



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 01:05 PM UTC

PDB ID : 1XNS / pdb_00001xns
Title : Peptide trapped Holliday junction intermediate in Cre-loxP recombination
Authors : Ghosh, K.; Lau, C.K.; Guo, F.; Segall, A.M.; Van Duyne, G.D.
Deposited on : 2004-10-05
Resolution : 2.80 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

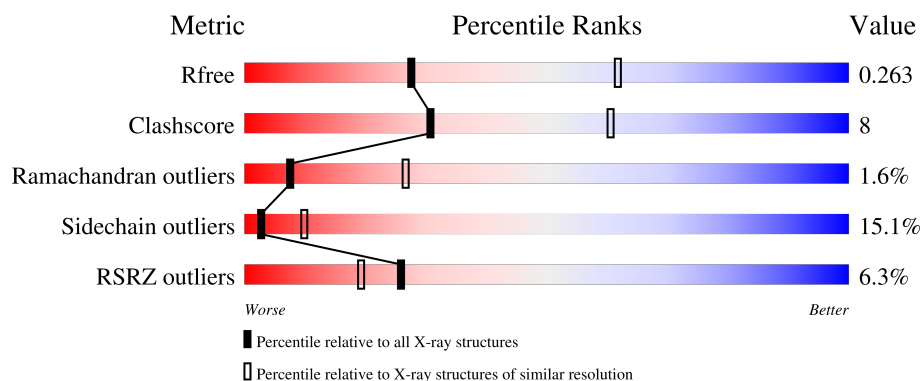
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	3866 (2.80-2.80)
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (2.80-2.80)

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	C	35	11% 54% 37% 6% •
2	D	34	6% 41% 35% 24%
3	A	324	7% 69% 25% 5% ••
3	B	324	5% 75% 22% ••

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 6807 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 loxP DNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	35	Total	C	N	O	P	1	0	0
			715	346	125	210	34			

- Molecule 2 is a DNA chain called loxP DNA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	34	Total	C	N	O	P	1	0	0
			696	335	124	203	34			

- Molecule 3 is a protein called Recombinase CRE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	A	322	Total	C	N	O	S	0	0	0
			2550	1584	486	465	15			
3	B	322	Total	C	N	O	S	0	0	0
			2550	1584	486	465	15			

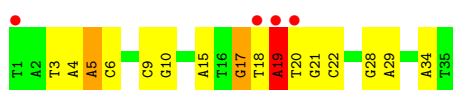
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	35	Total	O	0	0
			35	35		
4	D	36	Total	O	0	0
			36	36		
4	A	74	Total	O	0	0
			74	74		
4	B	151	Total	O	0	0
			151	151		

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.

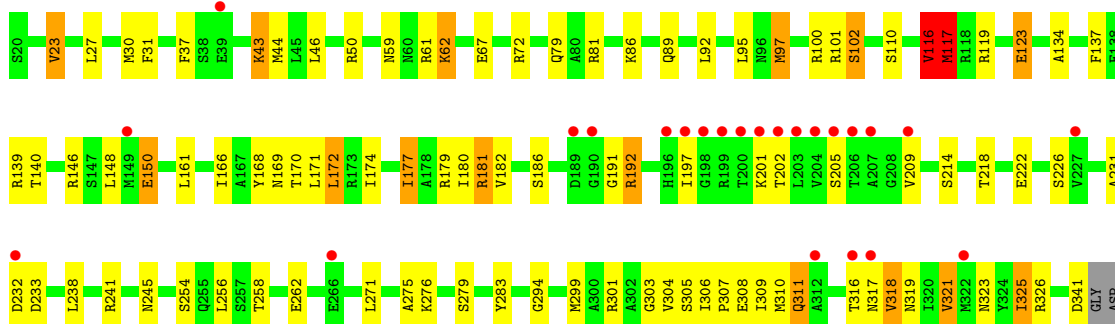
• Molecule 1: loxP DNA



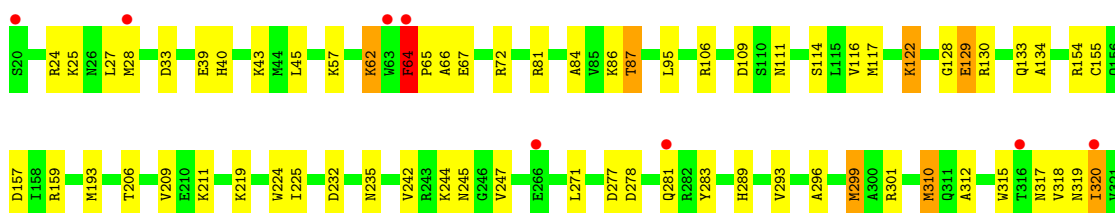
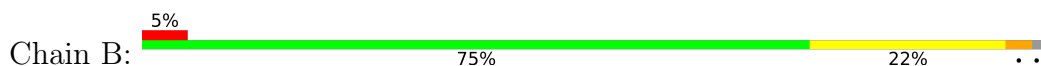
• Molecule 2: loxP DNA

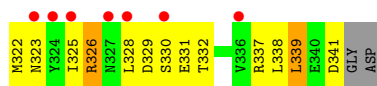


• Molecule 3: Recombinase CRE



• Molecule 3: Recombinase CRE





4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	106.08Å 121.53Å 177.80Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.67 – 2.80 47.67 – 2.80	Depositor EDS
% Data completeness (in resolution range)	96.2 (47.67-2.80) 96.2 (47.67-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.18 (at 2.81Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.196 , 0.265 0.200 , 0.263	Depositor DCC
R_{free} test set	1386 reflections (4.84%)	wwPDB-VP
Wilson B-factor (Å ²)	53.8	Xtriage
Anisotropy	0.174	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 54.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	6807	wwPDB-VP
Average B, all atoms (Å ²)	55.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.24% 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

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	C	0.77	3/801 (0.4%)	1.57	12/1235 (1.0%)
2	D	0.72	1/780 (0.1%)	1.55	17/1201 (1.4%)
3	A	0.80	2/2591 (0.1%)	1.00	1/3493 (0.0%)
3	B	0.89	3/2591 (0.1%)	1.02	6/3493 (0.2%)
All	All	0.82	9/6763 (0.1%)	1.18	36/9422 (0.4%)

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	C	0	1

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	18	DT	C5-C7	9.40	1.69	1.50
2	D	18	DT	C5-C7	-8.68	1.33	1.50
3	B	299	MET	SD-CE	-7.90	1.59	1.79
3	A	97	MET	SD-CE	5.84	1.94	1.79
3	B	28	MET	SD-CE	5.26	1.92	1.79
3	B	310	MET	SD-CE	5.21	1.92	1.79
3	A	117	MET	SD-CE	-5.11	1.66	1.79
1	C	19	DA	C1'-N9	-5.09	1.36	1.46
1	C	18	DT	O3'-P	5.00	1.68	1.61

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	19	DA	O4'-C1'-N9	13.11	128.07	108.40
1	C	18	DT	C6-C5-C7	-12.80	104.80	124.00
1	C	18	DT	C4-C5-C7	9.16	136.15	122.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	19	DA	C8-N9-C1'	-8.29	114.61	127.05
1	C	19	DA	N9-C1'-C2'	-7.95	101.58	113.50
2	D	17	DA	O4'-C1'-N9	-7.80	96.70	108.40
1	C	17	DG	P-O3'-C3'	7.14	130.91	120.20
1	C	19	DA	C2'-C3'-O3'	-7.04	100.94	111.50
2	D	9	DC	N1-C1'-C2'	6.78	123.67	113.50
3	A	116	VAL	CB-CA-C	-6.76	101.30	112.26
2	D	15	DG	N9-C1'-C2'	6.53	123.29	113.50
2	D	32	DT	C4'-C3'-O3'	-6.24	100.64	110.00
3	B	64	PHE	N-CA-CB	6.21	121.43	110.37
2	D	8	DT	N1-C1'-C2'	6.18	122.77	113.50
1	C	19	DA	C4-N9-C1'	6.10	136.20	127.05
2	D	19	DA	P-O3'-C3'	6.10	129.34	120.20
1	C	34	DA	O3'-P-O5'	-5.97	95.05	104.00
3	B	296	ALA	N-CA-C	-5.92	104.52	110.97
2	D	6	DC	N1-C1'-C2'	5.88	122.32	113.50
2	D	13	DT	O4'-C1'-N1	5.69	116.93	108.40
2	D	13	DT	P-O5'-C5'	-5.53	111.70	120.00
1	C	15	DA	C4'-C3'-O3'	-5.44	101.84	110.00
2	D	15	DG	C2'-C3'-O3'	5.43	119.65	111.50
2	D	17	DA	C4'-C3'-O3'	-5.39	101.92	110.00
3	B	64	PHE	CA-C-N	-5.35	113.15	119.84
3	B	64	PHE	C-N-CA	-5.35	113.15	119.84
2	D	11	DT	C2'-C3'-O3'	5.35	119.52	111.50
1	C	4	DA	O4'-C1'-N9	-5.24	100.54	108.40
2	D	17	DA	N9-C1'-C2'	5.24	121.36	113.50
2	D	11	DT	N1-C1'-C2'	5.24	121.35	113.50
3	B	225	ILE	N-CA-C	-5.20	105.26	110.30
3	B	87	THR	OG1-CB-CG2	-5.16	98.98	109.30
2	D	12	DA	O3'-P-O5'	-5.16	96.27	104.00
2	D	10	DG	O5'-C5'-C4'	-5.07	103.19	110.80
2	D	32	DT	N1-C1'-C2'	5.04	121.05	113.50
1	C	5	DA	O4'-C1'-N9	5.00	115.91	108.40

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	19	DA	Sidechain

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	C	715	0	401	11	0
2	D	696	0	387	13	0
3	A	2550	0	2571	45	0
3	B	2550	0	2571	40	0
4	A	74	0	0	3	0
4	B	151	0	0	14	1
4	C	35	0	0	3	1
4	D	36	0	0	5	0
All	All	6807	0	5930	102	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 8.

All (102) 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:C:19:DA:H2''	1:C:20:DT:O5'	1.35	1.09
3:B:67:GLU:HG3	4:B:436:HOH:O	1.62	0.97
3:A:311:GLN:HG3	4:B:487:HOH:O	1.67	0.93
3:B:64:PHE:O	3:B:65:PRO:C	2.12	0.90
3:A:31:PHE:HB2	4:A:380:HOH:O	1.79	0.83
3:B:64:PHE:O	3:B:66:ALA:N	2.17	0.77
1:C:17:DG:O6	4:C:53:HOH:O	2.04	0.73
3:A:37:PHE:C	3:B:122:LYS:HZ1	1.96	0.73
3:B:317:ASN:OD1	3:B:319:ASN:ND2	2.20	0.73
3:B:332:THR:HG21	4:B:487:HOH:O	1.90	0.70
1:C:19:DA:H2''	1:C:20:DT:C5'	2.21	0.70
3:B:235:ASN:HB2	4:B:485:HOH:O	1.95	0.67
2:D:32:DT:O4	4:D:43:HOH:O	2.11	0.65
2:D:35:DT:O2	3:B:244:LYS:NZ	2.26	0.64
3:A:43:LYS:NZ	3:A:50:ARG:HH22	1.97	0.63
1:C:9:DC:H2''	1:C:10:DG:C8	2.35	0.62
3:B:299:MET:HE1	3:B:312:ALA:HB2	1.82	0.61
3:B:84:ALA:O	3:B:87:THR:HG22	2.02	0.59
3:B:323:ASN:C	3:B:326:ARG:HB2	2.27	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:19:DA:C2'	1:C:20:DT:O5'	2.29	0.59
3:A:181:ARG:NH2	4:A:353:HOH:O	2.37	0.58
1:C:22:DC:OP1	4:C:42:HOH:O	2.16	0.57
3:A:119:ARG:O	3:A:123:GLU:HB2	2.04	0.56
3:A:214:SER:OG	3:B:339:LEU:HD13	2.06	0.56
3:A:43:LYS:HZ1	3:A:50:ARG:HH22	1.52	0.56
3:A:311:GLN:HB2	4:B:484:HOH:O	2.06	0.55
1:C:28:DG:H2''	1:C:29:DA:O5'	2.07	0.54
3:A:30:MET:HE2	3:A:101:ARG:HB3	1.89	0.54
3:A:202:THR:OG1	3:A:205:SER:HB2	2.08	0.54
2:D:24:DA:H2'	2:D:25:DT:C6	2.43	0.54
3:A:174:ILE:HD12	3:A:258:THR:HB	1.89	0.54
2:D:3:DT:H2''	2:D:4:DA:C8	2.44	0.53
3:B:245:ASN:OD1	3:B:247:VAL:HG23	2.09	0.52
3:B:299:MET:HE1	3:B:312:ALA:CB	2.38	0.52
3:B:62:LYS:HB3	4:B:419:HOH:O	2.09	0.52
3:A:170:THR:OG1	3:A:172:LEU:HB2	2.10	0.52
1:C:20:DT:H2''	1:C:21:DG:C8	2.44	0.52
3:B:128:GLY:O	3:B:129:GLU:C	2.53	0.52
3:B:326:ARG:HA	4:B:448:HOH:O	2.08	0.52
3:A:101:ARG:HH11	3:B:111:ASN:HD22	1.57	0.51
3:B:155:CYS:HB3	3:B:242:VAL:HG11	1.91	0.51
3:B:72:ARG:HG3	3:B:116:VAL:HG11	1.91	0.51
3:B:81:ARG:NH1	4:B:391:HOH:O	2.43	0.51
3:B:341:ASP:HB3	4:B:474:HOH:O	2.11	0.51
3:B:328:LEU:O	3:B:330:SER:N	2.44	0.50
3:B:318:VAL:O	3:B:322:MET:HG2	2.12	0.50
2:D:12:DA:H2''	2:D:13:DT:H5''	1.94	0.49
3:A:170:THR:O	3:A:171:LEU:C	2.55	0.49
3:A:101:ARG:HH11	3:B:111:ASN:ND2	2.11	0.48
3:A:166:ILE:HG22	3:A:177:ILE:HD13	1.96	0.48
3:B:320:ILE:HA	3:B:323:ASN:HB2	1.95	0.48
3:A:202:THR:OG1	3:A:205:SER:CB	2.62	0.48
3:B:64:PHE:HB3	3:B:65:PRO:HD3	1.96	0.47
3:A:44:MET:HE3	3:A:44:MET:HA	1.95	0.47
3:A:89:GLN:HG3	3:A:117:MET:HE2	1.96	0.47
1:C:3:DT:H71	4:C:68:HOH:O	2.14	0.46
3:B:310:MET:HB3	3:B:315:TRP:O	2.15	0.46
3:B:326:ARG:N	4:B:448:HOH:O	2.48	0.46
3:A:139:ARG:HB2	3:A:168:TYR:OH	2.16	0.46
2:D:12:DA:OP1	3:A:81:ARG:NH2	2.48	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:79:GLN:HB3	4:A:409:HOH:O	2.15	0.45
3:B:154:ARG:HD3	3:B:157:ASP:OD2	2.16	0.45
1:C:5:DA:H2"	1:C:6:DC:H5"	1.98	0.45
3:A:310:MET:SD	3:A:318:VAL:HG13	2.57	0.44
3:B:57:LYS:HD3	4:B:489:HOH:O	2.18	0.44
3:A:146:ARG:O	3:A:150:GLU:N	2.52	0.43
3:A:245:ASN:ND2	3:A:245:ASN:H	2.16	0.43
3:A:170:THR:HB	3:A:172:LEU:HD13	1.99	0.43
2:D:8:DT:P	4:D:52:HOH:O	2.76	0.43
3:A:59:ASN:O	3:A:61:ARG:HD3	2.19	0.43
3:A:306:ILE:HB	3:A:307:PRO:HD3	2.00	0.43
3:B:159:ARG:HB2	3:B:224:TRP:CZ3	2.54	0.43
3:A:62:LYS:HD3	3:A:67:GLU:OE2	2.18	0.42
3:A:72:ARG:HG3	3:A:116:VAL:HG21	2.01	0.42
3:B:33:ASP:HA	4:B:362:HOH:O	2.19	0.42
3:A:179:ARG:O	3:A:180:ILE:C	2.60	0.42
3:A:304:VAL:HG13	3:A:308:GLU:CD	2.44	0.42
1:C:21:DG:N2	2:D:17:DA:C2	2.88	0.42
3:A:137:PHE:O	3:A:294:GLY:HA3	2.20	0.42
3:A:231:ALA:O	3:A:233:ASP:N	2.52	0.42
2:D:14:DA:C2	2:D:15:DG:C4	3.07	0.42
2:D:11:DT:H2"	4:D:59:HOH:O	2.20	0.42
3:A:170:THR:C	3:A:172:LEU:N	2.76	0.42
3:B:235:ASN:CB	4:B:485:HOH:O	2.61	0.42
3:A:23:VAL:HB	3:A:102:SER:HB3	2.02	0.41
3:A:134:ALA:HA	3:A:283:TYR:CD1	2.56	0.41
3:A:62:LYS:H	3:A:62:LYS:CD	2.34	0.41
3:A:170:THR:O	3:A:172:LEU:N	2.54	0.41
3:A:214:SER:O	3:A:218:THR:OG1	2.29	0.41
3:B:326:ARG:CA	4:B:448:HOH:O	2.67	0.41
3:A:321:VAL:O	3:A:325:ILE:HD13	2.20	0.41
2:D:5:DA:H2"	2:D:6:DC:H5"	2.02	0.41
2:D:32:DT:H2'	4:D:68:HOH:O	2.21	0.41
3:A:191:GLY:O	3:A:192:ARG:C	2.63	0.41
4:D:67:HOH:O	3:B:40:HIS:HE1	2.05	0.40
3:A:166:ILE:O	3:A:170:THR:HG23	2.21	0.40
3:A:62:LYS:N	3:A:62:LYS:HD2	2.36	0.40
3:B:117:MET:HE3	3:B:117:MET:O	2.21	0.40
3:B:39:GLU:HG2	3:B:40:HIS:N	2.36	0.40
3:B:106:ARG:O	3:B:109:ASP:HB2	2.21	0.40
3:B:134:ALA:HA	3:B:283:TYR:CD1	2.55	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:34:DA:C2	2:D:35:DT:C2	3.10	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)
4:C:39:HOH:O	4:B:365:HOH:O[4_555]	1.80	0.40

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	
3	A	320/324 (99%)	277 (87%)	38 (12%)	5 (2%)	7	27
3	B	320/324 (99%)	305 (95%)	10 (3%)	5 (2%)	7	27
All	All	640/648 (99%)	582 (91%)	48 (8%)	10 (2%)	7	27

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	A	317	ASN
3	B	64	PHE
3	B	329	ASP
3	A	232	ASP
3	A	275	ALA
3	B	232	ASP
3	A	192	ARG
3	B	326	ARG
3	A	303	GLY
3	B	277	ASP

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	
3	A	269/270 (100%)	218 (81%)	51 (19%)	1	5
3	B	269/270 (100%)	239 (89%)	30 (11%)	6	19
All	All	538/540 (100%)	457 (85%)	81 (15%)	3	10

All (81) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	A	23	VAL
3	A	27	LEU
3	A	43	LYS
3	A	46	LEU
3	A	62	LYS
3	A	86	LYS
3	A	92	LEU
3	A	95	LEU
3	A	97	MET
3	A	100	ARG
3	A	102	SER
3	A	110	SER
3	A	116	VAL
3	A	117	MET
3	A	123	GLU
3	A	140	THR
3	A	148	LEU
3	A	150	GLU
3	A	161	LEU
3	A	169	ASN
3	A	172	LEU
3	A	177	ILE
3	A	181	ARG
3	A	182	VAL
3	A	186	SER
3	A	197	ILE
3	A	201	LYS

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Mol	Chain	Res	Type
3	A	209	VAL
3	A	222	GLU
3	A	226	SER
3	A	238	LEU
3	A	241	ARG
3	A	254	SER
3	A	256	LEU
3	A	262	GLU
3	A	271	LEU
3	A	276	LYS
3	A	279	SER
3	A	299	MET
3	A	301	ARG
3	A	305	SER
3	A	309	ILE
3	A	311	GLN
3	A	316	THR
3	A	318	VAL
3	A	319	ASN
3	A	321	VAL
3	A	323	ASN
3	A	325	ILE
3	A	326	ARG
3	A	341	ASP
3	B	24	ARG
3	B	25	LYS
3	B	27	LEU
3	B	43	LYS
3	B	45	LEU
3	B	62	LYS
3	B	86	LYS
3	B	95	LEU
3	B	114	SER
3	B	122	LYS
3	B	129	GLU
3	B	130	ARG
3	B	133	GLN
3	B	193	MET
3	B	206	THR
3	B	209	VAL
3	B	211	LYS
3	B	219	LYS

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Mol	Chain	Res	Type
3	B	271	LEU
3	B	278	ASP
3	B	281	GLN
3	B	289	HIS
3	B	293	VAL
3	B	301	ARG
3	B	320	ILE
3	B	325	ILE
3	B	331	GLU
3	B	337	ARG
3	B	338	LEU
3	B	339	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
3	A	111	ASN
3	A	144	GLN
3	A	289	HIS
3	A	311	GLN
3	B	89	GLN
3	B	90	GLN
3	B	94	GLN
3	B	111	ASN

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 oligosaccharides 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	C	35/35 (100%)	-0.05	4 (11%) 10 7	24, 44, 132, 182	0
2	D	34/34 (100%)	-0.32	2 (5%) 28 21	26, 41, 91, 105	0
3	A	322/324 (99%)	0.50	24 (7%) 20 15	33, 60, 107, 122	0
3	B	322/324 (99%)	0.07	15 (4%) 36 29	25, 43, 91, 121	0
All	All	713/717 (99%)	0.24	45 (6%) 26 19	24, 51, 103, 182	0

All (45) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	A	204	VAL	7.2
3	B	328	LEU	4.6
3	A	199	ARG	4.3
3	A	203	LEU	3.9
1	C	18	DT	3.8
3	A	207	ALA	3.7
1	C	20	DT	3.6
1	C	19	DA	3.5
3	B	325	ILE	3.3
3	A	198	GLY	3.2
3	A	201	LYS	3.1
3	A	316	THR	3.1
3	B	20	SER	3.1
3	B	320	ILE	3.1
3	B	327	ASN	3.0
3	B	323	ASN	3.0
3	A	190	GLY	2.7
3	A	202	THR	2.7
3	B	330	SER	2.7
2	D	17	DA	2.6
3	B	64	PHE	2.6

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Mol	Chain	Res	Type	RSRZ
3	A	196	HIS	2.5
3	A	39	GLU	2.5
3	A	232	ASP	2.4
3	A	209	VAL	2.3
3	A	266	GLU	2.2
3	B	316	THR	2.2
3	A	312	ALA	2.2
3	A	206	THR	2.2
3	A	205	SER	2.2
3	B	324	TYR	2.2
3	B	281	GLN	2.1
3	A	317	ASN	2.1
2	D	18	DT	2.1
3	B	266	GLU	2.1
3	A	227	VAL	2.1
1	C	1	DT	2.1
3	A	189	ASP	2.1
3	A	197	ILE	2.1
3	A	149	MET	2.0
3	A	322	MET	2.0
3	A	200	THR	2.0
3	B	28	MET	2.0
3	B	63	TRP	2.0
3	B	336	VAL	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](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.