1:A:978:ILE:HG13	1:A:979:GLU:N	2.29	0.46
1:A:874:TYR:CE2	2:B:393:LEU:HD22	2.50	0.46
1:A:523:GLU:OE1	2:B:358:LYS:CE	2.63	0.46
1:A:169:LYS:HA	1:A:169:LYS:HE2	1.97	0.46
1:A:740:VAL:O	1:A:744:GLN:OE1	2.34	0.46
1:A:657:LEU:O	1:A:661:LEU:HD12	2.16	0.46
1:A:731:ILE:HD11	1:A:782:THR:OG1	2.16	0.46
2:B:370:GLU:HG2	2:B:371:LYS:H	1.80	0.46
1:A:559:ASP:OD2	1:A:559:ASP:N	2.50	0.45
1:A:803:MET:HA	1:A:807:ARG:HE	1.81	0.45
1:A:817:PRO:HG3	1:A:876:VAL:HG12	1.98	0.45
1:A:497:CYS:O	1:A:501:LEU:HB2	2.16	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:529:ILE:HG23	1:A:563:ILE:HD13	1.98	0.45
1:A:688:LEU:HD11	1:A:728:GLN:HB3	1.99	0.45
1:A:748:ILE:HG22	1:A:748:ILE:O	2.16	0.45
1:A:519:SER:O	1:A:522:ILE:HG13	2.17	0.45
1:A:921:LEU:C	1:A:921:LEU:HD13	2.37	0.45
1:A:591:LEU:HB2	1:A:592:PRO:HD3	1.99	0.45
1:A:388:VAL:CG1	1:A:392:LYS:HD2	2.47	0.44
1:A:398:LEU:HD13	1:A:405:LEU:HD12	1.99	0.44
1:A:852:ALA:O	1:A:856:GLU:HG3	2.17	0.44
1:A:919:LEU:O	1:A:922:SER:HB2	2.18	0.44
1:A:264:LEU:C	1:A:264:LEU:HD12	2.38	0.44
1:A:930:MET:HG3	1:A:930:MET:O	2.17	0.44
1:A:862:ARG:NH2	1:A:898:ASP:OD2	2.50	0.44
1:A:953:ARG:NH1	1:A:957:LEU:HD11	2.33	0.44
1:A:433:TYR:CE1	1:A:488:ALA:HB2	2.52	0.44
1:A:616:ILE:O	1:A:620:VAL:HG13	2.18	0.44
1:A:84:LEU:HD12	1:A:84:LEU:O	2.18	0.44
1:A:938:PHE:CD2	1:A:938:PHE:O	2.70	0.44
1:A:959:PHE:HB2	1:A:1009:LYS:HD3	1.99	0.44
1:A:266:LEU:HD22	1:A:266:LEU:O	2.18	0.44
1:A:776:LEU:O	1:A:784:LYS:HE2	2.17	0.44
1:A:865:LEU:HD12	1:A:865:LEU:O	2.18	0.44
1:A:993:PRO:CG	1:A:1038:TRP:CE2	3.00	0.44
1:A:193:ASP:C	1:A:193:ASP:OD1	2.55	0.43
1:A:872:ILE:HD13	1:A:882:ALA:HB2	2.00	0.43
1:A:421:HIS:CG	1:A:423:PRO:HD2	2.53	0.43
1:A:762:LYS:HE3	1:A:766:ARG:NH1	2.33	0.43
1:A:154:GLU:H	1:A:154:GLU:CD	2.20	0.43
1:A:159:TYR:HB2	1:A:160:PRO:HD2	2.00	0.43
1:A:751:SER:C	1:A:753:SER:N	2.71	0.43
1:A:920:ILE:HG12	1:A:973:LEU:CD1	2.47	0.43
1:A:355:TYR:O	1:A:358:LYS:HB3	2.18	0.43
1:A:612:LEU:O	1:A:615:GLN:N	2.51	0.43
1:A:892:TYR:HB3	1:A:896:TYR:HD2	1.83	0.43
1:A:978:ILE:CD1	1:A:1025:PHE:CE1	3.02	0.43
1:A:187:GLN:HB2	1:A:233:VAL:HG22	2.01	0.43
1:A:224:MET:HG3	1:A:311:GLU:HB2	2.01	0.43
1:A:566:LEU:C	1:A:566:LEU:HD23	2.39	0.43
1:A:604:ARG:O	1:A:604:ARG:CG	2.67	0.43
1:A:615:GLN:O	1:A:619:ILE:HG23	2.19	0.43
1:A:366:LEU:HD12	1:A:366:LEU:O	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1019:TYR:O	1:A:1022:LEU:HB3	2.19	0.43
1:A:993:PRO:HG3	1:A:1038:TRP:CE2	2.54	0.43
1:A:1026:MET:HB2	1:A:1030:MET:CE	2.49	0.42
1:A:260:ALA:HA	1:A:263:ARG:HE	1.84	0.42
1:A:618:ASN:O	1:A:622:LYS:HG3	2.19	0.42
1:A:141:ASN:O	1:A:145:ILE:HG13	2.19	0.42
1:A:368:THR:O	1:A:372:LYS:HB2	2.19	0.42
1:A:619:ILE:HG13	1:A:620:VAL:N	2.34	0.42
1:A:893:TYR:O	1:A:897:GLY:N	2.51	0.42
1:A:972:MET:HA	1:A:975:LYS:HB3	2.01	0.42
1:A:129:GLY:C	1:A:148:MET:HE1	2.39	0.42
1:A:993:PRO:CD	1:A:1038:TRP:NE1	2.75	0.42
1:A:617:ARG:NH2	1:A:660:GLU:OE1	2.53	0.42
1:A:485:TRP:O	1:A:489:THR:HB	2.20	0.42
1:A:522:ILE:HD12	1:A:587:ASN:CB	2.50	0.42
1:A:1043:SER:O	1:A:1047:SER:OG	2.38	0.42
1:A:437:PHE:CE1	1:A:463:THR:HB	2.46	0.42
1:A:646:ILE:O	1:A:646:ILE:CG2	2.66	0.42
1:A:476:HIS:CE1	2:B:361:MET:HE2	2.55	0.42
1:A:640:CYS:CB	1:A:654:ARG:HH21	2.33	0.42
1:A:893:TYR:O	1:A:897:GLY:HA3	2.19	0.42
1:A:616:ILE:O	1:A:619:ILE:HG12	2.19	0.41
1:A:434:LYS:HE2	1:A:434:LYS:HB2	1.76	0.41
1:A:547:VAL:CG1	1:A:548:LEU:N	2.83	0.41
2:B:391:ARG:HG3	2:B:392:CYS:SG	2.60	0.41
1:A:582:ALA:HA	1:A:585:VAL:HG22	2.03	0.41
1:A:749:THR:HG23	1:A:750:GLU:N	2.35	0.41
1:A:920:ILE:CG1	1:A:973:LEU:CD1	2.98	0.41
1:A:967:ARG:HB3	1:A:1011:LEU:HD21	2.03	0.41
1:A:265:GLU:HA	1:A:268:LEU:CD2	2.51	0.41
1:A:726:PRO:O	1:A:727:GLU:C	2.59	0.41
1:A:700:ALA:HA	2:B:382:ASN:HB2	2.02	0.41
1:A:715:LEU:HD23	1:A:715:LEU:C	2.40	0.41
1:A:129:GLY:C	1:A:148:MET:CE	2.90	0.41
1:A:658:ILE:HD13	1:A:703:LEU:HD22	2.02	0.41
1:A:132:THR:HG23	1:A:135:MET:CE	2.51	0.40
1:A:476:HIS:NE2	2:B:361:MET:HE2	2.36	0.40
1:A:145:ILE:O	1:A:149:THR:HG23	2.20	0.40
1:A:309:ILE:HD13	1:A:309:ILE:HA	1.96	0.40
1:A:479:TYR:CZ	2:B:355:PRO:HD2	2.56	0.40
1:A:990:GLU:CD	1:A:990:GLU:H	2.24	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:554:LYS:NZ	1:A:938:PHE:N[1_455]	2.01	0.19

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	911/1231 (74%)	862 (95%)	49 (5%)	0	100	100
2	B	72/631 (11%)	69 (96%)	3 (4%)	0	100	100
3	C	7/727 (1%)	7 (100%)	0	0	100	100
All	All	990/2589 (38%)	938 (95%)	52 (5%)	0	100	100

There are no Ramachandran outliers to report.

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	839/1106 (76%)	796 (95%)	43 (5%)	24	50
2	B	69/566 (12%)	69 (100%)	0	100	100
3	C	9/647 (1%)	9 (100%)	0	100	100
All	All	917/2319 (40%)	874 (95%)	43 (5%)	26	54

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	202	SER
1	A	232	ASN
1	A	263	ARG
1	A	296	ARG
1	A	319	TYR
1	A	346	LYS
1	A	356	TYR
1	A	369	SER
1	A	419	SER
1	A	434	LYS
1	A	459	ASN
1	A	474	HIS
1	A	535	CYS
1	A	596	ASP
1	A	600	TYR
1	A	634	LYS
1	A	636	TYR
1	A	663	ASP
1	A	675	GLU
1	A	705	LYS
1	A	744	GLN
1	A	751	SER
1	A	752	SER
1	A	756	GLU
1	A	763	LYS
1	A	766	ARG
1	A	890	MET
1	A	931	ILE
1	A	934	ASN
1	A	937	ASN
1	A	939	ASP
1	A	940	ARG
1	A	954	ARG
1	A	955	PHE
1	A	1009	LYS
1	A	1019	TYR
1	A	1028	PHE
1	A	1029	GLN
1	A	1033	ARG
1	A	1034	ARG
1	A	1035	GLU
1	A	1042	MET
1	A	1045	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 carbohydrates in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	993:PRO	C	994:PRO	N	3.08

6 Fit of model and data

6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.