



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 02:49 PM UTC

PDB ID : 3LUB / pdb_00003lub
Title : Crystal structure of Putative creatinine amidohydrolase (YP_211512.1) from Bacteroides fragilis NCTC 9343 at 2.11 Å resolution
Authors : Joint Center for Structural Genomics (JCSG)
Deposited on : 2010-02-17
Resolution : 2.11 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
Mogul : 2022.3.0, CSD as543be (2022)
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

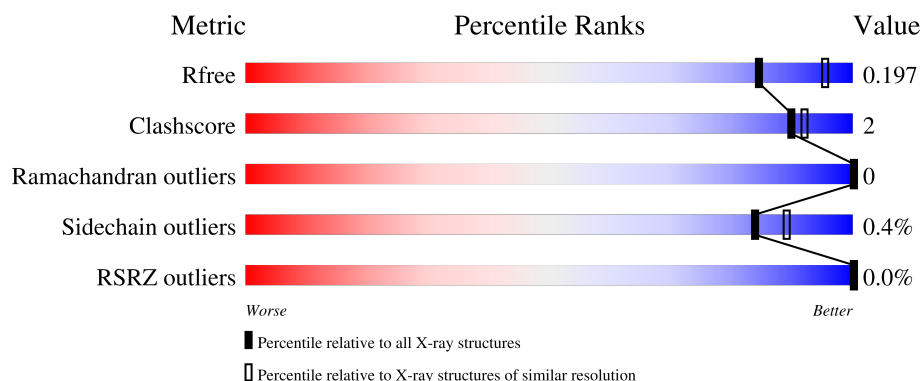
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.11 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	8290 (2.14-2.10)
Clashscore	190562	8817 (2.14-2.10)
Ramachandran outliers	187476	8738 (2.14-2.10)
Sidechain outliers	187428	8739 (2.14-2.10)
RSRZ outliers	180081	8294 (2.14-2.10)

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	A	254	94% 5%
1	B	254	95% 5%
1	C	254	94% 6%
1	D	254	96% .
1	E	254	96% .

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Mol	Chain	Length	Quality of chain
1	F	254	96%
1	G	254	93% 6%
1	H	254	96%
1	I	254	95%
1	J	254	94% 6%
1	K	254	93% 6%
1	L	254	93% 7%

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 26160 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 Putative creatinine amidohydrolase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	253	Total	C	N	O	S	Se	0	1	0
			1978	1268	333	366	4	7			
1	B	253	Total	C	N	O	S	Se	0	1	0
			1978	1265	332	370	4	7			
1	C	253	Total	C	N	O	S	Se	0	3	0
			1988	1273	333	371	4	7			
1	D	253	Total	C	N	O	S	Se	0	3	0
			1989	1274	334	370	4	7			
1	E	253	Total	C	N	O	S	Se	0	3	0
			1991	1275	335	370	4	7			
1	F	254	Total	C	N	O	S	Se	0	1	0
			1985	1271	335	368	4	7			
1	G	253	Total	C	N	O	S	Se	0	2	0
			1984	1271	334	368	4	7			
1	H	253	Total	C	N	O	S	Se	0	6	0
			2018	1293	340	374	4	7			
1	I	253	Total	C	N	O	S	Se	0	3	0
			1985	1271	333	370	4	7			
1	J	253	Total	C	N	O	S	Se	0	1	0
			1981	1268	333	369	4	7			
1	K	253	Total	C	N	O	S	Se	0	2	0
			1985	1272	334	368	4	7			
1	L	253	Total	C	N	O	S	Se	0	2	0
			1982	1269	333	369	4	7			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	GLY	-	expression tag	UNP Q5LE76
B	0	GLY	-	expression tag	UNP Q5LE76
C	0	GLY	-	expression tag	UNP Q5LE76
D	0	GLY	-	expression tag	UNP Q5LE76
E	0	GLY	-	expression tag	UNP Q5LE76

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Chain	Residue	Modelled	Actual	Comment	Reference
F	0	GLY	-	expression tag	UNP Q5LE76
G	0	GLY	-	expression tag	UNP Q5LE76
H	0	GLY	-	expression tag	UNP Q5LE76
I	0	GLY	-	expression tag	UNP Q5LE76
J	0	GLY	-	expression tag	UNP Q5LE76
K	0	GLY	-	expression tag	UNP Q5LE76
L	0	GLY	-	expression tag	UNP Q5LE76

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	Zn 2	0	0
2	B	2	Total 2	Zn 2	0	0
2	C	2	Total 2	Zn 2	0	0
2	D	2	Total 2	Zn 2	0	0
2	E	2	Total 2	Zn 2	0	0
2	F	2	Total 2	Zn 2	0	0
2	G	2	Total 2	Zn 2	0	0
2	H	2	Total 2	Zn 2	0	0
2	I	2	Total 2	Zn 2	0	0
2	J	2	Total 2	Zn 2	0	0
2	K	2	Total 2	Zn 2	0	0
2	L	2	Total 2	Zn 2	0	0

- Molecule 3 is CALCIUM ION (CCD ID: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total 1	Ca 1	0	0
3	C	1	Total 1	Ca 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	D	2	Total 2	Ca 2	0	0
3	E	2	Total 2	Ca 2	0	0
3	F	1	Total 1	Ca 1	0	0
3	G	1	Total 1	Ca 1	0	0
3	I	2	Total 2	Ca 2	0	0
3	J	1	Total 1	Ca 1	0	0
3	L	1	Total 1	Ca 1	0	0

- Molecule 4 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total 1	Cl 1	0	0
4	B	1	Total 1	Cl 1	0	0
4	C	1	Total 1	Cl 1	0	0
4	D	1	Total 1	Cl 1	0	0
4	E	2	Total 2	Cl 2	0	0
4	F	1	Total 1	Cl 1	0	0
4	G	1	Total 1	Cl 1	0	0
4	H	1	Total 1	Cl 1	0	0
4	I	1	Total 1	Cl 1	0	0
4	J	1	Total 1	Cl 1	0	0
4	K	1	Total 1	Cl 1	0	0
4	L	1	Total 1	Cl 1	0	0

- Molecule 5 is 1,2-ETHANEDIOL (CCD ID: EDO) (formula: $C_2H_6O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
5	B	1	Total	C	O	0	0
			4	2	2		
5	C	1	Total	C	O	0	0
			4	2	2		
5	C	1	Total	C	O	0	0
			4	2	2		
5	D	1	Total	C	O	0	0
			4	2	2		
5	D	1	Total	C	O	0	0
			4	2	2		
5	E	1	Total	C	O	0	0
			4	2	2		
5	G	1	Total	C	O	0	0
			4	2	2		
5	J	1	Total	C	O	0	0
			4	2	2		
5	K	1	Total	C	O	0	0
			4	2	2		
5	K	1	Total	C	O	0	0
			4	2	2		
5	L	1	Total	C	O	0	0
			4	2	2		

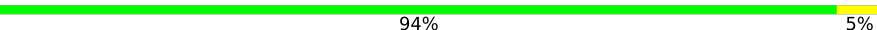
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	167	Total 167	O 167	0	0
6	B	150	Total 150	O 150	0	0
6	C	197	Total 198	O 198	0	1
6	D	212	Total 212	O 212	0	0
6	E	209	Total 209	O 209	0	0
6	F	198	Total 198	O 198	0	0
6	G	176	Total 176	O 176	0	0
6	H	231	Total 231	O 231	0	0
6	I	204	Total 204	O 204	0	0
6	J	176	Total 176	O 176	0	0
6	K	148	Total 148	O 148	0	0
6	L	154	Total 154	O 154	0	0

3 Residue-property plots [i](#)

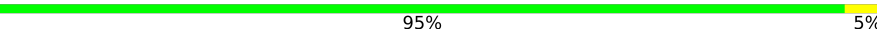
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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.

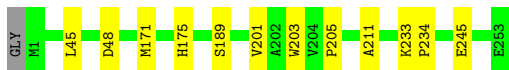
- Molecule 1: Putative creatinine amidohydrolase

Chain A:  94% 5%

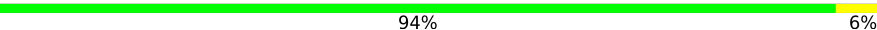


- Molecule 1: Putative creatinine amidohydrolase

Chain B:  95% 5%

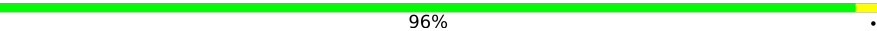


- Molecule 1: Putative creatinine amidohydrolase

Chain C:  94% 6%

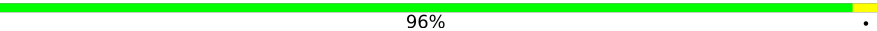


- Molecule 1: Putative creatinine amidohydrolase

Chain D:  96%

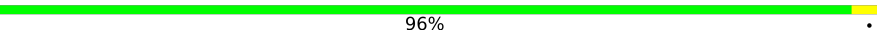


- Molecule 1: Putative creatinine amidohydrolase

Chain E:  96%



- Molecule 1: Putative creatinine amidohydrolase

Chain F:  96%



- Molecule 1: Putative creatinine amidohydrolase

Chain G: 93% 6%



- Molecule 1: Putative creatinine amidohydrolase

Chain H: 96% .



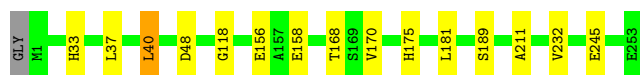
- Molecule 1: Putative creatinine amidohydrolase

Chain I: 95% .



- Molecule 1: Putative creatinine amidohydrolase

Chain J: 94% 6%



- Molecule 1: Putative creatinine amidohydrolase

Chain K: 93% 6%



- Molecule 1: Putative creatinine amidohydrolase

Chain L: 93% 7%



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	55.91Å 156.79Å 170.16Å 90.00° 95.29° 90.00°	Depositor
Resolution (Å)	43.03 – 2.11 43.03 – 2.11	Depositor EDS
% Data completeness (in resolution range)	99.8 (43.03-2.11) 99.8 (43.03-2.11)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.67 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5.2.0019, PHENIX	Depositor
R, R_{free}	0.151 , 0.193 0.158 , 0.197	Depositor DCC
R_{free} test set	8604 reflections (5.14%)	wwPDB-VP
Wilson B-factor (Å ²)	23.7	Xtriage
Anisotropy	0.552	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 39.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	26160	wwPDB-VP
Average B, all atoms (Å ²)	25.0	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 23.87 % 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 4.2787e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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: EDO, CA, CL, ZN

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	0.92	1/2028 (0.0%)	0.89	0/2745
1	B	0.91	0/2028	0.87	0/2746
1	C	0.91	0/2044	0.88	0/2767
1	D	0.91	1/2044 (0.0%)	0.87	0/2763
1	E	0.91	0/2047	0.84	0/2769
1	F	0.91	0/2034	0.88	0/2750
1	G	0.92	2/2037 (0.1%)	0.90	1/2756 (0.0%)
1	H	0.88	0/2077	0.86	1/2807 (0.0%)
1	I	0.91	0/2041	0.89	0/2763
1	J	0.93	1/2031 (0.0%)	0.91	2/2749 (0.1%)
1	K	0.89	0/2038	0.87	0/2757
1	L	0.90	3/2035 (0.1%)	0.88	2/2755 (0.1%)
All	All	0.91	8/24484 (0.0%)	0.88	6/33127 (0.0%)

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	J	118	GLY	C-O	-7.13	1.19	1.24
1	G	68	MSE	SE-CE	5.49	2.12	1.95
1	A	246	MSE	SE-CE	5.46	2.11	1.95
1	L	115	ILE	CA-CB	5.41	1.60	1.54
1	L	194	ILE	CA-CB	5.29	1.59	1.53
1	L	51	VAL	N-CA	5.12	1.52	1.46
1	G	179	VAL	CA-CB	5.10	1.61	1.54
1	D	5	VAL	CA-CB	5.07	1.60	1.54

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	69	PRO	O-C-N	5.40	123.69	121.15

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	H	221	LYS	N-CA-C	5.32	117.82	111.71
1	J	40	LEU	N-CA-C	5.20	118.75	112.93
1	L	204	VAL	CA-C-N	-5.08	114.68	119.76
1	L	204	VAL	C-N-CA	-5.08	114.68	119.76
1	J	156	GLU	CB-CA-C	-5.04	100.59	110.11

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	1978	0	1937	7	0
1	B	1978	0	1923	9	0
1	C	1988	0	1943	16	0
1	D	1989	0	1950	10	0
1	E	1991	0	1954	5	0
1	F	1985	0	1947	5	0
1	G	1984	0	1949	7	0
1	H	2018	0	1990	7	0
1	I	1985	0	1942	8	0
1	J	1981	0	1937	8	0
1	K	1985	0	1945	9	0
1	L	1982	0	1937	7	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0
2	D	2	0	0	0	0
2	E	2	0	0	0	0
2	F	2	0	0	0	0
2	G	2	0	0	0	0
2	H	2	0	0	0	0
2	I	2	0	0	0	0
2	J	2	0	0	0	0
2	K	2	0	0	0	0
2	L	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	1	0	0	0	0
3	C	1	0	0	0	0
3	D	2	0	0	0	0
3	E	2	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	I	2	0	0	0	0
3	J	1	0	0	0	0
3	L	1	0	0	0	0
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
4	E	2	0	0	0	0
4	F	1	0	0	0	0
4	G	1	0	0	0	0
4	H	1	0	0	0	0
4	I	1	0	0	0	0
4	J	1	0	0	0	0
4	K	1	0	0	0	0
4	L	1	0	0	0	0
5	B	4	0	6	0	0
5	C	8	0	12	1	0
5	D	8	0	12	3	0
5	E	4	0	6	0	0
5	G	4	0	6	0	0
5	J	4	0	6	0	0
5	K	8	0	12	0	0
5	L	4	0	6	0	0
6	A	167	0	0	1	0
6	B	150	0	0	0	0
6	C	198	0	0	0	0
6	D	212	0	0	1	0
6	E	209	0	0	1	0
6	F	198	0	0	0	0
6	G	176	0	0	1	0
6	H	231	0	0	3	0
6	I	204	0	0	2	0
6	J	176	0	0	0	0
6	K	148	0	0	1	0
6	L	154	0	0	0	0
All	All	26160	0	23420	84	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 2.

All (84) 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:H:134[A]:GLU:OE2	6:H:574:HOH:O	2.03	0.74
1:I:186[A]:ASP:OD1	6:I:1360:HOH:O	2.11	0.68
1:C:16:LYS:HZ2	1:D:35:LEU:HD22	1.66	0.61
1:A:230:ARG:HD3	1:H:230[A]:ARG:NH1	2.17	0.60
1:I:8:SER:HA	1:J:40:LEU:HD12	1.87	0.57
1:B:189:SER:HA	1:B:211:ALA:O	2.05	0.56
1:D:81:ARG:HE	5:D:257:EDO:H11	1.70	0.56
1:C:16:LYS:NZ	1:D:35:LEU:HD22	2.20	0.55
1:D:189:SER:HA	1:D:211:ALA:O	2.06	0.55
1:H:230[A]:ARG:NH1	6:H:260:HOH:O	2.39	0.55
1:D:17:GLU:OE1	1:D:17:GLU:N	2.37	0.55
1:C:212[B]:THR:CG2	1:C:216:GLY:O	2.56	0.54
1:G:1:MSE:HG3	1:G:9:VAL:HG21	1.90	0.54
1:G:189:SER:HA	1:G:211:ALA:O	2.08	0.54
1:K:1:MSE:HG3	1:K:9:VAL:HG21	1.91	0.53
1:A:189:SER:HA	1:A:211:ALA:O	2.10	0.51
1:J:189:SER:HA	1:J:211:ALA:O	2.10	0.51
1:E:123:ASN:HB3	6:E:998:HOH:O	2.10	0.51
1:C:81:ARG:HE	5:C:255:EDO:H12	1.76	0.50
1:L:166:SER:O	1:L:170:VAL:HG23	2.12	0.49
1:D:107:VAL:HG23	5:D:256:EDO:H12	1.94	0.49
1:C:212[B]:THR:HG22	1:C:213:VAL:H	1.77	0.49
5:D:257:EDO:H12	6:D:1178:HOH:O	2.13	0.49
1:K:166:SER:O	1:K:170:VAL:HG23	2.12	0.48
1:L:165:GLU:OE2	1:L:227:LYS:NZ	2.46	0.48
1:C:212[B]:THR:HG22	1:C:213:VAL:N	2.27	0.48
1:C:212[B]:THR:HG21	1:C:216:GLY:O	2.14	0.47
1:C:189:SER:HA	1:C:211:ALA:O	2.14	0.47
1:L:189:SER:HA	1:L:211:ALA:O	2.15	0.47
1:J:33:HIS:HB3	1:J:37:LEU:HB2	1.96	0.47
1:K:123:ASN:HB3	6:K:1405:HOH:O	2.16	0.46
1:J:245:GLU:OE1	1:K:196:SER:OG	2.28	0.46
1:B:45:LEU:HD21	1:B:171:MSE:HE2	1.96	0.46
1:L:7:LEU:HD23	1:L:69:PRO:HD3	1.98	0.46
1:E:189:SER:HA	1:E:211:ALA:O	2.16	0.45
1:F:166:SER:O	1:F:170:VAL:HG23	2.16	0.45
1:G:194:ILE:HG23	1:L:245:GLU:HB3	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:95:GLN:NE2	6:G:1256:HOH:O	2.25	0.45
1:E:114:LEU:HD22	1:E:243:PHE:HE1	1.82	0.45
1:I:208:TRP:CD1	1:I:212[B]:THR:HG21	2.51	0.45
1:C:16:LYS:NZ	1:D:35:LEU:CD2	2.79	0.45
1:J:170:VAL:HG13	1:J:232:VAL:HG11	1.98	0.45
1:A:47:HIS:O	1:A:51:VAL:HG23	2.17	0.45
1:C:204:VAL:HG13	1:C:205:PRO:HD2	1.99	0.45
1:B:201:VAL:HG13	1:C:148:VAL:HG13	1.99	0.44
1:C:212[B]:THR:HG23	1:C:216:GLY:O	2.17	0.44
1:L:52:GLU:OE1	1:L:174:TYR:OH	2.18	0.44
1:C:16:LYS:HZ2	1:D:35:LEU:CD2	2.30	0.44
1:C:33:HIS:HB3	1:C:37:LEU:HB2	1.98	0.44
1:A:123:ASN:HB3	6:A:897:HOH:O	2.17	0.44
1:K:184:ALA:HB3	1:K:221[B]:LYS:HE3	2.00	0.43
1:K:45:LEU:HD21	1:K:171:MSE:HE2	2.01	0.43
1:H:190:LYS:NZ	1:I:253:GLU:O	2.51	0.42
1:G:204:VAL:HG13	1:G:205:PRO:HD2	2.01	0.42
1:J:48:ASP:OD2	1:J:175:HIS:NE2	2.52	0.42
1:K:33:HIS:HB3	1:K:37:LEU:HB2	2.01	0.42
1:G:33:HIS:HB3	1:G:37:LEU:HB2	2.01	0.42
1:G:45:LEU:HD22	1:G:170:VAL:HG12	2.01	0.42
1:J:245:GLU:HB3	1:K:194:ILE:HG23	2.02	0.42
1:D:45:LEU:HD22	1:D:170:VAL:HG12	2.01	0.42
1:B:48:ASP:OD2	1:B:175:HIS:NE2	2.53	0.42
1:F:189:SER:HA	1:F:211:ALA:O	2.20	0.42
1:I:69:PRO:HA	1:I:70:PRO:HD3	1.91	0.42
1:J:168:THR:HG21	1:J:181:LEU:HD13	2.01	0.42
1:I:112:LYS:NZ	6:I:2212:HOH:O	2.49	0.41
1:B:171:MSE:SE	1:B:175:HIS:HB2	2.71	0.41
1:F:33:HIS:HB3	1:F:37:LEU:HB2	2.03	0.41
1:H:189:SER:HA	1:H:211:ALA:O	2.20	0.41
1:K:189:SER:HA	1:K:211:ALA:O	2.19	0.41
1:A:207:HIS:HB2	1:F:252:TYR:CE2	2.56	0.41
1:E:61[B]:SER:OG	1:E:63:VAL:HG23	2.21	0.41
1:I:1:MSE:HE3	1:I:1:MSE:HB2	1.97	0.41
1:B:203:TRP:CZ3	1:B:205:PRO:HD3	2.56	0.41
1:I:7:LEU:HD23	1:I:69:PRO:HD3	2.02	0.41
1:A:73:PHE:HB3	1:A:89:THR:HG21	2.03	0.41
1:B:245:GLU:OE1	1:C:196:SER:OG	2.34	0.41
1:F:7:LEU:HD23	1:F:69:PRO:HD3	2.03	0.41
1:A:26:PRO:O	1:A:70:PRO:HA	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:245:GLU:HB3	1:C:194:ILE:HG23	2.02	0.40
1:H:23:ILE:C	1:H:24:ILE:HD13	2.46	0.40
1:H:112:LYS:HD2	6:H:1268:HOH:O	2.21	0.40
1:L:50:ALA:HB2	1:L:116:LEU:HD23	2.03	0.40
1:B:233:LYS:N	1:B:234:PRO:HD2	2.36	0.40
1:D:245:GLU:HB3	1:E:194:ILE:HG23	2.04	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	
1	A	252/254 (99%)	245 (97%)	7 (3%)	0	100	100
1	B	252/254 (99%)	248 (98%)	4 (2%)	0	100	100
1	C	254/254 (100%)	247 (97%)	7 (3%)	0	100	100
1	D	253/254 (100%)	248 (98%)	5 (2%)	0	100	100
1	E	254/254 (100%)	249 (98%)	5 (2%)	0	100	100
1	F	253/254 (100%)	248 (98%)	5 (2%)	0	100	100
1	G	253/254 (100%)	246 (97%)	7 (3%)	0	100	100
1	H	257/254 (101%)	253 (98%)	4 (2%)	0	100	100
1	I	254/254 (100%)	247 (97%)	7 (3%)	0	100	100
1	J	252/254 (99%)	245 (97%)	7 (3%)	0	100	100
1	K	253/254 (100%)	248 (98%)	5 (2%)	0	100	100
1	L	253/254 (100%)	247 (98%)	6 (2%)	0	100	100
All	All	3040/3048 (100%)	2971 (98%)	69 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	210/204 (103%)	209 (100%)	1 (0%)	81	87
1	B	210/204 (103%)	210 (100%)	0	100	100
1	C	212/204 (104%)	212 (100%)	0	100	100
1	D	212/204 (104%)	212 (100%)	0	100	100
1	E	213/204 (104%)	213 (100%)	0	100	100
1	F	211/204 (103%)	209 (99%)	2 (1%)	70	78
1	G	212/204 (104%)	211 (100%)	1 (0%)	81	87
1	H	216/204 (106%)	215 (100%)	1 (0%)	81	87
1	I	212/204 (104%)	211 (100%)	1 (0%)	81	87
1	J	211/204 (103%)	210 (100%)	1 (0%)	81	87
1	K	211/204 (103%)	210 (100%)	1 (0%)	81	87
1	L	211/204 (103%)	210 (100%)	1 (0%)	81	87
All	All	2541/2448 (104%)	2532 (100%)	9 (0%)	84	89

All (9) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	221	LYS
1	F	158	GLU
1	F	179	VAL
1	G	60	ARG
1	H	179	VAL
1	I	107	VAL
1	J	158	GLU
1	K	158	GLU
1	L	213	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	E	249	HIS
1	F	95	GLN
1	G	144	ASN
1	H	180	ASN
1	J	95	GLN
1	L	94	GLN
1	L	180	ASN

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 60 ligands modelled in this entry, 49 are monoatomic - leaving 11 for Mogul analysis.

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	$\# Z > 2$
5	EDO	J	255	-	3,3,3	0.38	0	2,2,2	0.25	0
5	EDO	C	255	-	3,3,3	0.32	0	2,2,2	0.32	0
5	EDO	D	257	-	3,3,3	0.44	0	2,2,2	0.33	0
5	EDO	K	254	-	3,3,3	0.35	0	2,2,2	0.59	0
5	EDO	C	256	-	3,3,3	0.40	0	2,2,2	0.44	0
5	EDO	E	256	-	3,3,3	0.48	0	2,2,2	0.44	0
5	EDO	L	255	-	3,3,3	0.45	0	2,2,2	0.48	0
5	EDO	G	255	-	3,3,3	0.31	0	2,2,2	0.48	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	EDO	K	255	-	3,3,3	0.36	0	2,2,2	0.38	0
5	EDO	D	256	-	3,3,3	0.62	0	2,2,2	0.16	0
5	EDO	B	254	-	3,3,3	0.36	0	2,2,2	0.55	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
5	EDO	J	255	-	-	1/1/1/1	-
5	EDO	C	255	-	-	0/1/1/1	-
5	EDO	D	257	-	-	1/1/1/1	-
5	EDO	K	254	-	-	1/1/1/1	-
5	EDO	C	256	-	-	0/1/1/1	-
5	EDO	E	256	-	-	0/1/1/1	-
5	EDO	L	255	-	-	0/1/1/1	-
5	EDO	G	255	-	-	0/1/1/1	-
5	EDO	K	255	-	-	1/1/1/1	-
5	EDO	D	256	-	-	0/1/1/1	-
5	EDO	B	254	-	-	1/1/1/1	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	K	255	EDO	O1-C1-C2-O2
5	D	257	EDO	O1-C1-C2-O2
5	K	254	EDO	O1-C1-C2-O2
5	J	255	EDO	O1-C1-C2-O2
5	B	254	EDO	O1-C1-C2-O2

There are no ring outliers.

3 monomers are involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	255	EDO	1	0
5	D	257	EDO	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	D	256	EDO	1	0

5.7 Other polymers [i](#)

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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	246/254 (96%)	-0.52	0 100 100	11, 23, 37, 49	1 (0%)
1	B	246/254 (96%)	-0.53	0 100 100	14, 23, 36, 48	1 (0%)
1	C	246/254 (96%)	-0.57	0 100 100	15, 23, 36, 50	3 (1%)
1	D	246/254 (96%)	-0.61	0 100 100	14, 22, 35, 50	3 (1%)
1	E	246/254 (96%)	-0.57	0 100 100	15, 23, 36, 48	3 (1%)
1	F	247/254 (97%)	-0.52	1 (0%) 88 90	14, 23, 36, 48	1 (0%)
1	G	246/254 (96%)	-0.54	0 100 100	15, 23, 36, 47	2 (0%)
1	H	246/254 (96%)	-0.61	0 100 100	13, 22, 35, 47	6 (2%)
1	I	246/254 (96%)	-0.60	0 100 100	12, 23, 36, 49	3 (1%)
1	J	246/254 (96%)	-0.60	0 100 100	14, 23, 36, 50	1 (0%)
1	K	246/254 (96%)	-0.51	0 100 100	15, 23, 36, 52	2 (0%)
1	L	246/254 (96%)	-0.49	0 100 100	15, 23, 37, 49	2 (0%)
All	All	2953/3048 (96%)	-0.56	1 (0%) 100 100	11, 23, 36, 52	28 (0%)

All (1) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	0	GLY	2.5

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 ⓘ

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
5	EDO	D	257	4/4	0.78	0.16	33,37,40,49	0
5	EDO	K	255	4/4	0.87	0.09	35,36,37,45	0
3	CA	F	254	1/1	0.88	0.11	66,66,66,66	0
5	EDO	K	254	4/4	0.90	0.12	29,29,30,39	0
5	EDO	C	255	4/4	0.90	0.09	21,26,30,33	0
5	EDO	E	256	4/4	0.91	0.11	31,34,36,38	0
3	CA	A	254	1/1	0.92	0.07	77,77,77,77	0
3	CA	E	254	1/1	0.92	0.07	66,66,66,66	0
5	EDO	G	255	4/4	0.92	0.12	30,32,39,40	0
5	EDO	C	256	4/4	0.92	0.11	27,33,34,34	0
5	EDO	D	256	4/4	0.92	0.09	44,45,46,51	0
3	CA	I	255	1/1	0.94	0.07	56,56,56,56	0
4	CL	E	257	1/1	0.94	0.09	52,52,52,52	0
5	EDO	L	255	4/4	0.94	0.07	26,28,32,34	0
5	EDO	J	255	4/4	0.95	0.09	26,31,33,33	0
5	EDO	B	254	4/4	0.95	0.08	25,27,31,34	0
3	CA	D	254	1/1	0.96	0.05	39,39,39,39	0
3	CA	C	254	1/1	0.96	0.05	47,47,47,47	0
3	CA	E	255	1/1	0.97	0.06	49,49,49,49	0
3	CA	J	254	1/1	0.97	0.08	47,47,47,47	0
3	CA	G	254	1/1	0.97	0.07	55,55,55,55	0
4	CL	L	256	1/1	0.97	0.06	47,47,47,47	0
3	CA	I	254	1/1	0.97	0.04	44,44,44,44	0
4	CL	C	257	1/1	0.98	0.04	38,38,38,38	0
4	CL	D	258	1/1	0.98	0.04	40,40,40,40	0
3	CA	D	255	1/1	0.98	0.06	46,46,46,46	0
4	CL	F	255	1/1	0.98	0.05	36,36,36,36	0
4	CL	H	254	1/1	0.98	0.04	37,37,37,37	0
4	CL	I	256	1/1	0.98	0.06	37,37,37,37	0
3	CA	L	254	1/1	0.98	0.04	57,57,57,57	0
4	CL	A	255	1/1	0.98	0.14	47,47,47,47	0
4	CL	B	255	1/1	0.98	0.06	38,38,38,38	0
2	ZN	I	301	1/1	0.99	0.04	33,33,33,33	0
4	CL	J	256	1/1	0.99	0.04	37,37,37,37	0
4	CL	K	256	1/1	0.99	0.07	38,38,38,38	0
2	ZN	J	301	1/1	0.99	0.04	35,35,35,35	0
2	ZN	K	301	1/1	0.99	0.06	38,38,38,38	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	ZN	L	301	1/1	0.99	0.06	42,42,42,42	0
2	ZN	L	302	1/1	0.99	0.03	23,23,23,23	0
2	ZN	A	301	1/1	0.99	0.08	40,40,40,40	0
2	ZN	B	301	1/1	0.99	0.05	39,39,39,39	0
2	ZN	C	301	1/1	0.99	0.07	32,32,32,32	0
2	ZN	D	301	1/1	0.99	0.06	28,28,28,28	0
2	ZN	E	301	1/1	0.99	0.07	32,32,32,32	0
2	ZN	G	301	1/1	0.99	0.04	33,33,33,33	0
4	CL	G	256	1/1	0.99	0.04	39,39,39,39	0
2	ZN	H	301	1/1	0.99	0.06	35,35,35,35	0
2	ZN	F	301	1/1	1.00	0.06	34,34,34,34	0
2	ZN	F	302	1/1	1.00	0.02	21,21,21,21	0
2	ZN	C	302	1/1	1.00	0.01	17,17,17,17	0
2	ZN	G	302	1/1	1.00	0.02	20,20,20,20	0
2	ZN	B	302	1/1	1.00	0.02	20,20,20,20	0
2	ZN	H	302	1/1	1.00	0.03	18,18,18,18	0
2	ZN	D	302	1/1	1.00	0.01	18,18,18,18	0
4	CL	E	258	1/1	1.00	0.04	36,36,36,36	0
2	ZN	I	302	1/1	1.00	0.03	20,20,20,20	0
2	ZN	A	302	1/1	1.00	0.02	23,23,23,23	0
2	ZN	J	302	1/1	1.00	0.02	17,17,17,17	0
2	ZN	E	302	1/1	1.00	0.02	20,20,20,20	0
2	ZN	K	302	1/1	1.00	0.02	22,22,22,22	0

6.5 Other polymers [i](#)

There are no such residues in this entry.