



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 12, 2026 – 03:40 PM UTC

PDB ID : 1QSL / pdb_00001qsl
Title : KLENOW FRAGMENT COMPLEXED WITH SINGLE-STRANDED SUBSTRATE AND EUROPIUM (III) ION
Authors : Brautigam, C.A.; Aschheim, K.; Steitz, T.A.
Deposited on : 1999-06-22
Resolution : 2.20 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 types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

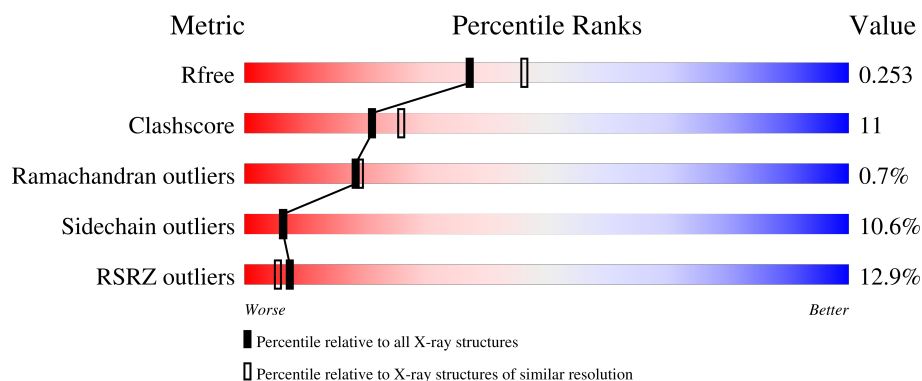
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.20 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	6164 (2.20-2.20)
Clashscore	190562	6851 (2.20-2.20)
Ramachandran outliers	187476	6768 (2.20-2.20)
Sidechain outliers	187428	6769 (2.20-2.20)
RSRZ outliers	180081	6166 (2.20-2.20)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	B	8	
2	A	605	

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 5006 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 DNA chain called 5'-D(*GP*CP*TP*TP*AP*CP*GP*C)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	4	Total	C	N	O	P	0	0	1
			61	28	11	19	3			

- Molecule 2 is a protein called DNA POLYMERASE I.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	A	601	Total	C	N	O	S	0	0	0
			4753	3008	830	899	16			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	324	MET	VAL	engineered mutation	UNP P00582

- Molecule 3 is EUROPIUM ION (CCD ID: EU) (formula: Eu).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Eu	0	0
			1	1		

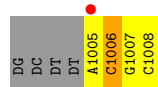
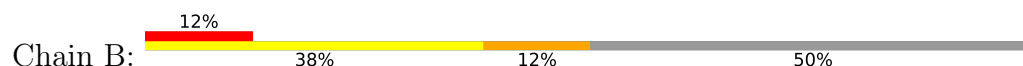
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	4	Total	O	0	0
			4	4		
4	A	187	Total	O	0	0
			187	187		

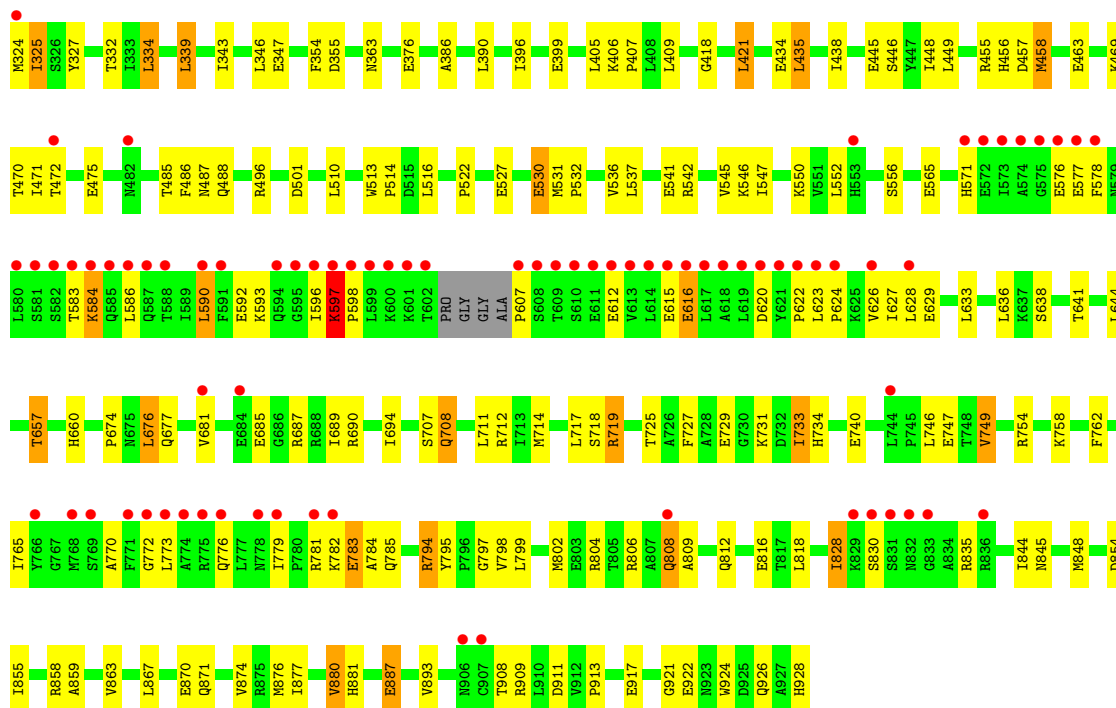
3 Residue-property plots

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: 5'-D(*GP*CP*TP*TP*AP*CP*GP*C)-3'



- Molecule 2: DNA POLYMERASE I



4 Data and refinement statistics

Property	Value	Source
Space group	P 43	Depositor
Cell constants a, b, c, α , β , γ	103.30Å 103.30Å 86.50Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.00 – 2.20 20.00 – 2.20	Depositor EDS
% Data completeness (in resolution range)	(Not available) (20.00-2.20) 93.8 (20.00-2.20)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.69 (at 2.19Å)	Xtriage
Refinement program	X-PLOR 3.851	Depositor
R, R_{free}	0.214 , 0.255 0.219 , 0.253	Depositor DCC
R_{free} test set	4658 reflections (10.13%)	wwPDB-VP
Wilson B-factor (Å ²)	33.5	Xtriage
Anisotropy	0.241	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 57.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.034 for h,-k,-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	5006	wwPDB-VP
Average B, all atoms (Å ²)	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.53% 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 ⓘ

5.1 Standard geometry ⓘ

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

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	B	1.80	0/67	3.04	11/102 (10.8%)
2	A	0.51	0/4839	1.05	25/6547 (0.4%)
All	All	0.55	0/4906	1.10	36/6649 (0.5%)

There are no bond length outliers.

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	1006	DC	C3'-C2'-C1'	11.40	118.70	101.60
2	A	783	GLU	N-CA-C	-9.13	100.94	112.90
1	B	1006	DC	C4'-C3'-C2'	-9.00	88.90	102.40
2	A	597	LYS	N-CA-C	8.88	129.44	109.81
1	B	1006	DC	N1-C1'-C2'	-8.71	100.44	113.50
1	B	1007	DG	P-O5'-C5'	8.34	132.51	120.00
2	A	830	SER	N-CA-C	7.88	121.84	111.75
2	A	590	LEU	N-CA-C	7.54	120.16	111.11
2	A	845	ASN	N-CA-C	7.41	119.15	111.14
2	A	376	GLU	N-CA-CB	-7.05	104.65	111.27
2	A	458	MET	N-CA-C	6.79	118.68	111.28
1	B	1006	DC	O4'-C1'-C2'	-6.79	96.21	106.40
2	A	386	ALA	N-CA-C	6.76	119.06	110.61
1	B	1008	DC	C6-N1-C1'	6.72	129.78	119.70
1	B	1006	DC	C4'-C3'-O3'	-6.69	99.97	110.00
2	A	893	VAL	N-CA-C	6.56	118.10	110.62
2	A	607	PRO	N-CA-CB	6.55	110.20	103.00
2	A	694	ILE	N-CA-C	6.34	119.03	109.20
2	A	527	GLU	N-CA-C	6.24	117.88	111.14
2	A	616	GLU	N-CA-C	-6.07	104.00	111.40
1	B	1006	DC	O5'-C5'-C4'	-5.84	102.03	110.80
2	A	396	ILE	N-CA-C	-5.71	102.21	109.58

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	784	ALA	N-CA-C	-5.71	104.67	111.69
1	B	1006	DC	C2'-C3'-O3'	5.61	119.91	111.50
2	A	876	MET	N-CA-C	-5.60	100.06	108.96
1	B	1008	DC	C2-N1-C1'	-5.46	111.52	119.70
2	A	445	GLU	N-CA-C	-5.44	105.27	111.14
2	A	486	PHE	N-CA-C	5.34	118.58	111.75
2	A	689	ILE	N-CA-C	-5.33	105.34	110.72
2	A	887	GLU	N-CA-C	-5.29	99.78	108.41
1	B	1005	DA	O3'-P-O5'	-5.28	96.08	104.00
2	A	795	TYR	CA-C-N	5.19	124.81	119.05
2	A	795	TYR	C-N-CA	5.19	124.81	119.05
2	A	530	GLU	N-CA-C	5.13	116.56	110.97
2	A	471	ILE	N-CA-C	-5.12	102.90	109.30
2	A	636	LEU	N-CA-C	5.02	116.76	111.28

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	B	61	0	34	6	0
2	A	4753	0	4753	106	0
3	A	1	0	0	0	0
4	A	187	0	0	5	0
4	B	4	0	0	0	0
All	All	5006	0	4787	106	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 11.

All (106) 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)
2:A:740:GLU:HB3	2:A:794:ARG:HG2	1.54	0.86

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:472:THR:HG22	2:A:475:GLU:HG3	1.63	0.80
2:A:855:ILE:HG23	2:A:908:THR:HG21	1.64	0.80
2:A:324:MET:HA	2:A:324:MET:HE3	1.66	0.77
2:A:677:GLN:HG2	2:A:880:VAL:HG23	1.68	0.76
2:A:677:GLN:HE21	2:A:881:HIS:H	1.32	0.75
2:A:485:THR:H	2:A:488:GLN:HE21	1.34	0.75
2:A:802:MET:HE2	2:A:844:ILE:HD13	1.72	0.71
2:A:545:VAL:HG23	2:A:877:ILE:HD12	1.73	0.69
1:B:1006:DC:P	2:A:455:ARG:HH21	2.17	0.67
2:A:657:THR:HG22	4:A:149:HOH:O	1.93	0.67
2:A:717:LEU:HD21	2:A:818:LEU:HD11	1.76	0.67
2:A:324:MET:HG3	2:A:325:ILE:H	1.59	0.67
2:A:677:GLN:NE2	2:A:881:HIS:H	1.93	0.66
2:A:681:VAL:HA	2:A:690:ARG:HH11	1.61	0.66
2:A:712:ARG:HD3	2:A:913:PRO:O	1.96	0.65
2:A:772:GLY:O	2:A:776:GLN:HG2	1.96	0.64
2:A:808:GLN:O	2:A:812:GLN:HG2	1.97	0.63
2:A:854:ASP:O	2:A:858:ARG:HG3	2.01	0.59
2:A:782:LYS:HA	2:A:785:GLN:HB3	1.85	0.59
2:A:711:LEU:HD13	2:A:765:ILE:HD11	1.85	0.58
2:A:458:MET:HE1	2:A:501:ASP:OD2	2.02	0.58
2:A:446:SER:OG	2:A:456:HIS:HD2	1.86	0.58
2:A:687:ARG:HG2	2:A:690:ARG:HH22	1.69	0.58
2:A:327:TYR:CE2	2:A:496:ARG:HD2	2.40	0.57
2:A:802:MET:O	2:A:806:ARG:HG3	2.06	0.55
2:A:472:THR:HG22	2:A:475:GLU:CG	2.34	0.55
2:A:677:GLN:HE21	2:A:881:HIS:N	2.03	0.55
2:A:674:PRO:HG2	2:A:676:LEU:HD13	1.89	0.54
2:A:571:HIS:HD2	2:A:578:PHE:CE2	2.26	0.54
2:A:612:GLU:HB3	2:A:615:GLU:HG2	1.88	0.54
2:A:448:ILE:HD11	2:A:530:GLU:HG3	1.89	0.54
2:A:590:LEU:HD23	2:A:623:LEU:HD23	1.88	0.54
2:A:657:THR:HB	2:A:674:PRO:HD2	1.89	0.54
2:A:435:LEU:HD13	2:A:438:ILE:HG12	1.90	0.53
2:A:921:GLY:HA3	2:A:926:GLN:HB3	1.90	0.53
2:A:725:THR:O	2:A:729:GLU:HG2	2.08	0.53
2:A:615:GLU:HB3	2:A:628:LEU:HD21	1.90	0.53
2:A:623:LEU:O	2:A:626:VAL:HG22	2.09	0.53
2:A:363:ASN:ND2	2:A:542:ARG:HH21	2.06	0.52
1:B:1006:DC:H5''	2:A:457:ASP:HB3	1.92	0.52
2:A:597:LYS:CG	2:A:598:PRO:HD3	2.40	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:463:GLU:OE1	2:A:469:LYS:HE2	2.10	0.51
2:A:779:ILE:HD12	2:A:783:GLU:HG3	1.92	0.51
2:A:418:GLY:HA3	2:A:421:LEU:HD13	1.93	0.51
2:A:858:ARG:HB2	2:A:908:THR:HG23	1.93	0.51
2:A:565:GLU:HG2	4:A:157:HOH:O	2.11	0.50
2:A:593:LYS:HZ3	2:A:623:LEU:HD22	1.77	0.50
2:A:734:HIS:CD2	2:A:758:LYS:HA	2.47	0.50
2:A:727:PHE:CE2	2:A:733:ILE:HG12	2.47	0.50
2:A:740:GLU:HB3	2:A:794:ARG:CG	2.35	0.50
1:B:1006:DC:C5	2:A:660:HIS:HE1	2.30	0.50
2:A:332:THR:HG22	2:A:334:LEU:HD13	1.94	0.49
2:A:363:ASN:HD22	2:A:542:ARG:HH21	1.59	0.49
2:A:487:ASN:HD22	2:A:487:ASN:H	1.60	0.49
2:A:399:GLU:HB3	4:A:288:HOH:O	2.12	0.49
2:A:597:LYS:HG3	2:A:598:PRO:HD3	1.94	0.49
2:A:717:LEU:HD21	2:A:818:LEU:CD1	2.43	0.48
2:A:877:ILE:HD13	2:A:887:GLU:HG3	1.96	0.48
2:A:571:HIS:HD2	2:A:578:PHE:HE2	1.60	0.48
2:A:719:ARG:CZ	2:A:804:ARG:HH12	2.27	0.47
2:A:339:LEU:O	2:A:343:ILE:HG13	2.14	0.47
2:A:746:LEU:O	2:A:749:VAL:HG12	2.14	0.47
2:A:909:ARG:HB3	2:A:911:ASP:OD1	2.15	0.47
2:A:586:LEU:HD22	2:A:627:ILE:HD13	1.97	0.47
2:A:487:ASN:H	2:A:487:ASN:ND2	2.13	0.46
2:A:633:LEU:CD2	2:A:685:GLU:HG3	2.46	0.46
2:A:711:LEU:HD22	2:A:762:PHE:CE2	2.50	0.46
2:A:593:LYS:NZ	2:A:623:LEU:HD22	2.29	0.46
2:A:782:LYS:N	2:A:782:LYS:HD2	2.29	0.46
2:A:674:PRO:HG2	2:A:676:LEU:CD1	2.46	0.46
2:A:859:ALA:O	2:A:863:VAL:HG23	2.16	0.45
2:A:908:THR:HG22	2:A:909:ARG:H	1.80	0.45
2:A:406:LYS:HG2	4:A:222:HOH:O	2.16	0.45
2:A:808:GLN:OE1	2:A:812:GLN:NE2	2.49	0.45
2:A:809:ALA:HB1	2:A:828:ILE:HD13	1.98	0.45
2:A:714:MET:HB2	2:A:848:MET:SD	2.56	0.45
2:A:324:MET:HA	2:A:324:MET:CE	2.43	0.44
2:A:406:LYS:HB3	2:A:407:PRO:HD3	1.99	0.44
2:A:798:VAL:O	2:A:802:MET:HG3	2.17	0.44
2:A:421:LEU:HD12	2:A:421:LEU:HA	1.89	0.44
2:A:924:TRP:O	2:A:928:HIS:HB2	2.18	0.44
1:B:1006:DC:C4	2:A:660:HIS:HE1	2.35	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:727:PHE:CZ	2:A:733:ILE:HG12	2.53	0.43
2:A:711:LEU:CD1	2:A:765:ILE:HD11	2.48	0.43
2:A:343:ILE:O	2:A:347:GLU:HG3	2.19	0.43
2:A:922:GLU:HB2	2:A:926:GLN:NE2	2.33	0.43
2:A:458:MET:HE3	2:A:470:THR:HG21	2.01	0.43
2:A:707:SER:C	2:A:708:GLN:HG2	2.43	0.43
2:A:844:ILE:O	2:A:848:MET:HE2	2.19	0.43
1:B:1006:DC:C5	2:A:660:HIS:CE1	3.07	0.43
2:A:584:LYS:HD2	2:A:584:LYS:HA	1.86	0.43
2:A:556:SER:HB2	2:A:641:THR:HG22	2.00	0.42
1:B:1006:DC:OP2	2:A:455:ARG:NH2	2.52	0.42
2:A:513:TRP:HB3	2:A:514:PRO:HD3	2.00	0.42
2:A:418:GLY:HA3	2:A:421:LEU:CD1	2.50	0.42
2:A:623:LEU:N	2:A:624:PRO:HD2	2.35	0.42
2:A:399:GLU:HG2	4:A:103:HOH:O	2.20	0.42
2:A:922:GLU:HB2	2:A:926:GLN:HE22	1.85	0.41
2:A:537:LEU:O	2:A:541:GLU:HG3	2.20	0.41
2:A:758:LYS:HE3	2:A:762:PHE:HE1	1.85	0.41
2:A:593:LYS:HG3	2:A:593:LYS:O	2.21	0.41
2:A:781:ARG:C	2:A:783:GLU:H	2.29	0.41
2:A:531:MET:HB2	2:A:532:PRO:HD3	2.04	0.40
2:A:718:SER:HB2	2:A:797:GLY:O	2.21	0.40
2:A:731:LYS:HD2	2:A:746:LEU:HD22	2.02	0.40

There are no symmetry-related clashes.

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
2	A	597/605 (99%)	561 (94%)	32 (5%)	4 (1%)	18 19

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	A	576	GLU
2	A	597	LYS
2	A	770	ALA
2	A	622	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
2	A	500/510 (98%)	447 (89%)	53 (11%)	6 6

All (53) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	A	325	ILE
2	A	334	LEU
2	A	339	LEU
2	A	346	LEU
2	A	354	PHE
2	A	355	ASP
2	A	390	LEU
2	A	405	LEU
2	A	409	LEU
2	A	421	LEU
2	A	434	GLU
2	A	435	LEU
2	A	449	LEU
2	A	510	LEU
2	A	516	LEU
2	A	522	PRO
2	A	536	VAL
2	A	546	LYS
2	A	547	ILE
2	A	550	LYS
2	A	552	LEU
2	A	577	GLU
2	A	583	THR

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Mol	Chain	Res	Type
2	A	584	LYS
2	A	592	GLU
2	A	596	ILE
2	A	597	LYS
2	A	616	GLU
2	A	620	ASP
2	A	629	GLU
2	A	638	SER
2	A	644	LEU
2	A	657	THR
2	A	676	LEU
2	A	708	GLN
2	A	719	ARG
2	A	733	ILE
2	A	747	GLU
2	A	749	VAL
2	A	754	ARG
2	A	773	LEU
2	A	794	ARG
2	A	799	LEU
2	A	808	GLN
2	A	816	GLU
2	A	828	ILE
2	A	835	ARG
2	A	867	LEU
2	A	870	GLU
2	A	871	GLN
2	A	874	VAL
2	A	880	VAL
2	A	917	GLU

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

Mol	Chain	Res	Type
2	A	363	ASN
2	A	456	HIS
2	A	483	GLN
2	A	487	ASN
2	A	488	GLN
2	A	519	HIS
2	A	528	ASN
2	A	543	ASN

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Mol	Chain	Res	Type
2	A	571	HIS
2	A	677	GLN
2	A	734	HIS
2	A	785	GLN
2	A	849	GLN
2	A	879	GLN
2	A	899	GLN
2	A	926	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

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	B	4/8 (50%)	1.42	1 (25%) 2 1	54, 56, 62, 67	0
2	A	601/605 (99%)	0.46	77 (12%) 7 5	16, 36, 92, 100	0
All	All	605/613 (98%)	0.47	78 (12%) 7 5	16, 36, 92, 100	0

All (78) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	A	598	PRO	8.6
2	A	582	SER	7.4
2	A	613	VAL	7.3
2	A	600	LYS	6.9
2	A	608	SER	6.9
2	A	581	SER	6.8
2	A	583	THR	6.2
2	A	610	SER	6.1
2	A	609	THR	6.1
2	A	601	LYS	5.8
2	A	580	LEU	5.6
2	A	602	THR	5.6
2	A	596	ILE	5.5
2	A	612	GLU	5.1
2	A	599	LEU	4.8
2	A	617	LEU	4.7
2	A	611	GLU	4.6
2	A	830	SER	4.5
2	A	595	GLY	4.4
2	A	607	PRO	4.4
2	A	575	GLY	4.3
2	A	621	TYR	4.1
2	A	584	LYS	4.0
2	A	619	LEU	3.9

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Mol	Chain	Res	Type	RSRZ
2	A	833	GLY	3.8
2	A	681	VAL	3.7
2	A	577	GLU	3.7
2	A	614	LEU	3.5
2	A	616	GLU	3.5
2	A	585	GLN	3.5
2	A	553	HIS	3.5
2	A	588	THR	3.4
2	A	587	GLN	3.3
2	A	771	PHE	3.3
2	A	618	ALA	3.2
2	A	594	GLN	3.2
2	A	626	VAL	3.2
2	A	574	ALA	3.1
2	A	781	ARG	3.1
2	A	782	LYS	3.1
2	A	831	SER	3.1
2	A	620	ASP	3.0
2	A	597	LYS	3.0
2	A	573	ILE	3.0
2	A	829	LYS	3.0
2	A	768	MET	2.9
2	A	684	GLU	2.9
2	A	906	ASN	2.9
2	A	772	GLY	2.8
2	A	591	PHE	2.8
2	A	622	PRO	2.8
2	A	776	GLN	2.8
2	A	774	ALA	2.8
2	A	576	GLU	2.7
1	B	1005	DA	2.6
2	A	571	HIS	2.6
2	A	586	LEU	2.6
2	A	324	MET	2.6
2	A	769	SER	2.6
2	A	628	LEU	2.6
2	A	482	ASN	2.6
2	A	615	GLU	2.5
2	A	624	PRO	2.5
2	A	808	GLN	2.5
2	A	773	LEU	2.4
2	A	623	LEU	2.4

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Mol	Chain	Res	Type	RSRZ
2	A	836	ARG	2.4
2	A	775	ARG	2.3
2	A	779	ILE	2.2
2	A	590	LEU	2.2
2	A	766	TYR	2.1
2	A	578	PHE	2.1
2	A	832	ASN	2.1
2	A	907	CYS	2.1
2	A	472	THR	2.0
2	A	744	LEU	2.0
2	A	572	GLU	2.0
2	A	778	ASN	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 oligosaccharides in this entry.

6.4 Ligands [i](#)

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	EU	A	1	1/1	0.99	0.03	61,61,61,61	0

6.5 Other polymers [i](#)

There are no such residues in this entry.