WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 01:50 PM EDT

PDB ID	:	3DU6
Title	:	Structure of the catalytic subunit of telomerase, TERT
Authors	:	Skordalakes, E.
Deposited on	:	2008-07-16
Resolution	:	2.71 Å(reported)

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

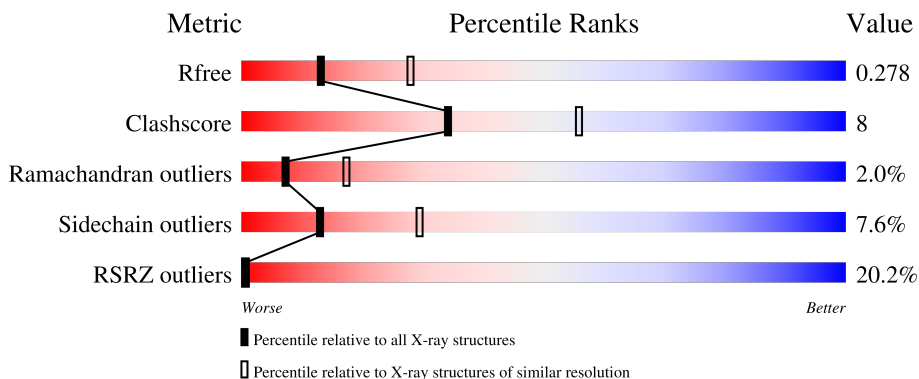|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.20.1
EDS	:	2.36.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.71 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		0.278
Clashscore		8
Ramachandran outliers		2.0%
Sidechain outliers		7.6%
RSRZ outliers		20.2%

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$_{free}$	130704	3359 (2.74-2.70)
Clashscore	141614	3686 (2.74-2.70)
Ramachandran outliers	138981	3622 (2.74-2.70)
Sidechain outliers	138945	3623 (2.74-2.70)
RSRZ outliers	127900	3276 (2.74-2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	596	21% / 74% 23% •
1	B	596	20% / 77% 20% •

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 10319 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 Telomerase reverse transcriptase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	596	Total	C	N	O	S	0	0	0
			4982	3266	852	842	22			
1	B	596	Total	C	N	O	S	0	0	0
			4982	3266	852	842	22			

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	180	Total	O	0	0
			180	180		
2	B	175	Total	O	0	0
			175	175		

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: Telomerase reverse transcriptase

Chain A:

• Molecule 1: Telomerase reverse transcriptase

Chain B:
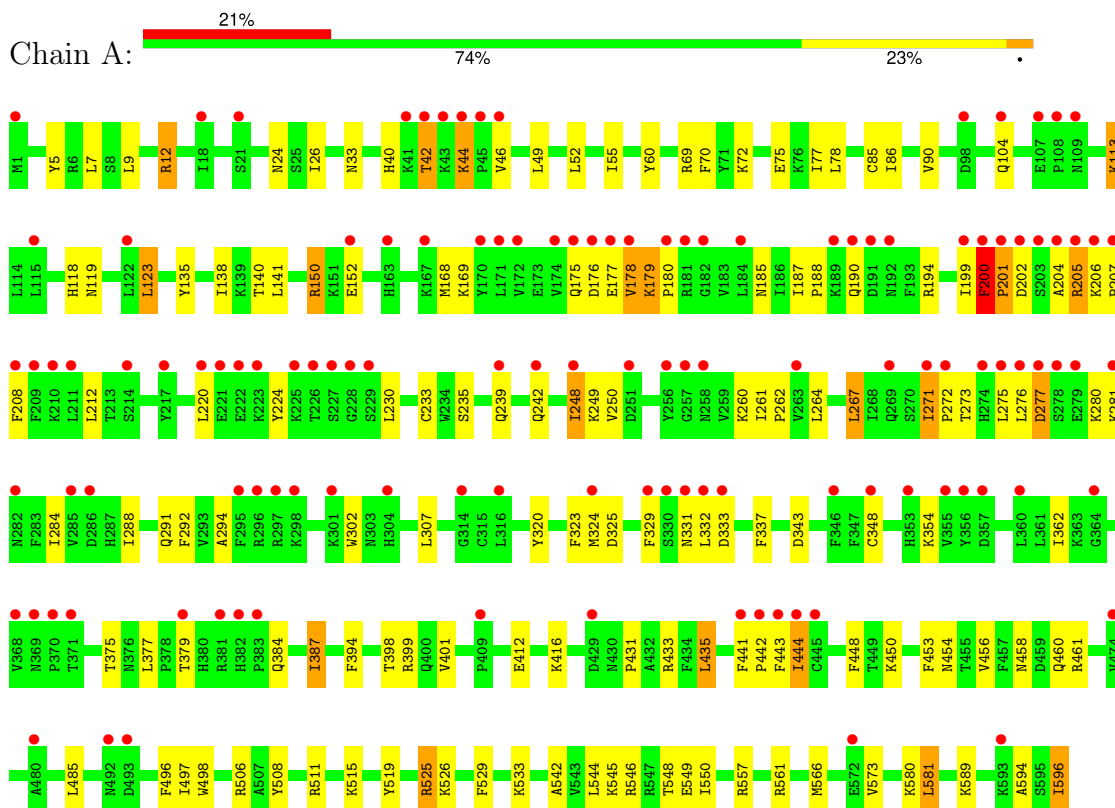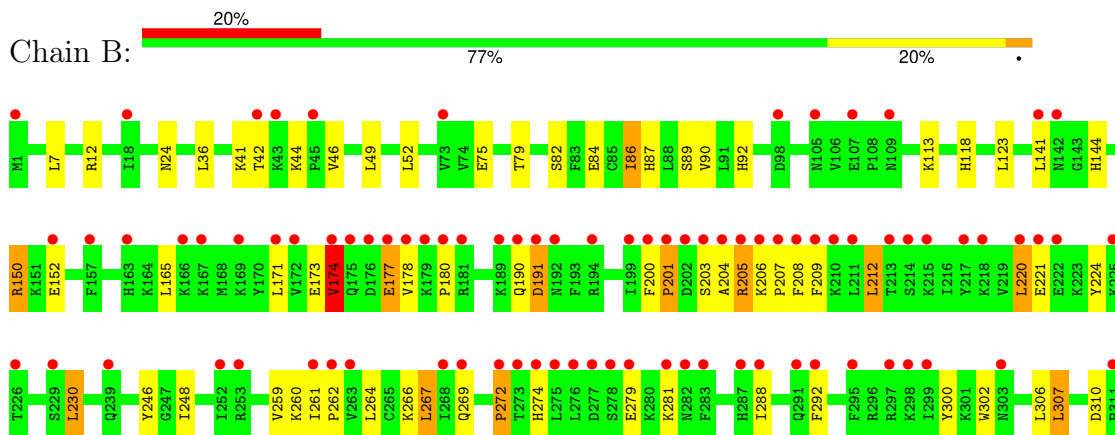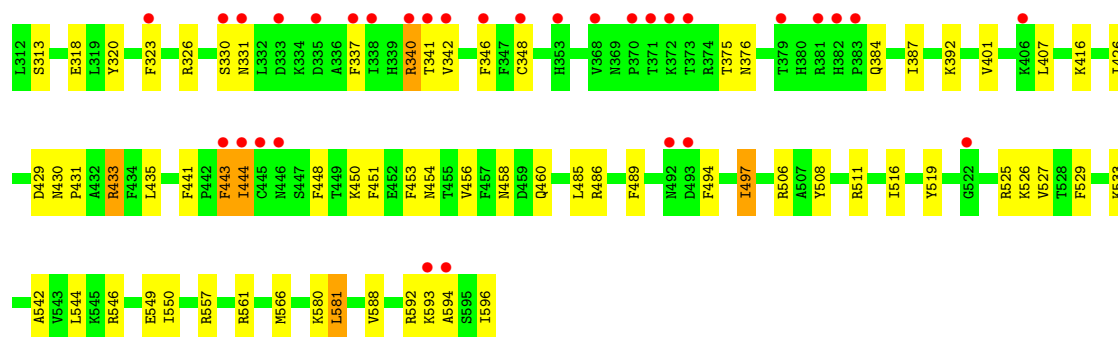
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	85.04Å 122.66Å 212.41Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.71 25.01 – 2.71	Depositor EDS
% Data completeness (in resolution range)	97.0 (20.00-2.71) 97.0 (25.01-2.71)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.11	Depositor
$< I/\sigma(I) >$ [1]	2.58 (at 2.72Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.238 , 0.278 0.242 , 0.278	Depositor DCC
R_{free} test set	3023 reflections (5.10%)	wwPDB-VP
Wilson B-factor (Å^2)	37.4	Xtriage
Anisotropy	0.643	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 63.2	EDS
L-test for twinning[2]	$< |L| > = 0.52, < L^2 > = 0.36$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	10319	wwPDB-VP
Average B, all atoms (Å^2)	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 53.69 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 4.0687e-05. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

---

[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	0.40	0/5114	0.46	0/6893
1	B	0.40	0/5114	0.45	0/6893
All	All	0.40	0/10228	0.45	0/13786

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 ⓘ

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	4982	0	5126	93	0
1	B	4982	0	5126	76	0
2	A	180	0	0	6	0
2	B	175	0	0	5	0
All	All	10319	0	10252	169	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 (169) 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:B:444:ILE:HD13	1:B:444:ILE:H	1.20	1.05

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:24:ASN:H	1:A:118:HIS:HE1	1.05	0.97
1:B:24:ASN:H	1:B:118:HIS:HE1	1.16	0.91
1:A:401:VAL:H	1:A:458:ASN:HD21	1.20	0.89
1:A:178:VAL:O	1:A:178:VAL:HG12	1.72	0.89
1:A:177:GLU:HG2	1:A:178:VAL:H	1.39	0.87
1:A:511:ARG:HD3	2:A:715:HOH:O	1.76	0.85
1:A:200:PHE:H	1:A:201:PRO:HA	1.40	0.84
1:A:460:GLN:HE22	1:A:526:LYS:H	1.25	0.83
1:A:24:ASN:H	1:A:118:HIS:CE1	1.96	0.81
1:B:326:ARG:HA	1:B:330:SER:HB3	1.62	0.81
1:A:549:GLU:HG2	1:A:550:ILE:H	1.44	0.80
1:B:84:GLU:OE2	1:B:592:ARG:NH2	2.17	0.78
1:B:401:VAL:H	1:B:458:ASN:HD21	1.33	0.76
1:A:177:GLU:HG2	1:A:178:VAL:N	2.02	0.74
1:B:460:GLN:HE22	1:B:526:LYS:H	1.36	0.74
1:A:272:PRO:HG2	1:A:275:LEU:HD12	1.69	0.73
1:A:206:LYS:N	1:A:207:PRO:HD2	2.06	0.71
1:A:444:ILE:HD11	1:A:508:TYR:HE2	1.56	0.70
1:A:9:LEU:O	1:A:12:ARG:HB3	1.91	0.70
1:B:542:ALA:HB1	1:B:581:LEU:HD13	1.73	0.69
1:B:24:ASN:H	1:B:118:HIS:CE1	2.04	0.69
1:B:444:ILE:HD13	1:B:444:ILE:N	2.03	0.69
1:A:200:PHE:N	1:A:201:PRO:HA	2.08	0.69
1:B:454:ASN:HD22	1:B:456:VAL:H	1.41	0.69
1:A:179:LYS:N	1:A:180:PRO:HD3	2.09	0.68
1:B:220:LEU:O	1:B:224:TYR:HB2	1.94	0.68
1:A:69:ARG:HD2	2:A:774:HOH:O	1.93	0.68
1:A:549:GLU:HG2	1:A:550:ILE:N	2.09	0.67
1:A:454:ASN:HD22	1:A:456:VAL:H	1.43	0.67
1:B:46:VAL:HG22	1:B:150:ARG:HH12	1.59	0.66
1:A:248:ILE:HD12	1:A:375:THR:HB	1.76	0.65
1:A:448:PHE:HA	1:A:453:PHE:HE1	1.62	0.65
1:A:72:LYS:HA	1:A:72:LYS:HE2	1.78	0.65
1:B:310:ASP:HB3	1:B:313:SER:HB2	1.79	0.65
1:B:200:PHE:N	1:B:201:PRO:HA	2.14	0.63
1:A:557:ARG:HE	1:A:561:ARG:NH1	1.97	0.63
1:A:177:GLU:CG	1:A:178:VAL:H	2.11	0.62
1:B:84:GLU:CD	1:B:592:ARG:HH22	2.03	0.61
1:B:269:GLN:HE21	1:B:281:LYS:HB3	1.66	0.61
1:B:340:ARG:HG2	1:B:341:THR:N	2.17	0.60
1:A:461:ARG:HD2	1:A:573:VAL:HA	1.85	0.59

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:208:PHE:O	1:B:212:LEU:HB2	2.02	0.58
1:B:173:GLU:HA	1:B:300:TYR:HA	1.85	0.58
1:B:200:PHE:H	1:B:201:PRO:HA	1.69	0.58
1:B:549:GLU:HG2	1:B:550:ILE:N	2.19	0.58
1:A:325:ASP:HB3	2:A:722:HOH:O	2.04	0.57
1:B:444:ILE:H	1:B:444:ILE:CD1	2.03	0.57
1:A:416:LYS:HD2	2:A:700:HOH:O	2.05	0.56
1:A:337:PHE:HB3	1:A:348:CYS:HB2	1.87	0.55
1:B:220:LEU:HD11	1:B:318:GLU:HB2	1.89	0.55
1:A:333:ASP:HB2	1:A:354:LYS:HD3	1.89	0.55
1:B:443:PHE:HD2	2:B:771:HOH:O	1.88	0.55
1:A:284:ILE:O	1:A:288:ILE:HG12	2.08	0.54
1:A:75:GLU:HG3	1:A:594:ALA:HB2	1.90	0.54
1:A:267:LEU:HD11	1:A:323:PHE:HB2	1.90	0.54
1:B:527:VAL:HA	2:B:639:HOH:O	2.07	0.54
1:A:7:LEU:HD22	1:A:77:ILE:HG13	1.89	0.54
1:A:261:ILE:HG23	1:A:288:ILE:HG22	1.90	0.53
1:A:205:ARG:HB3	1:A:207:PRO:HG2	1.90	0.53
1:A:113:LYS:H	1:A:113:LYS:HD2	1.73	0.53
1:B:549:GLU:HG2	1:B:550:ILE:HG13	1.91	0.53
1:A:460:GLN:HE22	1:A:526:LYS:N	2.03	0.53
1:A:444:ILE:HD11	1:A:508:TYR:CE2	2.41	0.53
1:B:561:ARG:HD3	2:B:720:HOH:O	2.09	0.53
1:A:529:PHE:CE2	1:A:533:LYS:HD3	2.44	0.52
1:B:460:GLN:NE2	1:B:525:ARG:H	2.06	0.52
1:A:70:PHE:CZ	1:A:123:LEU:HD13	2.44	0.52
1:A:435:LEU:HG	1:A:485:LEU:HD11	1.92	0.52
1:B:82:SER:HB2	1:B:144:HIS:HB3	1.91	0.52
1:A:205:ARG:O	1:A:208:PHE:HB3	2.09	0.51
1:A:271:ILE:HD11	1:A:276:LEU:HB2	1.91	0.51
1:B:431:PRO:HB3	1:B:485:LEU:HD22	1.92	0.51
1:A:187:ILE:HG21	1:A:194:ARG:HH21	1.75	0.51
1:A:460:GLN:NE2	1:A:525:ARG:H	2.09	0.50
1:B:494:PHE:HD2	1:B:497:ILE:HD13	1.76	0.50
1:A:200:PHE:H	1:A:201:PRO:CA	2.18	0.50
1:B:337:PHE:HB3	1:B:348:CYS:HB2	1.93	0.50
1:B:441:PHE:HB2	1:B:511:ARG:CZ	2.42	0.50
1:A:431:PRO:HB3	1:A:485:LEU:HD22	1.93	0.50
1:A:235:SER:O	1:A:239:GLN:HG2	2.12	0.49
1:B:448:PHE:HA	1:B:453:PHE:HE1	1.77	0.49
1:B:246:TYR:HA	1:B:376:ASN:HD21	1.77	0.49

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:204:ALA:O	1:A:205:ARG:HB2	2.13	0.49
1:A:387:ILE:H	1:A:387:ILE:HD13	1.78	0.49
1:A:208:PHE:O	1:A:212:LEU:HB2	2.13	0.48
1:A:325:ASP:HA	1:A:329:PHE:HD1	1.78	0.48
1:A:264:LEU:HD13	1:A:320:TYR:HB2	1.96	0.48
1:A:431:PRO:HB2	1:A:496:PHE:CZ	2.47	0.48
1:B:516:ILE:HG21	1:B:527:VAL:HG21	1.93	0.48
1:B:204:ALA:H	1:B:209:PHE:HE2	1.62	0.48
1:B:443:PHE:CD2	1:B:444:ILE:HD12	2.49	0.48
1:B:450:LYS:HG2	1:B:519:TYR:CZ	2.48	0.48
1:B:262:PRO:O	1:B:266:LYS:HG2	2.14	0.48
1:A:448:PHE:HA	1:A:453:PHE:CE1	2.47	0.47
1:A:450:LYS:HG2	1:A:519:TYR:CZ	2.50	0.47
1:B:429:ASP:C	1:B:431:PRO:HD3	2.35	0.47
1:A:5:TYR:O	1:A:85:CYS:HB3	2.14	0.47
1:B:529:PHE:CE2	1:B:533:LYS:HD3	2.50	0.47
1:A:46:VAL:HG22	1:A:150:ARG:HH12	1.80	0.46
1:A:140:THR:O	1:A:141:LEU:HB2	2.15	0.46
1:A:498:TRP:CD2	1:A:557:ARG:HD3	2.50	0.46
1:B:259:VAL:HG21	1:B:306:LEU:HD12	1.97	0.46
1:A:545:LYS:O	1:A:548:THR:HG23	2.15	0.46
1:A:546:ARG:HD2	1:A:581:LEU:HD21	1.98	0.46
1:B:346:PHE:CE1	1:B:387:ILE:HG21	2.51	0.46
1:A:206:LYS:N	1:A:207:PRO:CD	2.78	0.46
1:A:42:THR:HB	1:A:44:LYS:HG2	1.98	0.46
1:B:267:LEU:HD11	1:B:323:PHE:HB2	1.98	0.46
1:A:398:THR:O	1:A:399:ARG:HB2	2.17	0.45
1:A:271:ILE:HD11	1:A:276:LEU:CB	2.46	0.45
1:A:291:GLN:HB2	1:A:302:TRP:HB3	1.99	0.45
1:A:515:LYS:HE2	2:A:721:HOH:O	2.16	0.45
1:B:89:SER:HA	1:B:92:HIS:CE1	2.52	0.45
1:B:79:THR:OG1	1:B:592:ARG:HD3	2.17	0.45
1:B:444:ILE:HD11	1:B:508:TYR:CE2	2.53	0.44
1:A:444:ILE:CD1	1:A:508:TYR:HE2	2.29	0.44
1:B:433:ARG:NH1	2:B:597:HOH:O	2.51	0.44
1:B:546:ARG:HD2	1:B:581:LEU:HD21	1.99	0.44
1:A:178:VAL:O	1:A:178:VAL:CG1	2.46	0.44
1:A:138:ILE:HD13	1:A:188:PRO:HG2	1.98	0.43
1:B:203:SER:HB3	1:B:209:PHE:CE2	2.53	0.43
1:B:206:LYS:N	1:B:207:PRO:HD2	2.33	0.43
1:B:460:GLN:HE22	1:B:526:LYS:N	2.11	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:273:THR:O	1:A:277:ASP:HB3	2.18	0.43
1:A:441:PHE:N	1:A:442:PRO:CD	2.82	0.43
1:B:205:ARG:NE	1:B:205:ARG:HA	2.33	0.43
1:B:444:ILE:HD11	1:B:508:TYR:OH	2.18	0.43
1:A:220:LEU:O	1:A:224:TYR:HB2	2.19	0.43
1:A:180:PRO:HB3	1:A:294:ALA:HB2	1.99	0.43
1:A:443:PHE:CE1	1:A:444:ILE:HG23	2.54	0.43
1:B:272:PRO:HB3	1:B:274:HIS:NE2	2.33	0.43
1:A:60:TYR:OH	1:A:119:ASN:ND2	2.52	0.43
1:A:179:LYS:H	1:A:180:PRO:HD3	1.84	0.42
1:B:201:PRO:C	1:B:203:SER:H	2.23	0.42
1:B:261:ILE:HD12	1:B:261:ILE:H	1.84	0.42
1:B:458:ASN:HD22	1:B:458:ASN:HA	1.62	0.42
1:A:233:CYS:HB3	1:A:337:PHE:CE1	2.55	0.42
1:B:75:GLU:HG3	1:B:594:ALA:HB2	2.00	0.42
1:B:261:ILE:HG23	1:B:288:ILE:HG22	2.01	0.42
1:B:549:GLU:HG2	1:B:550:ILE:H	1.85	0.42
1:A:542:ALA:HB1	1:A:581:LEU:HD13	2.02	0.42
1:A:261:ILE:HB	1:A:262:PRO:HD3	2.02	0.42
1:A:441:PHE:HB2	1:A:511:ARG:CZ	2.49	0.42
1:B:174:VAL:HB	1:B:177:GLU:HG3	2.02	0.42
1:B:426:ILE:HG12	1:B:433:ARG:CZ	2.50	0.42
1:A:33:ASN:HB3	1:A:55:ILE:HA	2.01	0.41
1:A:135:TYR:CZ	1:A:596:ILE:HB	2.55	0.41
1:B:264:LEU:HD13	1:B:320:TYR:HB2	2.01	0.41
1:A:276:LEU:HG	1:A:280:LYS:HB2	2.02	0.41
1:A:40:HIS:CE1	1:A:42:THR:HG23	2.55	0.41
1:B:430:ASN:N	1:B:431:PRO:HD3	2.35	0.41
1:A:377:LEU:C	1:A:379:THR:H	2.24	0.41
1:B:557:ARG:HE	1:B:561:ARG:NH1	2.18	0.41
1:B:87:HIS:HE1	1:B:489:PHE:CZ	2.39	0.41
1:A:201:PRO:HB2	1:A:202:ASP:H	1.69	0.41
1:A:399:ARG:NH1	2:A:768:HOH:O	2.53	0.41
1:B:596:ILE:C	2:B:698:HOH:O	2.58	0.41
1:A:78:LEU:HD22	1:A:596:ILE:HG12	2.03	0.41
1:B:230:LEU:HB3	1:B:451:PHE:HZ	1.86	0.41
1:B:407:LEU:HD13	1:B:588:VAL:HG11	2.03	0.41
1:A:46:VAL:HG22	1:A:150:ARG:NH1	2.36	0.41
1:A:387:ILE:HD13	1:A:394:PHE:O	2.20	0.41
1:B:248:ILE:HG13	1:B:375:THR:HB	2.03	0.41
1:B:165:LEU:HB3	1:B:171:LEU:CD2	2.51	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:412:GLU:HG2	1:A:589:LYS:HB2	2.03	0.40
1:B:7:LEU:HD21	1:B:86:ILE:HG23	2.02	0.40
1:B:46:VAL:HG22	1:B:150:ARG:NH1	2.31	0.40
1:B:302:TRP:CD1	1:B:307:LEU:HG	2.57	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	594/596 (100%)	547 (92%)	33 (6%)	14 (2%)	6	13
1	B	594/596 (100%)	551 (93%)	33 (6%)	10 (2%)	9	21
All	All	1188/1192 (100%)	1098 (92%)	66 (6%)	24 (2%)	7	17

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	175	GLN
1	A	199	ILE
1	A	200	PHE
1	A	332	LEU
1	B	180	PRO
1	B	201	PRO
1	A	277	ASP
1	A	281	LYS
1	A	331	ASN
1	B	191	ASP
1	B	331	ASN
1	A	168	MET
1	A	169	LYS
1	B	177	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	190	GLN
1	A	178	VAL
1	A	205	ARG
1	B	205	ARG
1	A	179	LYS
1	B	272	PRO
1	A	444	ILE
1	B	174	VAL
1	B	178	VAL
1	A	201	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	552/552 (100%)	510 (92%)	42 (8%)	13	29
1	B	552/552 (100%)	510 (92%)	42 (8%)	13	29
All	All	1104/1104 (100%)	1020 (92%)	84 (8%)	13	29

All (84) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	12	ARG
1	A	26	ILE
1	A	42	THR
1	A	44	LYS
1	A	49	LEU
1	A	52	LEU
1	A	86	ILE
1	A	90	VAL
1	A	104	GLN
1	A	113	LYS
1	A	123	LEU
1	A	150	ARG
1	A	152	GLU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	176	ASP
1	A	185	ASN
1	A	190	GLN
1	A	200	PHE
1	A	230	LEU
1	A	242	GLN
1	A	248	ILE
1	A	249	LYS
1	A	250	VAL
1	A	260	LYS
1	A	267	LEU
1	A	271	ILE
1	A	292	PHE
1	A	307	LEU
1	A	324	MET
1	A	343	ASP
1	A	362	ILE
1	A	384	GLN
1	A	387	ILE
1	A	433	ARG
1	A	435	LEU
1	A	497	ILE
1	A	506	ARG
1	A	525	ARG
1	A	544	LEU
1	A	566	MET
1	A	580	LYS
1	A	581	LEU
1	A	596	ILE
1	B	12	ARG
1	B	36	LEU
1	B	41	LYS
1	B	42	THR
1	B	44	LYS
1	B	49	LEU
1	B	52	LEU
1	B	86	ILE
1	B	90	VAL
1	B	113	LYS
1	B	123	LEU
1	B	141	LEU
1	B	150	ARG

Continued from previous page...

Mol	Chain	Res	Type
1	B	152	GLU
1	B	174	VAL
1	B	191	ASP
1	B	212	LEU
1	B	220	LEU
1	B	221	GLU
1	B	230	LEU
1	B	260	LYS
1	B	267	LEU
1	B	279	GLU
1	B	292	PHE
1	B	307	LEU
1	B	340	ARG
1	B	342	VAL
1	B	384	GLN
1	B	392	LYS
1	B	416	LYS
1	B	433	ARG
1	B	435	LEU
1	B	443	PHE
1	B	444	ILE
1	B	486	ARG
1	B	497	ILE
1	B	506	ARG
1	B	544	LEU
1	B	566	MET
1	B	580	LYS
1	B	581	LEU
1	B	593	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	13	GLN
1	A	92	HIS
1	A	118	HIS
1	A	119	ASN
1	A	185	ASN
1	A	242	GLN
1	A	384	GLN
1	A	454	ASN
1	A	458	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	460	GLN
1	B	92	HIS
1	B	118	HIS
1	B	119	ASN
1	B	185	ASN
1	B	258	ASN
1	B	269	GLN
1	B	304	HIS
1	B	454	ASN
1	B	458	ASN
1	B	460	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(Å²)	Q<0.9
1	A	596/596 (100%)	1.28	123 (20%)	1	0	22, 40, 100, 115	0
1	B	596/596 (100%)	1.26	118 (19%)	1	0	23, 40, 113, 126	0
All	All	1192/1192 (100%)	1.27	241 (20%)	1	0	22, 40, 106, 126	0

All (241) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	178	VAL	14.0
1	A	211	LEU	12.3
1	B	177	GLU	10.5
1	A	175	GLN	10.3
1	A	177	GLU	9.3
1	B	178	VAL	9.2
1	A	203	SER	9.0
1	A	190	GLN	8.1
1	B	221	GLU	8.0
1	B	204	ALA	7.7
1	A	277	ASP	7.7
1	A	382	HIS	7.6
1	B	175	GLN	7.6
1	B	203	SER	7.1
1	A	205	ARG	7.0
1	B	205	ARG	6.9
1	B	211	LEU	6.9
1	A	43	LYS	6.8
1	A	222	GLU	6.7
1	A	204	ALA	6.6
1	B	1	MET	6.6
1	A	163	HIS	6.6
1	A	226	THR	6.5
1	B	200	PHE	6.4

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	202	ASP	6.3
1	A	227	SER	6.2
1	A	200	PHE	6.1
1	B	176	ASP	6.0
1	B	190	GLN	6.0
1	A	356	TYR	5.9
1	A	444	ILE	5.8
1	A	207	PRO	5.8
1	A	381	ARG	5.7
1	B	199	ILE	5.7
1	B	239	GLN	5.7
1	B	382	HIS	5.7
1	B	272	PRO	5.6
1	B	218	LYS	5.5
1	A	206	LYS	5.5
1	A	191	ASP	5.5
1	B	276	LEU	5.5
1	B	288	ILE	5.4
1	A	371	THR	5.3
1	B	381	ARG	5.2
1	B	226	THR	5.2
1	B	372	LYS	5.1
1	B	217	TYR	5.1
1	B	43	LYS	5.1
1	B	174	VAL	4.9
1	B	262	PRO	4.9
1	B	298	LYS	4.9
1	A	275	LEU	4.9
1	A	170	TYR	4.8
1	A	167	LYS	4.8
1	A	228	GLY	4.7
1	B	225	LYS	4.7
1	B	201	PRO	4.6
1	A	109	ASN	4.6
1	B	222	GLU	4.6
1	A	220	LEU	4.5
1	A	217	TYR	4.5
1	B	341	THR	4.5
1	B	172	VAL	4.4
1	B	445	CYS	4.4
1	A	208	PHE	4.3
1	A	189	LYS	4.3

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	176	ASP	4.3
1	B	220	LEU	4.3
1	B	163	HIS	4.3
1	B	295	PHE	4.2
1	B	278	SER	4.2
1	B	330	SER	4.2
1	A	202	ASP	4.2
1	A	297	ARG	4.1
1	B	371	THR	4.1
1	A	274	HIS	4.1
1	A	192	ASN	4.1
1	A	278	SER	4.1
1	A	199	ILE	4.1
1	B	443	PHE	4.1
1	A	281	LYS	4.0
1	B	492	ASN	4.0
1	A	286	ASP	4.0
1	B	45	PRO	4.0
1	A	295	PHE	4.0
1	A	107	GLU	3.9
1	A	201	PRO	3.9
1	A	1	MET	3.9
1	B	208	PHE	3.9
1	B	342	VAL	3.8
1	A	332	LEU	3.8
1	B	191	ASP	3.8
1	B	353	HIS	3.8
1	A	45	PRO	3.8
1	A	370	PRO	3.8
1	A	409	PRO	3.7
1	B	522	GLY	3.7
1	B	269	GLN	3.7
1	B	273	THR	3.7
1	B	335	ASP	3.7
1	B	214	SER	3.7
1	A	360	LEU	3.7
1	B	253	ARG	3.6
1	B	373	THR	3.6
1	B	277	ASP	3.5
1	A	172	VAL	3.5
1	A	210	LYS	3.5
1	B	331	ASN	3.5

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	42	THR	3.5
1	B	181	ARG	3.4
1	A	442	PRO	3.4
1	B	167	LYS	3.4
1	B	213	THR	3.3
1	B	109	ASN	3.3
1	A	331	ASN	3.3
1	A	269	GLN	3.3
1	A	263	VAL	3.3
1	B	283	PHE	3.3
1	B	444	ILE	3.3
1	B	207	PRO	3.2
1	B	446	ASN	3.2
1	A	355	VAL	3.2
1	B	180	PRO	3.2
1	B	179	LYS	3.2
1	B	338	ILE	3.2
1	B	169	LYS	3.2
1	B	107	GLU	3.2
1	A	152	GLU	3.2
1	A	272	PRO	3.2
1	B	275	LEU	3.1
1	B	297	ARG	3.1
1	A	279	GLU	3.1
1	A	493	ASP	3.1
1	A	181	ARG	3.1
1	B	340	ARG	3.1
1	B	274	HIS	3.1
1	A	242	GLN	3.0
1	A	301	LYS	3.0
1	B	209	PHE	3.0
1	B	593	LYS	3.0
1	A	445	CYS	3.0
1	A	369	ASN	2.9
1	B	152	GLU	2.9
1	B	141	LEU	2.9
1	B	206	LYS	2.9
1	B	73	VAL	2.9
1	A	353	HIS	2.9
1	B	287	HIS	2.9
1	B	268	ILE	2.9
1	B	368	VAL	2.9

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	279	GLU	2.8
1	A	171	LEU	2.8
1	A	239	GLN	2.8
1	A	276	LEU	2.8
1	B	252	ILE	2.8
1	B	346	PHE	2.8
1	A	271	ILE	2.8
1	A	98	ASP	2.8
1	A	122	LEU	2.8
1	A	593	LYS	2.8
1	B	281	LYS	2.8
1	A	221	GLU	2.7
1	A	257	GLY	2.7
1	A	324	MET	2.7
1	B	299	ILE	2.7
1	B	98	ASP	2.7
1	B	379	THR	2.7
1	A	368	VAL	2.7
1	B	42	THR	2.7
1	A	184	LEU	2.7
1	B	263	VAL	2.7
1	A	46	VAL	2.7
1	A	18	ILE	2.6
1	A	108	PRO	2.6
1	A	282	ASN	2.6
1	A	251	ASP	2.6
1	B	210	LYS	2.6
1	A	248	ILE	2.6
1	A	333	ASP	2.6
1	A	357	ASP	2.6
1	B	194	ARG	2.6
1	A	492	ASN	2.5
1	A	572	GLU	2.5
1	A	346	PHE	2.5
1	A	21	SER	2.5
1	B	192	ASN	2.5
1	A	364	GLY	2.5
1	A	258	ASN	2.5
1	A	225	LYS	2.5
1	A	182	GLY	2.5
1	B	348	CYS	2.5
1	A	214	SER	2.4

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	474	VAL	2.4
1	B	323	PHE	2.4
1	B	142	ASN	2.4
1	A	298	LYS	2.4
1	B	215	LYS	2.4
1	A	285	VAL	2.4
1	A	304	HIS	2.3
1	A	379	THR	2.3
1	B	18	ILE	2.3
1	A	174	VAL	2.3
1	A	314	GLY	2.3
1	A	44	LYS	2.3
1	A	229	SER	2.3
1	A	443	PHE	2.3
1	B	493	ASP	2.3
1	A	480	ALA	2.3
1	A	316	LEU	2.2
1	A	383	PRO	2.2
1	B	333	ASP	2.2
1	B	370	PRO	2.2
1	A	441	PHE	2.2
1	B	229	SER	2.2
1	A	104	GLN	2.2
1	B	157	PHE	2.2
1	B	292	PHE	2.2
1	A	296	ARG	2.2
1	A	180	PRO	2.2
1	B	406	LYS	2.2
1	A	256	TYR	2.2
1	A	330	SER	2.2
1	B	189	LYS	2.2
1	B	105	ASN	2.1
1	B	261	ILE	2.1
1	B	383	PRO	2.1
1	B	303	ASN	2.1
1	B	291	GLN	2.1
1	B	311	PRO	2.1
1	A	223	LYS	2.1
1	B	594	ALA	2.1
1	A	209	PHE	2.1
1	B	171	LEU	2.1
1	A	429	ASP	2.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	348	CYS	2.1
1	B	337	PHE	2.1
1	B	282	ASN	2.0
1	A	329	PHE	2.0
1	A	115	LEU	2.0
1	A	41	LYS	2.0
1	B	166	LYS	2.0

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 ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.