



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 19, 2020 – 12:14 PM JST

PDB ID : 6LHM
Title : Structure of human PYCR2
Authors : Baburajendran, N.
Deposited on : 2019-12-09
Resolution : 3.40 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	:	2.14.6
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)	:	2.14.6

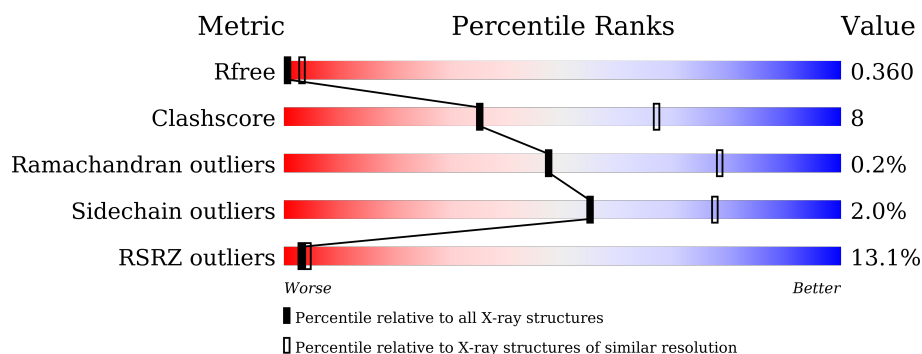
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.40 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	1026 (3.48-3.32)
Clashscore	141614	1055 (3.48-3.32)
Ramachandran outliers	138981	1038 (3.48-3.32)
Sidechain outliers	138945	1038 (3.48-3.32)
RSRZ outliers	127900	2173 (3.50-3.30)

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 $\leq 5\%$. 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	301	<div> <div>10%</div> <div> <div></div> <div>71%</div> <div>17%</div> <div>•</div> <div>11%</div> </div> </div>
1	B	301	<div> <div>13%</div> <div> <div></div> <div>73%</div> <div>16%</div> <div></div> <div>11%</div> </div> </div>
1	C	301	<div> <div>13%</div> <div> <div></div> <div>67%</div> <div>18%</div> <div>•</div> <div>14%</div> </div> </div>
1	D	301	<div> <div>6%</div> <div> <div></div> <div>74%</div> <div>16%</div> <div></div> <div>9%</div> </div> </div>
1	E	301	<div> <div>16%</div> <div> <div></div> <div>69%</div> <div>14%</div> <div></div> <div>17%</div> </div> </div>

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 9211 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 Pyrroline-5-carboxylate reductase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	268	Total	C	N	O	S	0	0	0
			1884	1192	319	359	14			
1	B	269	Total	C	N	O	S	0	0	0
			1893	1196	326	358	13			
1	C	258	Total	C	N	O	S	0	0	0
			1789	1131	306	340	12			
1	D	273	Total	C	N	O	S	0	0	0
			1934	1216	333	373	12			
1	E	249	Total	C	N	O	S	0	0	0
			1711	1076	287	336	12			

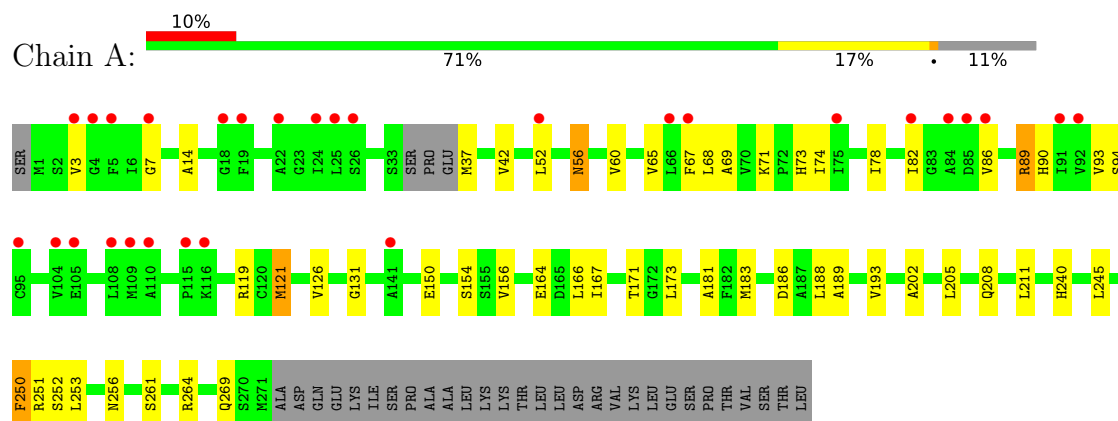
There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	SER	-	expression tag	UNP Q96C36
A	239	THR	ILE	conflict	UNP Q96C36
B	0	SER	-	expression tag	UNP Q96C36
B	239	THR	ILE	conflict	UNP Q96C36
C	0	SER	-	expression tag	UNP Q96C36
C	239	THR	ILE	conflict	UNP Q96C36
D	0	SER	-	expression tag	UNP Q96C36
D	239	THR	ILE	conflict	UNP Q96C36
E	0	SER	-	expression tag	UNP Q96C36
E	239	THR	ILE	conflict	UNP Q96C36

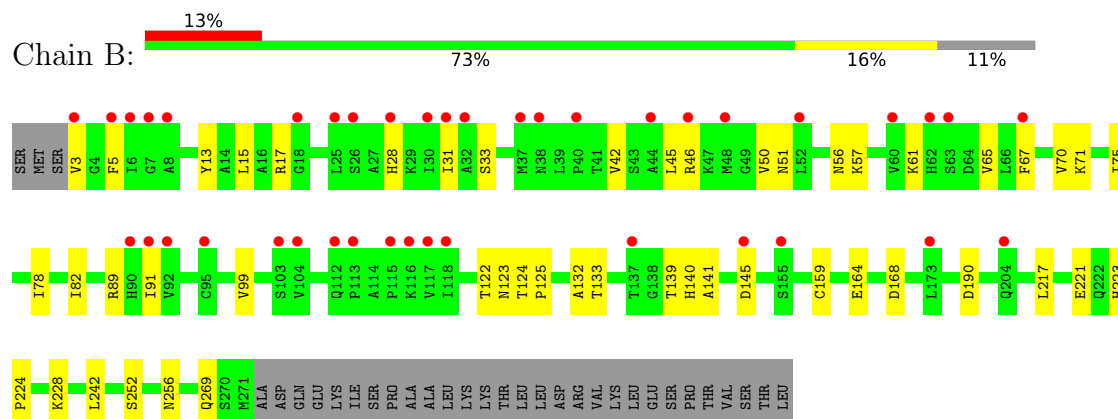
3 Residue-property plots [i](#)

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.

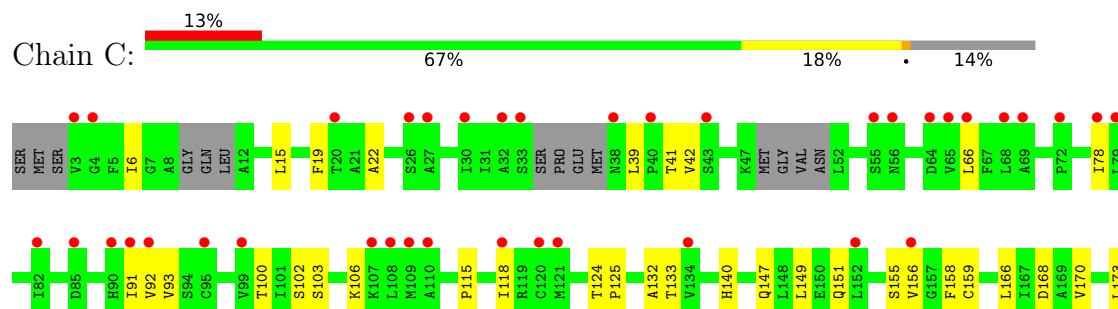
• Molecule 1: Pyrroline-5-carboxylate reductase 2

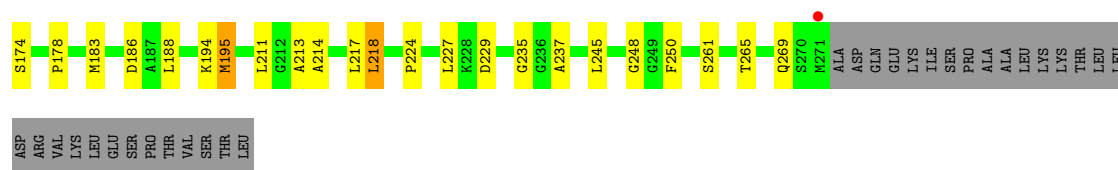


• Molecule 1: Pyrroline-5-carboxylate reductase 2

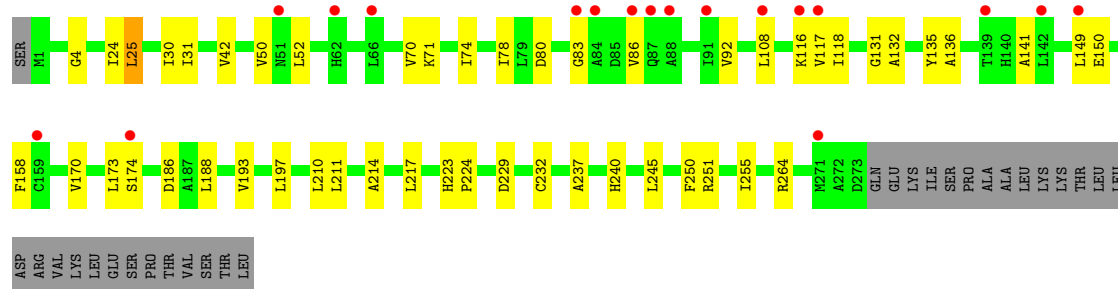
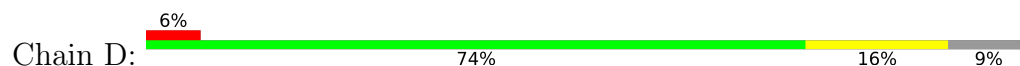


• Molecule 1: Pyrroline-5-carboxylate reductase 2

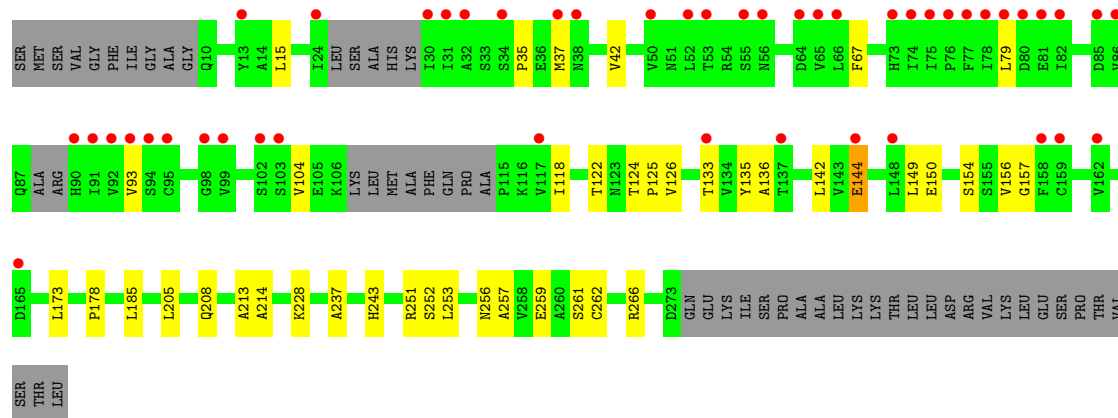




• Molecule 1: Pyrroline-5-carboxylate reductase 2



• Molecule 1: Pyrroline-5-carboxylate reductase 2



4 Data and refinement statistics

Property	Value	Source
Space group	P 2 ₁ 2 ₁ 2 ₁	Depositor
Cell constants a, b, c, α , β , γ	101.90Å 110.31Å 155.47Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.90 – 3.40 46.90 – 3.40	Depositor EDS
% Data completeness (in resolution range)	97.7 (46.90-3.40) 97.7 (46.90-3.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.49 (at 3.40Å)	Xtriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.329 , 0.360 0.329 , 0.360	Depositor DCC
R_{free} test set	1961 reflections (8.11%)	wwPDB-VP
Wilson B-factor (Å ²)	65.7	Xtriage
Anisotropy	0.356	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 28.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.81	EDS
Total number of atoms	9211	wwPDB-VP
Average B, all atoms (Å ²)	76.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.73% 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 [i](#)

5.1 Standard geometry [i](#)

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.25	0/1910	0.42	0/2601
1	B	0.24	0/1921	0.42	0/2617
1	C	0.24	0/1812	0.41	0/2464
1	D	0.24	0/1963	0.41	0/2677
1	E	0.24	0/1729	0.41	0/2356
All	All	0.24	0/9335	0.41	0/12715

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1884	0	1845	43	0
1	B	1893	0	1871	33	0
1	C	1789	0	1737	39	0
1	D	1934	0	1907	39	0
1	E	1711	0	1644	29	0
All	All	9211	0	9004	149	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 8.

All (149) 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:E:262:CYS:SG	1:E:266:ARG:NH1	2.55	0.79
1:A:126:VAL:HG12	1:A:131:GLY:HA3	1.69	0.74
1:B:70:VAL:HG23	1:B:75:ILE:HG12	1.69	0.73
1:C:217:LEU:HD22	1:E:185:LEU:HD13	1.71	0.73
1:C:229:ASP:OD2	1:D:223:HIS:NE2	2.23	0.71
1:A:126:VAL:HB	1:A:156:VAL:HG13	1.72	0.70
1:A:3:VAL:HG23	1:A:65:VAL:HG13	1.74	0.70
1:C:217:LEU:HD21	1:C:224:PRO:HG3	1.74	0.69
1:C:147:GLN:HG2	1:C:151:GLN:HE22	1.57	0.68
1:B:28:HIS:O	1:B:51:ASN:ND2	2.27	0.67
1:A:251:ARG:NH1	1:D:186:ASP:OD2	2.24	0.66
1:D:217:LEU:HD21	1:D:224:PRO:HG3	1.77	0.66
1:A:82:ILE:HG22	1:A:86:VAL:HG23	1.77	0.66
1:A:173:LEU:HD11	1:D:188:LEU:HB3	1.77	0.65
1:B:123:ASN:HB2	1:B:125:PRO:HD2	1.79	0.65
1:C:194:LYS:NZ	1:E:259:GLU:OE2	2.26	0.65
1:C:39:LEU:HD12	1:C:41:THR:HG23	1.79	0.65
1:C:93:VAL:HG21	1:C:149:LEU:HD21	1.78	0.65
1:A:186:ASP:OD2	1:D:251:ARG:NH1	2.28	0.64
1:B:252:SER:O	1:B:256:ASN:ND2	2.29	0.63
1:C:168:ASP:OD1	1:C:269:GLN:NE2	2.32	0.62
1:D:24:ILE:HG13	1:D:25:LEU:HD23	1.81	0.62
1:B:65:VAL:HG12	1:B:91:ILE:HB	1.82	0.61
1:A:193:VAL:O	1:C:235:GLY:N	2.29	0.61
1:D:83:GLY:O	1:D:86:VAL:HG12	2.01	0.60
1:D:92:VAL:HB	1:D:117:VAL:HG23	1.83	0.59
1:A:78:ILE:HG23	1:A:82:ILE:HD13	1.83	0.59
1:A:181:ALA:HB2	1:D:210:LEU:HD22	1.85	0.59
1:A:52:LEU:HD23	1:A:52:LEU:H	1.67	0.58
1:A:166:LEU:HD23	1:D:197:LEU:HD23	1.85	0.58
1:A:252:SER:O	1:A:256:ASN:ND2	2.37	0.58
1:B:61:LYS:O	1:B:89:ARG:NH2	2.35	0.57
1:A:60:VAL:HG21	1:A:82:ILE:HG23	1.86	0.57
1:C:261:SER:HA	1:E:237:ALA:HB1	1.87	0.56
1:E:15:LEU:HD23	1:E:156:VAL:HG11	1.88	0.55
1:C:186:ASP:OD2	1:E:251:ARG:NH1	2.39	0.55
1:D:135:TYR:OH	1:D:150:GLU:OE2	2.23	0.55
1:A:189:ALA:HA	1:A:202:ALA:HB1	1.89	0.55
1:C:115:PRO:HD2	1:C:140:HIS:ND1	2.21	0.55
1:B:13:TYR:OH	1:B:17:ARG:NH1	2.40	0.54
1:D:25:LEU:H	1:D:25:LEU:HD23	1.71	0.54
1:C:183:MET:HG3	1:E:228:LYS:HE2	1.90	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:228:LYS:HE3	1:B:242:LEU:HD13	1.90	0.53
1:C:188:LEU:HB3	1:E:173:LEU:HD11	1.90	0.53
1:C:237:ALA:HB1	1:E:261:SER:HA	1.91	0.53
1:B:123:ASN:HD21	1:B:132:ALA:HB3	1.73	0.53
1:A:211:LEU:HD13	1:D:214:ALA:HB3	1.89	0.53
1:D:71:LYS:HB2	1:D:74:ILE:HG12	1.90	0.52
1:A:14:ALA:HB1	1:A:126:VAL:HG22	1.92	0.52
1:A:150:GLU:O	1:A:154:SER:N	2.42	0.51
1:A:188:LEU:HB3	1:D:173:LEU:HD11	1.91	0.51
1:A:37:MET:HA	1:A:42:VAL:HG11	1.93	0.51
1:A:89:ARG:HD3	1:A:90:HIS:N	2.25	0.51
1:B:5:PHE:HD1	1:B:67:PHE:HB2	1.75	0.51
1:A:208:GLN:NE2	1:D:131:GLY:O	2.44	0.51
1:B:31:ILE:HA	1:B:51:ASN:HB2	1.92	0.51
1:C:245:LEU:HD11	1:E:257:ALA:HB2	1.93	0.50
1:B:56:ASN:ND2	1:B:78:ILE:HD13	2.27	0.50
1:A:211:LEU:HG	1:D:211:LEU:HD12	1.93	0.50
1:A:164:GLU:HA	1:A:167:ILE:HG13	1.93	0.50
1:D:116:LYS:HG2	1:D:141:ALA:HA	1.93	0.50
1:B:168:ASP:OD1	1:B:269:GLN:NE2	2.45	0.50
1:B:71:LYS:O	1:B:75:ILE:HG13	2.12	0.50
1:B:56:ASN:OD1	1:B:56:ASN:N	2.43	0.49
1:B:31:ILE:HG12	1:B:51:ASN:HD22	1.77	0.49
1:D:229:ASP:OD1	1:D:229:ASP:N	2.39	0.49
1:C:66:LEU:HD23	1:C:92:VAL:HG13	1.95	0.49
1:B:133:THR:O	1:B:159:CYS:HA	2.12	0.49
1:D:245:LEU:HD13	1:D:250:PHE:CD1	2.48	0.49
1:D:70:VAL:HG21	1:D:78:ILE:HD12	1.96	0.48
1:D:30:ILE:HG13	1:D:50:VAL:HG22	1.96	0.48
1:C:39:LEU:O	1:C:42:VAL:HG23	2.14	0.48
1:A:183:MET:HG3	1:D:251:ARG:CZ	2.44	0.47
1:C:178:PRO:HB3	1:E:213:ALA:HB2	1.96	0.47
1:A:7:GLY:HA3	1:A:69:ALA:HB3	1.96	0.47
1:B:3:VAL:HA	1:B:65:VAL:HG23	1.95	0.47
1:A:208:GLN:OE1	1:D:158:PHE:HB2	2.14	0.47
1:A:205:LEU:HD13	1:D:170:VAL:HG13	1.96	0.47
1:D:86:VAL:HG11	1:D:108:LEU:HD11	1.95	0.47
1:C:173:LEU:HD23	1:E:205:LEU:HB2	1.97	0.47
1:A:250:PHE:HE2	1:D:250:PHE:CE1	2.32	0.47
1:C:166:LEU:O	1:C:170:VAL:HG23	2.14	0.47
1:B:141:ALA:HB1	1:B:145:ASP:HB2	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:100:THR:O	1:C:103:SER:OG	2.26	0.46
1:B:5:PHE:CD1	1:B:67:PHE:HB2	2.51	0.46
1:A:68:LEU:HB2	1:A:94:SER:HA	1.97	0.45
1:D:132:ALA:HB3	1:D:174:SER:HB2	1.98	0.45
1:C:6:ILE:HG21	1:C:78:ILE:HD13	1.97	0.45
1:C:248:GLY:HA3	1:E:253:LEU:HD21	1.99	0.45
1:B:124:THR:N	1:B:125:PRO:HD2	2.31	0.45
1:C:213:ALA:HB2	1:E:178:PRO:HB3	1.98	0.45
1:A:261:SER:HA	1:D:237:ALA:HB1	1.98	0.45
1:E:142:LEU:HB2	1:E:144:GLU:OE1	2.16	0.45
1:E:154:SER:HA	1:E:157:GLY:O	2.17	0.45
1:C:22:ALA:HB1	1:C:155:SER:HB2	1.98	0.45
1:C:174:SER:HB3	1:E:205:LEU:HB3	1.99	0.45
1:D:251:ARG:O	1:D:255:ILE:HG13	2.16	0.45
1:E:79:LEU:HD12	1:E:104:VAL:HG12	1.98	0.44
1:E:149:LEU:HD12	1:E:149:LEU:HA	1.81	0.44
1:B:46:ARG:HA	1:B:50:VAL:HG12	1.99	0.44
1:A:253:LEU:HB3	1:D:245:LEU:HD22	2.00	0.44
1:B:13:TYR:HD1	1:B:45:LEU:HG	1.82	0.44
1:A:264:ARG:HD2	1:D:240:HIS:ND1	2.32	0.44
1:D:24:ILE:HA	1:D:24:ILE:HD12	1.85	0.44
1:D:118:ILE:HG21	1:D:149:LEU:HD23	1.99	0.43
1:D:42:VAL:HB	1:D:52:LEU:HD21	2.01	0.43
1:E:118:ILE:HG23	1:E:136:ALA:O	2.19	0.43
1:C:15:LEU:HD23	1:C:156:VAL:HG21	2.00	0.43
1:B:15:LEU:HD21	1:B:122:THR:HG21	2.01	0.43
1:B:217:LEU:HD22	1:B:224:PRO:HB3	2.00	0.43
1:C:102:SER:O	1:C:106:LYS:HB2	2.18	0.43
1:C:133:THR:N	1:C:158:PHE:O	2.51	0.43
1:B:139:THR:OG1	1:B:140:HIS:N	2.52	0.43
1:C:195:MET:SD	1:C:195:MET:N	2.91	0.43
1:E:135:TYR:OH	1:E:150:GLU:OE1	2.30	0.43
1:A:37:MET:HG2	1:A:52:LEU:HD13	2.01	0.42
1:A:73:HIS:CE1	1:A:74:ILE:HG13	2.55	0.42
1:C:265:THR:O	1:C:269:GLN:HG3	2.19	0.42
1:E:37:MET:HA	1:E:42:VAL:HG21	2.01	0.42
1:E:122:THR:HB	1:E:133:THR:HG23	2.00	0.42
1:B:123:ASN:ND2	1:B:132:ALA:O	2.53	0.42
1:B:13:TYR:HB2	1:B:45:LEU:HD12	2.00	0.42
1:B:75:ILE:HD12	1:B:99:VAL:HG11	2.02	0.42
1:D:118:ILE:HG23	1:D:136:ALA:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:56:ASN:HB3	1:A:82:ILE:HD11	2.01	0.42
1:C:245:LEU:HD23	1:C:250:PHE:CG	2.55	0.42
1:C:211:LEU:HB2	1:E:214:ALA:HB3	2.01	0.42
1:A:121:MET:CE	1:A:171:THR:HG23	2.50	0.41
1:B:223:HIS:CG	1:B:224:PRO:HD2	2.56	0.41
1:D:4:GLY:HA2	1:D:30:ILE:O	2.20	0.41
1:B:5:PHE:O	1:B:33:SER:N	2.52	0.41
1:A:71:LYS:HD2	1:A:73:HIS:NE2	2.36	0.41
1:B:57:LYS:HG3	1:B:82:ILE:HG22	2.01	0.41
1:C:91:ILE:HG23	1:C:118:ILE:HD12	2.02	0.41
1:C:132:ALA:HB2	1:E:208:GLN:HB3	2.02	0.41
1:E:252:SER:O	1:E:256:ASN:ND2	2.30	0.41
1:B:42:VAL:HA	1:B:45:LEU:HB3	2.02	0.41
1:A:245:LEU:HD13	1:A:250:PHE:CD1	2.56	0.41
1:A:240:HIS:CG	1:D:264:ARG:HD3	2.56	0.40
1:E:124:THR:O	1:E:126:VAL:N	2.47	0.40
1:A:73:HIS:ND1	1:A:74:ILE:HG13	2.36	0.40
1:C:133:THR:O	1:C:159:CYS:HA	2.21	0.40
1:A:52:LEU:HG	1:A:52:LEU:O	2.21	0.40
1:E:124:THR:N	1:E:125:PRO:HD2	2.36	0.40
1:E:67:PHE:HA	1:E:93:VAL:O	2.21	0.40
1:A:67:PHE:CD1	1:A:93:VAL:HB	2.57	0.40
1:C:124:THR:N	1:C:125:PRO:HD2	2.35	0.40
1:C:214:ALA:O	1:C:218:LEU:HD12	2.20	0.40
1:D:193:VAL:HA	1:D:197:LEU:O	2.22	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	264/301 (88%)	253 (96%)	11 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	267/301 (89%)	250 (94%)	17 (6%)	0	100	100
1	C	250/301 (83%)	235 (94%)	15 (6%)	0	100	100
1	D	271/301 (90%)	257 (95%)	13 (5%)	1 (0%)	34	67
1	E	241/301 (80%)	229 (95%)	11 (5%)	1 (0%)	34	67
All	All	1293/1505 (86%)	1224 (95%)	67 (5%)	2 (0%)	47	78

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	31	ILE
1	E	35	PRO

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	186/240 (78%)	180 (97%)	6 (3%)	39	67
1	B	189/240 (79%)	186 (98%)	3 (2%)	62	81
1	C	173/240 (72%)	169 (98%)	4 (2%)	50	74
1	D	197/240 (82%)	194 (98%)	3 (2%)	65	82
1	E	166/240 (69%)	164 (99%)	2 (1%)	71	85
All	All	911/1200 (76%)	893 (98%)	18 (2%)	55	77

All (18) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	56	ASN
1	A	89	ARG
1	A	119	ARG
1	A	121	MET
1	A	250	PHE
1	A	269	GLN

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Mol	Chain	Res	Type
1	B	164	GLU
1	B	190	ASP
1	B	221	GLU
1	C	19	PHE
1	C	195	MET
1	C	218	LEU
1	C	227	LEU
1	D	25	LEU
1	D	80	ASP
1	D	232	CYS
1	E	144	GLU
1	E	243	HIS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	151	GLN

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 monosaccharides 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 ⓘ

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	268/301 (89%)	0.72	29 (10%) 5 7	38, 65, 111, 118	0
1	B	269/301 (89%)	0.93	40 (14%) 2 2	35, 76, 116, 122	0
1	C	258/301 (85%)	0.94	39 (15%) 2 2	42, 83, 119, 137	0
1	D	273/301 (90%)	0.62	18 (6%) 18 20	39, 72, 99, 114	0
1	E	249/301 (82%)	1.06	47 (18%) 1 1	41, 79, 139, 145	0
All	All	1317/1505 (87%)	0.85	173 (13%) 3 4	35, 74, 120, 145	0

All (173) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	25	LEU	6.8
1	C	68	LEU	6.3
1	B	91	ILE	5.4
1	E	65	VAL	5.4
1	E	56	ASN	5.1
1	E	76	PRO	5.0
1	E	53	THR	5.0
1	B	26	SER	4.9
1	C	32	ALA	4.8
1	E	79	LEU	4.8
1	E	66	LEU	4.7
1	E	34	SER	4.6
1	C	3	VAL	4.6
1	E	92	VAL	4.5
1	E	85	ASP	4.3
1	C	20	THR	4.3
1	B	7	GLY	4.3
1	B	63	SER	4.2
1	C	79	LEU	4.2
1	A	66	LEU	4.1

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Mol	Chain	Res	Type	RSRZ
1	A	104	VAL	4.1
1	E	78	ILE	4.1
1	E	55	SER	4.1
1	B	52	LEU	4.1
1	A	91	ILE	4.0
1	E	75	ILE	4.0
1	B	44	ALA	4.0
1	C	91	ILE	4.0
1	E	74	ILE	4.0
1	E	94	SER	4.0
1	E	133	THR	3.9
1	E	90	HIS	3.8
1	B	38	ASN	3.8
1	E	91	ILE	3.8
1	B	117	VAL	3.7
1	E	159	CYS	3.7
1	A	110	ALA	3.7
1	C	92	VAL	3.7
1	B	92	VAL	3.6
1	E	80	ASP	3.6
1	B	118	ILE	3.6
1	C	118	ILE	3.6
1	E	30	ILE	3.6
1	B	28	HIS	3.6
1	B	30	ILE	3.5
1	C	78	ILE	3.5
1	B	62	HIS	3.5
1	B	8	ALA	3.5
1	B	18	GLY	3.5
1	B	40	PRO	3.5
1	C	69	ALA	3.5
1	C	107	LYS	3.4
1	E	38	ASN	3.4
1	E	93	VAL	3.4
1	C	109	MET	3.4
1	B	115	PRO	3.3
1	A	26	SER	3.2
1	C	64	ASP	3.2
1	C	108	LEU	3.1
1	A	24	ILE	3.1
1	E	117	VAL	3.1
1	B	31	ILE	3.1

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Mol	Chain	Res	Type	RSRZ
1	C	65	VAL	3.1
1	C	43	SER	3.1
1	A	92	VAL	3.1
1	A	115	PRO	3.0
1	D	116	LYS	3.0
1	C	30	ILE	3.0
1	A	19	PHE	3.0
1	A	105	GLU	3.0
1	C	4	GLY	3.0
1	C	66	LEU	2.9
1	B	46	ARG	2.9
1	E	24	ILE	2.9
1	A	52	LEU	2.9
1	A	3	VAL	2.9
1	E	31	ILE	2.9
1	B	145	ASP	2.8
1	C	38	ASN	2.8
1	E	86	VAL	2.8
1	A	18	GLY	2.7
1	A	84	ALA	2.7
1	E	98	GLY	2.7
1	B	137	THR	2.7
1	D	87	GLN	2.6
1	D	142	LEU	2.6
1	A	85	ASP	2.6
1	A	108	LEU	2.6
1	C	40	PRO	2.6
1	D	108	LEU	2.6
1	B	155	SER	2.6
1	B	95	CYS	2.6
1	C	99	VAL	2.6
1	D	149	LEU	2.5
1	D	117	VAL	2.5
1	A	116	LYS	2.5
1	B	67	PHE	2.5
1	A	25	LEU	2.5
1	E	64	ASP	2.5
1	E	32	ALA	2.5
1	C	120	CYS	2.5
1	E	103	SER	2.5
1	C	110	ALA	2.5
1	B	112	GLN	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	5	PHE	2.5
1	D	91	ILE	2.5
1	D	271	MET	2.4
1	A	109	MET	2.4
1	B	113	PRO	2.4
1	C	26	SER	2.4
1	A	22	ALA	2.4
1	C	27	ALA	2.4
1	D	174	SER	2.4
1	E	144	GLU	2.4
1	D	159	CYS	2.4
1	E	82	ILE	2.4
1	E	165	ASP	2.4
1	B	103	SER	2.4
1	E	99	VAL	2.4
1	A	82	ILE	2.4
1	B	90	HIS	2.4
1	C	152	LEU	2.4
1	E	37	MET	2.4
1	B	5	PHE	2.3
1	E	95	CYS	2.3
1	C	95	CYS	2.3
1	E	81	GLU	2.3
1	A	67	PHE	2.3
1	D	84	ALA	2.3
1	B	104	VAL	2.3
1	D	139	THR	2.3
1	E	137	THR	2.3
1	D	86	VAL	2.2
1	E	77	PHE	2.2
1	A	141	ALA	2.2
1	E	102	SER	2.2
1	E	50	VAL	2.2
1	D	83	GLY	2.2
1	A	95	CYS	2.2
1	E	52	LEU	2.2
1	C	82	ILE	2.2
1	D	51	ASN	2.2
1	C	121	MET	2.2
1	E	13	TYR	2.2
1	D	66	LEU	2.2
1	C	85	ASP	2.2

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Mol	Chain	Res	Type	RSRZ
1	A	75	ILE	2.2
1	B	37	MET	2.2
1	A	7	GLY	2.2
1	C	33	SER	2.1
1	C	156	VAL	2.1
1	C	56	ASN	2.1
1	B	3	VAL	2.1
1	C	134	VAL	2.1
1	B	32	ALA	2.1
1	E	162	VAL	2.1
1	B	116	LYS	2.1
1	E	158	PHE	2.1
1	D	88	ALA	2.1
1	C	72	PRO	2.1
1	D	62	HIS	2.1
1	E	73	HIS	2.1
1	E	148	LEU	2.1
1	C	271	MET	2.1
1	A	86	VAL	2.0
1	B	60	VAL	2.0
1	B	6	ILE	2.0
1	B	204	GLN	2.0
1	A	4	GLY	2.0
1	B	173	LEU	2.0
1	B	48	MET	2.0
1	C	55	SER	2.0
1	C	90	HIS	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.