Full wwPDB X-ray Structure Validation Report ⓘ

Nov 28, 2023 – 07:56 pm GMT

PDB ID	:	1E2P
Title	:	Thymidine kinase, DHBT
Authors	:	Schulz, G.E.; Kessler, U.
Deposited on	:	2000-05-23
Resolution	:	2.50 Å(reported)

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

|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
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

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 2.50 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		0.244
Clashscore		12
Ramachandran outliers		0.7%
Sidechain outliers		4.4%
RSRZ outliers		7.2%

Worse / *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
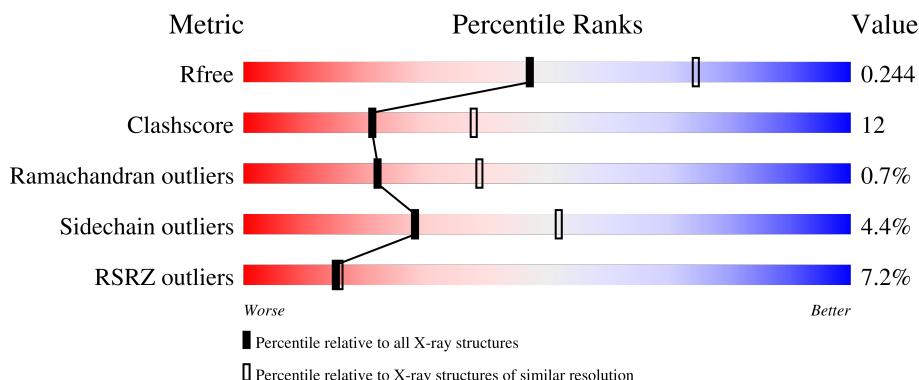
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)
RSRZ outliers	127900	4559 (2.50-2.50)

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	331	6% / 67% / 21% / • / 8%
1	B	331	8% / 70% / 21% / • / 6%

WORLDWIDE PDB
PROTEIN DATA BANK
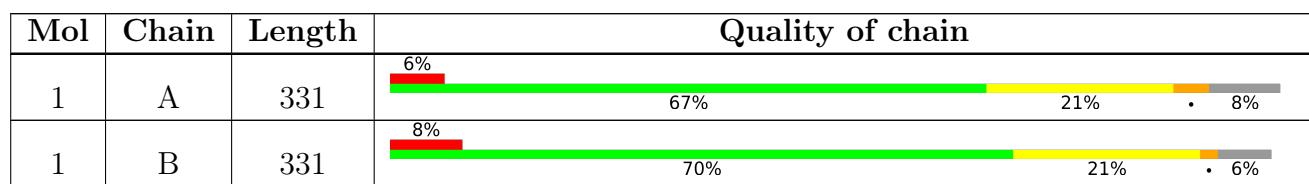
2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 4855 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 THYMIDINE KINASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	305	Total	C	N	O	S	0	0	0
			2341	1490	410	425	16			
1	B	310	Total	C	N	O	S	0	0	0
			2359	1502	410	431	16			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	321	SER	PRO	conflict	UNP P03176
B	321	SER	PRO	conflict	UNP P03176

- Molecule 2 is SULFATE ION (three-letter code: SO4) (formula: O_4S).
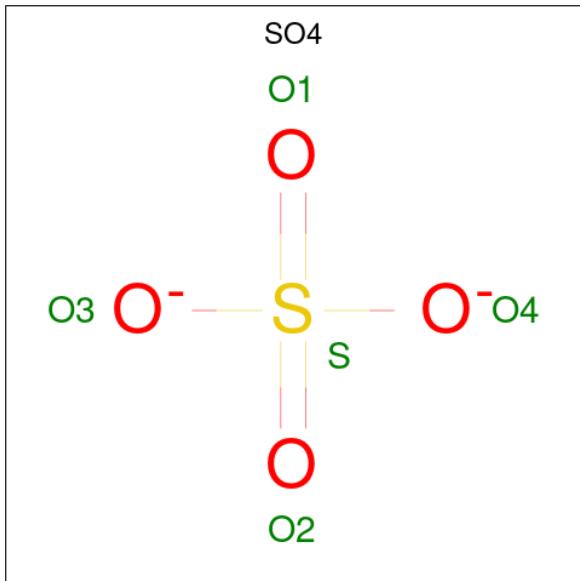
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	S	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	B	1	Total 5	O 4	S 1	0	0

- Molecule 3 is 6-[3-HYDROXY-2-(HYDROXYMETHYL)PROPYL]-5-METHYL-2,4(1H,3H)-PYRIMIDINEDIONE (three-letter code: CCV) (formula: $C_9H_{14}N_2O_4$).
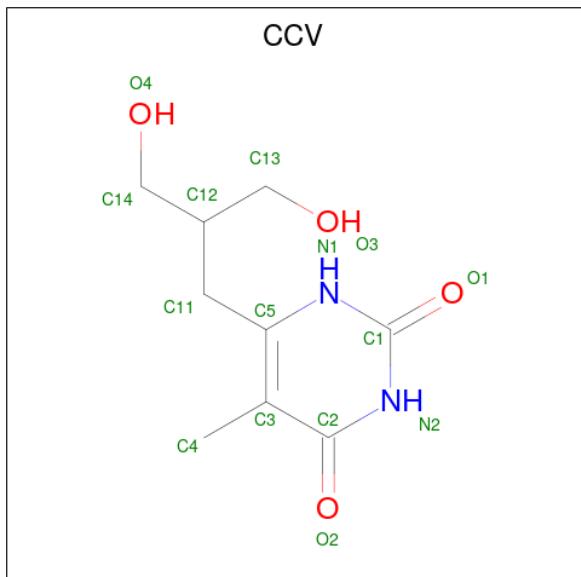
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total 15	C 9	N 2	O 4	0	0
3	B	1	Total 15	C 9	N 2	O 4	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	52	Total 52	O 52	0	0
4	B	63	Total 63	O 63	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: THYMIDINE KINASE

Chain A:

- Molecule 1: THYMIDINE KINASE

Chain B:
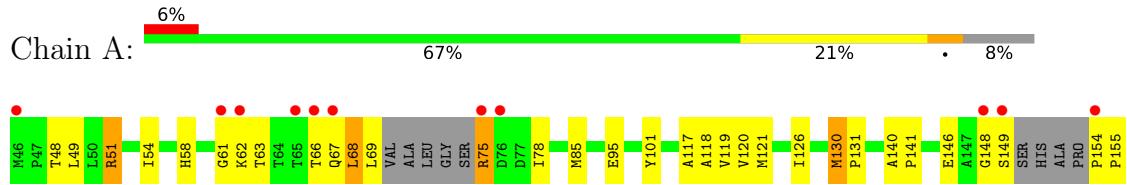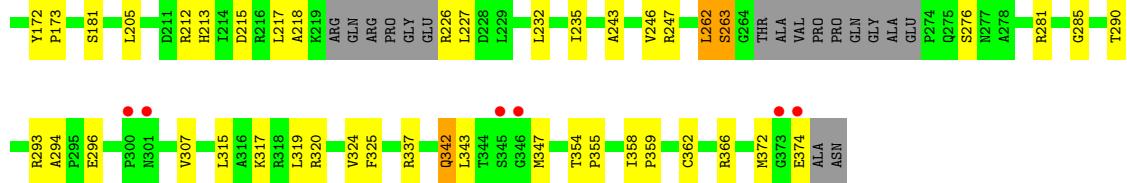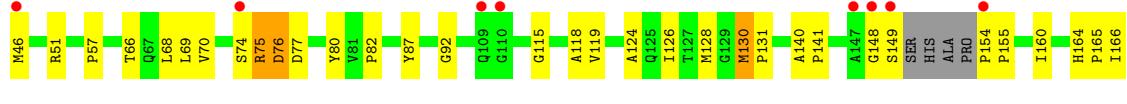
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	113.70Å 117.60Å 108.30Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.50 19.98 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.0 (20.00-2.50) 99.8 (19.98-2.50)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	0.10	Depositor
$< I/\sigma(I) >$ [1]	2.02 (at 2.50Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.209 , 0.261 0.199 , 0.244	Depositor DCC
R_{free} test set	1250 reflections (4.93%)	wwPDB-VP
Wilson B-factor (Å^2)	41.8	Xtriage
Anisotropy	0.302	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 49.2	EDS
L-test for twinning[2]	$< \lvert L \rvert > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.032 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	4855	wwPDB-VP
Average B, all atoms (Å^2)	40.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.29% 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 $< \lvert L \rvert >$, $< L^2 >$ 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 ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, CCV

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	0.45	0/2394	0.93	7/3261 (0.2%)
1	B	0.46	0/2412	1.01	11/3288 (0.3%)
All	All	0.45	0/4806	0.97	18/6549 (0.3%)

There are no bond length outliers.

All (18) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	247	ARG	CD-NE-CZ	13.98	143.17	123.60
1	B	247	ARG	NE-CZ-NH1	11.13	125.86	120.30
1	B	281	ARG	CD-NE-CZ	7.75	134.45	123.60
1	B	263	SER	CA-C-N	-7.53	101.14	116.20
1	A	51	ARG	NE-CZ-NH1	6.76	123.68	120.30
1	B	281	ARG	NE-CZ-NH1	6.53	123.56	120.30
1	B	46	MET	CA-CB-CG	6.27	123.96	113.30
1	B	263	SER	CB-CA-C	-6.05	98.60	110.10
1	A	293	ARG	CD-NE-CZ	5.87	131.82	123.60
1	A	237	ARG	CD-NE-CZ	5.81	131.74	123.60
1	A	51	ARG	CD-NE-CZ	5.62	131.47	123.60
1	A	307	VAL	CB-CA-C	-5.55	100.86	111.40
1	B	51	ARG	CD-NE-CZ	5.35	131.09	123.60
1	A	237	ARG	NE-CZ-NH1	5.25	122.92	120.30
1	B	262	LEU	C-N-CA	5.13	134.52	121.70
1	B	263	SER	O-C-N	5.02	131.73	123.20
1	B	247	ARG	NE-CZ-NH2	-5.01	117.79	120.30
1	A	222	ARG	CD-NE-CZ	5.01	130.62	123.60

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	2341	0	2357	62	0
1	B	2359	0	2374	56	0
2	A	5	0	0	0	0
2	B	5	0	0	0	0
3	A	15	0	14	0	0
3	B	15	0	14	1	0
4	A	52	0	0	6	0
4	B	63	0	0	2	0
All	All	4855	0	4759	115	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 12.

All (115) 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:126:ILE:HD11	1:B:126:ILE:HD11	1.48	0.95
1:A:119:VAL:HG12	1:B:119:VAL:HG12	1.54	0.88
1:B:154:PRO:HB2	1:B:155:PRO:HD2	1.63	0.80
1:B:358:ILE:HB	1:B:359:PRO:HD3	1.64	0.80
1:B:130:MET:HB3	1:B:131:PRO:HD3	1.65	0.79
1:B:354:THR:HB	1:B:355:PRO:HD2	1.65	0.78
1:A:54:ILE:HD12	1:A:66:THR:HG22	1.65	0.78
1:B:276:SER:HB2	1:B:324:VAL:HB	1.67	0.77
1:A:358:ILE:HB	1:A:359:PRO:HD3	1.66	0.75
1:A:68:LEU:O	1:A:69:LEU:HB2	1.87	0.74
1:B:285:GLY:HA2	1:B:290:THR:HG21	1.70	0.71
1:B:57:PRO:HB3	1:B:235:ILE:HG23	1.73	0.71
1:B:342:GLN:HB2	4:B:2060:HOH:O	1.92	0.70
1:A:61:GLY:HA2	1:A:220:ARG:NH1	2.06	0.69
1:B:140:ALA:HB3	1:B:141:PRO:HD3	1.77	0.67
1:B:262:LEU:HB3	1:B:293:ARG:HD2	1.75	0.67
1:A:285:GLY:HA2	1:A:290:THR:HG23	1.76	0.66
1:B:70:VAL:HG21	1:B:80:TYR:HB2	1.79	0.64
1:B:130:MET:HB3	1:B:131:PRO:CD	2.27	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:212:ARG:NH1	1:A:216:ARG:HH21	1.95	0.63
1:B:76:ASP:HB3	1:B:366:ARG:HH22	1.63	0.63
1:A:130:MET:HB3	1:A:131:PRO:HD3	1.81	0.62
1:B:217:LEU:HD22	1:B:232:LEU:HD13	1.81	0.62
1:B:317:LYS:HA	1:B:320:ARG:HD3	1.81	0.62
1:A:146:GLU:HG3	1:A:199:PRO:HB3	1.83	0.60
1:A:140:ALA:HB3	1:A:141:PRO:HD3	1.83	0.60
1:B:66:THR:HG23	1:B:160:ILE:HG21	1.84	0.59
1:A:299:ALA:HB1	1:A:300:PRO:HD2	1.83	0.59
1:A:304:LEU:HD22	1:A:308:PHE:HB2	1.86	0.56
1:A:85:MET:HE3	1:A:222:ARG:HD3	1.88	0.56
1:B:262:LEU:HB3	1:B:293:ARG:CD	2.36	0.56
1:B:115:GLY:O	1:B:119:VAL:HG23	2.05	0.55
1:B:262:LEU:HD21	1:B:290:THR:HG22	1.89	0.55
1:B:205:LEU:HD12	1:B:243:ALA:HB2	1.90	0.54
1:A:213:HIS:CE1	1:A:232:LEU:HD11	2.43	0.54
1:A:293:ARG:HH11	1:A:293:ARG:HB3	1.73	0.54
1:B:66:THR:HG21	1:B:80:TYR:CE1	2.43	0.53
1:A:78:ILE:HD11	1:A:160:ILE:HD12	1.90	0.53
1:B:124:ALA:O	1:B:128:MET:HG2	2.09	0.53
1:A:159:LEU:HD13	1:A:161:PHE:CZ	2.44	0.53
1:A:164:HIS:ND1	1:A:166:ILE:HG12	2.24	0.53
1:B:362:CYS:O	1:B:366:ARG:HG2	2.10	0.52
1:A:327:LEU:HD23	1:A:329:TYR:CZ	2.45	0.52
1:A:48:THR:OG1	1:A:155:PRO:HA	2.09	0.51
1:A:154:PRO:CB	1:A:155:PRO:HD2	2.40	0.51
1:B:75:ARG:HE	1:B:75:ARG:H	1.58	0.50
1:A:164:HIS:CG	1:A:165:PRO:HD2	2.46	0.50
1:B:285:GLY:HA2	1:B:290:THR:CG2	2.40	0.50
1:A:62:LYS:HG3	4:A:2003:HOH:O	2.11	0.50
1:B:154:PRO:CB	1:B:155:PRO:HD2	2.38	0.50
1:B:164:HIS:CG	1:B:165:PRO:HD2	2.46	0.50
1:A:51:ARG:HG3	4:A:2050:HOH:O	2.12	0.49
1:A:317:LYS:HD3	4:B:2020:HOH:O	2.12	0.49
1:B:294:ALA:HB1	1:B:296:GLU:OE1	2.12	0.49
1:A:54:ILE:HD12	1:A:66:THR:CG2	2.38	0.49
1:A:362:CYS:O	1:A:366:ARG:HG3	2.12	0.49
1:A:178:LEU:HD21	1:A:291:LEU:HD22	1.95	0.49
1:A:63:THR:HG22	1:A:67:GLN:NE2	2.28	0.48
1:A:198:LEU:HB3	1:A:199:PRO:CD	2.43	0.48
1:A:118:ALA:HA	1:A:181:SER:O	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:58:HIS:HB3	1:A:163:ARG:NH2	2.29	0.47
1:A:154:PRO:HB2	1:A:155:PRO:HD2	1.96	0.47
1:B:154:PRO:HB2	1:B:155:PRO:CD	2.40	0.47
1:A:62:LYS:NZ	1:A:62:LYS:HB2	2.31	0.46
1:A:157:LEU:HD22	1:A:358:ILE:HG23	1.97	0.46
1:A:285:GLY:HA2	1:A:290:THR:CG2	2.43	0.46
1:A:85:MET:CE	1:A:222:ARG:HD3	2.44	0.46
1:A:120:VAL:HA	1:B:119:VAL:CG1	2.46	0.46
1:B:87:TYR:HB2	1:B:372:MET:HG2	1.98	0.46
1:A:117:ALA:O	1:A:121:MET:HB2	2.17	0.45
4:A:2026:HOH:O	1:B:130:MET:HA	2.16	0.45
1:B:315:LEU:O	1:B:319:LEU:HG	2.16	0.45
3:B:500:CCV:H112	3:B:500:CCV:H43	1.79	0.45
1:B:325:PHE:CE1	1:B:347:MET:HG2	2.51	0.45
1:A:49:LEU:HD12	1:A:157:LEU:O	2.17	0.45
1:A:262:LEU:HD22	1:A:290:THR:CG2	2.47	0.45
1:A:373:GLY:O	1:A:374:GLU:HB2	2.17	0.45
1:B:262:LEU:CD2	1:B:290:THR:HG22	2.47	0.44
1:B:87:TYR:OH	1:B:130:MET:HG3	2.17	0.44
1:A:119:VAL:CG1	1:B:119:VAL:HG12	2.37	0.44
1:B:213:HIS:NE2	1:B:232:LEU:HD11	2.33	0.43
1:B:246:VAL:HG11	1:B:324:VAL:HG23	2.00	0.43
1:A:172:TYR:N	1:A:173:PRO:CD	2.81	0.43
1:A:222:ARG:HB3	1:A:223:PRO:HD2	1.99	0.43
1:B:354:THR:HB	1:B:355:PRO:CD	2.43	0.43
1:A:148:GLY:O	1:A:149:SER:C	2.57	0.43
1:B:87:TYR:CE1	1:B:92:GLY:HA3	2.54	0.43
1:B:285:GLY:CA	1:B:290:THR:HG21	2.44	0.43
1:B:68:LEU:HB3	1:B:337:ARG:HD3	2.00	0.43
1:B:80:TYR:O	1:B:82:PRO:HD3	2.19	0.43
1:B:213:HIS:CE1	1:B:232:LEU:HD11	2.54	0.43
1:A:61:GLY:HA2	1:A:220:ARG:HH12	1.83	0.42
1:A:75:ARG:N	1:A:75:ARG:HE	2.17	0.42
1:A:101:TYR:CZ	1:A:225:GLU:HG3	2.53	0.42
1:B:246:VAL:HG21	1:B:324:VAL:HG21	2.00	0.42
1:A:198:LEU:HB3	1:A:199:PRO:HD2	2.00	0.42
1:A:247:ARG:HD3	4:A:2040:HOH:O	2.19	0.42
1:A:354:THR:HB	1:A:355:PRO:CD	2.50	0.42
1:B:226:ARG:HB2	1:B:227:LEU:H	1.58	0.42
1:A:293:ARG:HB3	1:A:293:ARG:NH1	2.34	0.42
1:B:235:ILE:HD12	1:B:235:ILE:HA	1.90	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:203:ILE:HG23	1:A:324:VAL:HG22	2.01	0.42
1:B:74:SER:HB3	1:B:77:ASP:OD2	2.19	0.42
1:A:62:LYS:HD2	4:A:2020:HOH:O	2.20	0.41
1:A:225:GLU:HG2	1:A:226:ARG:N	2.35	0.41
1:B:164:HIS:ND1	1:B:166:ILE:HG12	2.36	0.41
1:A:54:ILE:CD1	1:A:66:THR:HG22	2.41	0.41
1:B:118:ALA:HA	1:B:181:SER:O	2.21	0.41
1:B:172:TYR:N	1:B:173:PRO:CD	2.84	0.41
1:B:325:PHE:CZ	1:B:347:MET:HG2	2.56	0.41
1:A:304:LEU:HB2	4:A:2047:HOH:O	2.21	0.41
1:A:219:LYS:HB3	1:A:219:LYS:NZ	2.35	0.41
1:A:162:ASP:O	1:A:163:ARG:HB2	2.22	0.40
1:B:148:GLY:O	1:B:149:SER:C	2.59	0.40
1:A:67:GLN:O	1:A:69:LEU:N	2.55	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	297/331 (90%)	280 (94%)	15 (5%)	2 (1%)	22	39
1	B	302/331 (91%)	291 (96%)	9 (3%)	2 (1%)	22	39
All	All	599/662 (90%)	571 (95%)	24 (4%)	4 (1%)	22	39

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	68	LEU
1	B	218	ALA
1	A	95	GLU
1	B	263	SER

5.3.2 Protein sidechains (i)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	247/264 (94%)	235 (95%)	12 (5%)	25	47
1	B	249/264 (94%)	239 (96%)	10 (4%)	31	56
All	All	496/528 (94%)	474 (96%)	22 (4%)	28	52

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	75	ARG
1	A	130	MET
1	A	159	LEU
1	A	212	ARG
1	A	215	ASP
1	A	219	LYS
1	A	247	ARG
1	A	290	THR
1	A	304	LEU
1	A	307	VAL
1	A	343	LEU
1	A	374	GLU
1	B	69	LEU
1	B	75	ARG
1	B	76	ASP
1	B	130	MET
1	B	212	ARG
1	B	215	ASP
1	B	307	VAL
1	B	342	GLN
1	B	343	LEU
1	B	374	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	349	GLN
1	B	306	ASN
1	B	342	GLN
1	B	349	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 ⓘ

4 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#$|Z|$ > 2	Counts	RMSZ	#$|Z|$ > 2
3	CCV	B	500	-	14,15,15	1.86	2 (14%)	11,20,20	3.05	3 (27%)
3	CCV	A	500	-	14,15,15	1.89	2 (14%)	11,20,20	3.02	4 (36%)
2	SO4	B	400	-	4,4,4	0.69	0	6,6,6	0.34	0
2	SO4	A	400	-	4,4,4	0.61	0	6,6,6	0.14	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	CCV	B	500	-	-	2/8/8/8	0/1/1/1
3	CCV	A	500	-	-	2/8/8/8	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	500	CCV	C3-C5	-4.87	1.34	1.39
3	A	500	CCV	C3-C5	-4.87	1.34	1.39
3	A	500	CCV	C3-C2	3.38	1.48	1.41
3	B	500	CCV	C3-C2	3.13	1.48	1.41

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	500	CCV	C1-N2-C2	7.46	121.44	115.14
3	A	500	CCV	C1-N2-C2	6.35	120.50	115.14
3	A	500	CCV	C3-C5-N1	-5.48	118.08	123.87
3	B	500	CCV	C3-C2-N2	-5.12	118.29	125.25
3	A	500	CCV	C3-C2-N2	-4.85	118.66	125.25
3	B	500	CCV	C3-C5-N1	-4.02	119.62	123.87
3	A	500	CCV	C11-C12-C14	2.04	112.38	110.15

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	500	CCV	C5-C11-C12-C13
3	A	500	CCV	C5-C11-C12-C14
3	B	500	CCV	C5-C11-C12-C13
3	B	500	CCV	C5-C11-C12-C14

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	500	CCV	1	0

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6   Fit of model and data   ⓘ

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	305/331 (92%)	0.04	19 (6%)	20	21	20, 35, 79, 114	0
1	B	310/331 (93%)	0.05	25 (8%)	12	12	18, 35, 75, 105	0
All	All	615/662 (92%)	0.04	44 (7%)	15	16	18, 35, 77, 114	0

All (44) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	149	SER	7.8
1	A	264	GLY	7.4
1	B	264	GLY	7.2
1	A	148	GLY	6.4
1	A	75	ARG	6.3
1	B	263	SER	6.1
1	B	148	GLY	5.4
1	A	65	THR	5.4
1	A	76	ASP	4.6
1	B	274	PRO	4.1
1	B	374	GLU	4.1
1	A	62	LYS	4.0
1	A	46	MET	4.0
1	B	227	LEU	3.8
1	B	46	MET	3.5
1	A	61	GLY	3.3
1	B	154	PRO	3.2
1	B	149	SER	3.1
1	A	154	PRO	3.1
1	B	147	ALA	3.0
1	A	370	ARG	3.0
1	A	374	GLU	3.0
1	B	275	GLN	3.0
1	B	277	ASN	2.8

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Mol	Chain	Res	Type	RSRZ
1	B	276	SER	2.8
1	B	219	LYS	2.7
1	B	345	SER	2.6
1	B	74	SER	2.6
1	B	300	PRO	2.6
1	B	109	GLN	2.5
1	A	67	GLN	2.5
1	B	301	ASN	2.5
1	A	263	SER	2.5
1	A	66	THR	2.4
1	A	373	GLY	2.4
1	A	355	PRO	2.3
1	B	110	GLY	2.2
1	A	334	ALA	2.2
1	B	278	ALA	2.2
1	A	332	SER	2.2
1	B	373	GLY	2.2
1	B	346	GLY	2.2
1	B	211	ASP	2.1
1	B	229	LEU	2.1

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
3	CCV	A	500	15/15	0.92	0.27	26,31,39,40	0
3	CCV	B	500	15/15	0.96	0.18	27,30,36,41	0
2	SO4	A	400	5/5	0.98	0.16	64,64,65,67	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
2	SO4	B	400	5/5	0.99	0.10	34,35,36,42	0

6.5 Other polymers ⓘ

There are no such residues in this entry.