



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 06:18 AM GMT

PDB ID : 2WKN
Title : GAMMA LACTAMASE FROM DELFTIA ACIDOVORANS
Authors : Isupov, M.N.; Line, K.; Gonsalvez, I.S.; Gange-Harris, P.; Lanzotti, M.; Saneei, V.; Littlechild, J.A.
Deposited on : 2009-06-16
Resolution : 2.08 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
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

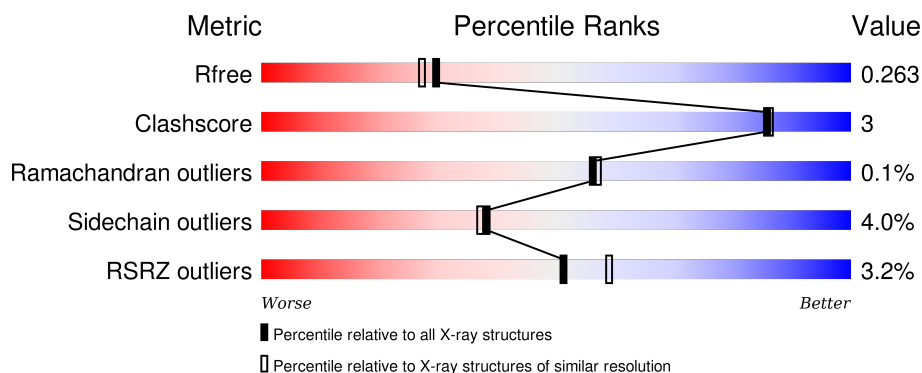
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.08 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}	91344	4546 (2.10-2.06)
Clashscore	102246	5101 (2.10-2.06)
Ramachandran outliers	100387	5048 (2.10-2.06)
Sidechain outliers	100360	5049 (2.10-2.06)
RSRZ outliers	91569	4556 (2.10-2.06)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	409	<div> <div>2%</div> <div>92%</div> <div>7%</div> </div>
1	B	409	<div> <div>5%</div> <div>89%</div> <div>10%</div> </div>
1	C	409	<div> <div>4%</div> <div>93%</div> <div>7%</div> </div>
1	D	409	<div> <div>%</div> <div>91%</div> <div>8%</div> </div>
1	E	409	<div> <div>2%</div> <div>91%</div> <div>8%</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	409	<div><div></div><div>4%</div><div>92%</div><div>7%</div></div>
1	G	409	<div><div></div><div>3%</div><div>91%</div><div>7%</div></div>
1	H	409	<div><div></div><div>5%</div><div>91%</div><div>7%</div></div>

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 26920 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 FORMAMIDASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	408	Total	C	N	O	S	0	5	0
			3149	2010	531	594	14			
1	B	408	Total	C	N	O	S	0	1	0
			3127	1994	529	590	14			
1	C	408	Total	C	N	O	S	0	1	0
			3130	1996	529	591	14			
1	D	408	Total	C	N	O	S	0	2	0
			3134	2001	530	589	14			
1	E	408	Total	C	N	O	S	0	1	0
			3127	1994	529	590	14			
1	F	408	Total	C	N	O	S	0	1	0
			3129	1995	529	591	14			
1	G	408	Total	C	N	O	S	0	0	0
			3124	1992	529	589	14			
1	H	408	Total	C	N	O	S	0	2	0
			3136	2000	529	593	14			

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	G	2	Total	Zn	0	0
			2	2		
2	D	2	Total	Zn	0	0
			2	2		
2	E	2	Total	Zn	0	0
			2	2		
2	H	2	Total	Zn	0	0
			2	2		
2	B	2	Total	Zn	0	0
			2	2		
2	C	2	Total	Zn	0	0
			2	2		

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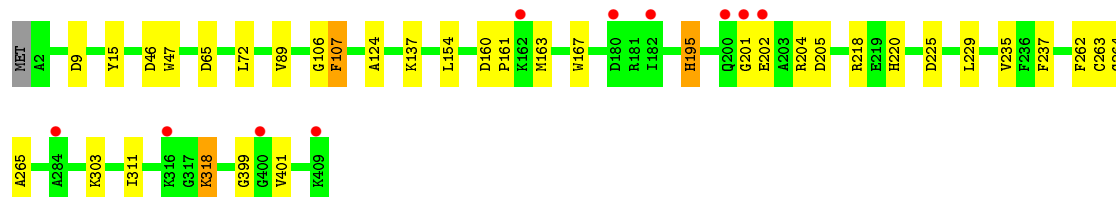
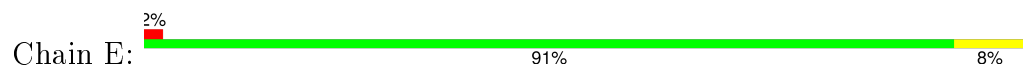
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	Zn 2	0	0
2	F	2	Total 2	Zn 2	0	0

- Molecule 3 is water.

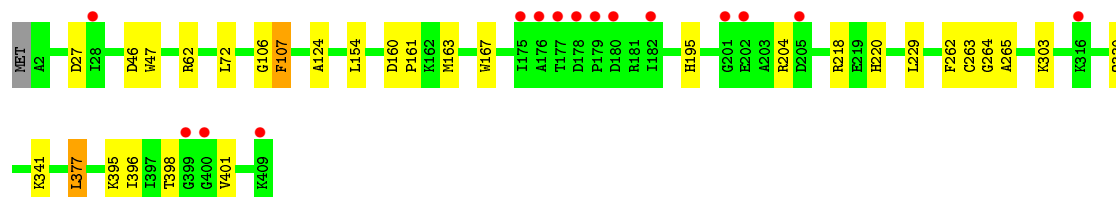
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	332	Total 332	O 332	0	0
3	B	219	Total 219	O 219	0	0
3	C	197	Total 197	O 197	0	0
3	D	269	Total 269	O 269	0	0
3	E	249	Total 249	O 249	0	0
3	F	250	Total 250	O 250	0	0
3	G	166	Total 166	O 166	0	0
3	H	166	Total 166	O 166	0	0



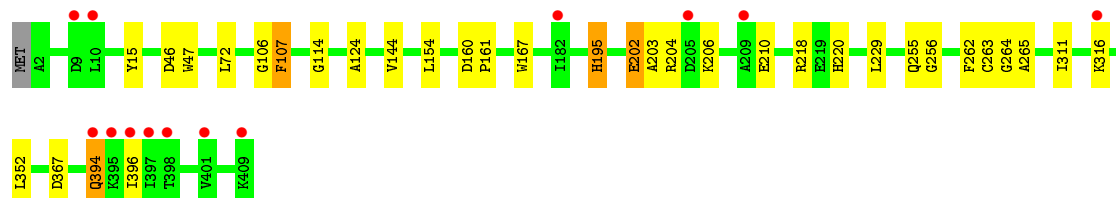
• Molecule 1: FORMAMIDASE



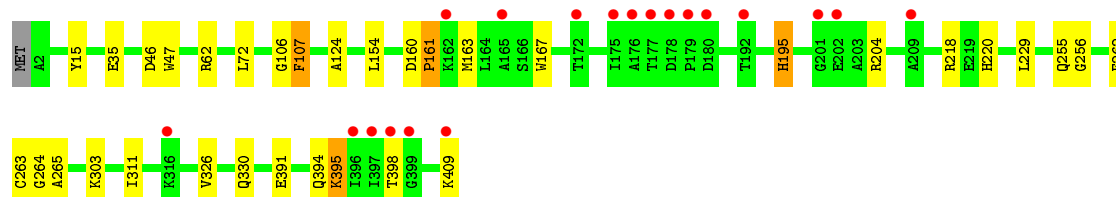
• Molecule 1: FORMAMIDASE



• Molecule 1: FORMAMIDASE



• Molecule 1: FORMAMIDASE



4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	63.87Å 94.62Å 152.30Å 105.71° 90.27° 108.46°	Depositor
Resolution (Å)	24.78 – 2.08 24.78 – 2.08	Depositor EDS
% Data completeness (in resolution range)	90.8 (24.78-2.08) 73.9 (24.78-2.08)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.31 (at 2.08Å)	Xtriage
Refinement program	REFMAC 5.5.0088	Depositor
R, R_{free}	0.220 , 0.269 0.213 , 0.263	Depositor DCC
R_{free} test set	3032 reflections (2.00%)	DCC
Wilson B-factor (Å ²)	32.3	Xtriage
Anisotropy	0.683	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 42.1	EDS
Estimated twinning fraction	0.179 for h,-h-k,-l	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	0 of 154713 reflections	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	26920	wwPDB-VP
Average B, all atoms (Å ²)	37.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 8.25% 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, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.57	0/3251	0.72	3/4422 (0.1%)
1	B	0.61	0/3217	0.66	1/4376 (0.0%)
1	C	0.59	0/3220	0.65	0/4381
1	D	0.57	0/3227	0.63	0/4389
1	E	0.55	0/3217	0.63	0/4376
1	F	0.55	0/3219	0.66	2/4379 (0.0%)
1	G	0.57	0/3211	0.63	0/4368
1	H	0.58	0/3229	0.64	1/4392 (0.0%)
All	All	0.57	0/25791	0.65	7/35083 (0.0%)

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	62	ARG	NE-CZ-NH1	-16.29	112.16	120.30
1	A	62	ARG	NE-CZ-NH2	16.01	128.30	120.30
1	A	62	ARG	CD-NE-CZ	6.75	133.05	123.60
1	B	60	ASP	CB-CG-OD1	5.60	123.34	118.30
1	F	377	LEU	CA-CB-CG	5.52	127.99	115.30
1	H	62	ARG	NE-CZ-NH1	5.34	122.97	120.30
1	F	62	ARG	NE-CZ-NH2	-5.00	117.80	120.30

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	3149	0	3056	17	1
1	B	3127	0	3025	26	0
1	C	3130	0	3026	14	1
1	D	3134	0	3042	25	0
1	E	3127	0	3025	19	0
1	F	3129	0	3024	11	0
1	G	3124	0	3020	20	0
1	H	3136	0	3032	15	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
3	A	332	0	0	3	0
3	B	219	0	0	4	0
3	C	197	0	0	4	0
3	D	269	0	0	4	0
3	E	249	0	0	3	0
3	F	250	0	0	2	0
3	G	166	0	0	2	0
3	H	166	0	0	0	0
All	All	26920	0	24250	136	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 3.

All (136) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:62:ARG:HD2	1:B:63:ASP:OD1	1.61	1.00
1:A:62:ARG:HD2	1:A:63:ASP:OD1	1.74	0.86
1:F:264:GLY:HA2	1:F:265:ALA:HB3	1.59	0.83
1:G:264:GLY:HA2	1:G:265:ALA:HB3	1.60	0.81
1:H:264:GLY:HA2	1:H:265:ALA:HB3	1.61	0.81
1:E:264:GLY:HA2	1:E:265:ALA:HB3	1.64	0.80
1:C:264:GLY:HA2	1:C:265:ALA:HB3	1.63	0.79

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:264:GLY:HA2	1:D:265:ALA:HB3	1.66	0.76
1:D:229:LEU:HD21	1:D:235[B]:VAL:CG2	2.15	0.76
1:B:62:ARG:CD	1:B:63:ASP:OD1	2.34	0.76
1:B:303:LYS:HE3	1:D:303[B]:LYS:HG3	1.67	0.75
1:A:264:GLY:HA2	1:A:265:ALA:HB3	1.71	0.72
1:B:264:GLY:HA2	1:B:265:ALA:HB3	1.71	0.71
1:B:399:GLY:HA3	3:B:2208:HOH:O	1.95	0.67
1:A:137:LYS:HE2	3:A:2092:HOH:O	1.96	0.64
1:D:97:ARG:HD2	3:D:2063:HOH:O	1.97	0.63
1:D:229:LEU:HD21	1:D:235[B]:VAL:HG22	1.79	0.63
1:D:229:LEU:HD21	1:D:235[B]:VAL:HG21	1.80	0.61
1:A:304:ASP:HB3	3:A:2308:HOH:O	2.02	0.60
1:C:120:HIS:ND1	3:C:2071:HOH:O	2.32	0.59
1:C:311:ILE:HD13	1:D:218:ARG:HA	1.86	0.57
1:G:264:GLY:CA	1:G:265:ALA:HB3	2.34	0.57
1:F:264:GLY:CA	1:F:265:ALA:HB3	2.33	0.57
1:E:72:LEU:HD21	1:E:154:LEU:HD13	1.86	0.56
1:B:107:PHE:O	1:B:124:ALA:HA	2.07	0.55
1:B:160:ASP:HB2	1:B:161:PRO:HD2	1.89	0.54
1:D:204:ARG:C	1:D:204:ARG:HD3	2.29	0.54
1:E:218:ARG:HA	1:G:311:ILE:HD13	1.90	0.54
1:F:218:ARG:HA	1:H:311:ILE:HD13	1.91	0.53
1:D:9:ASP:OD2	1:E:9:ASP:OD2	2.27	0.53
1:B:72:LEU:HD21	1:B:154:LEU:HD13	1.90	0.53
1:C:106:GLY:O	1:C:263:CYS:HB3	2.08	0.52
1:A:264:GLY:CA	1:A:265:ALA:HB3	2.40	0.52
1:G:114:GLY:O	3:G:2062:HOH:O	2.19	0.52
1:E:264:GLY:CA	1:E:265:ALA:HB3	2.36	0.52
1:A:72:LEU:HD21	1:A:154:LEU:HD13	1.92	0.52
1:C:72:LEU:HD21	1:C:154:LEU:HD13	1.91	0.52
1:C:41:LYS:NZ	3:C:2016:HOH:O	2.42	0.52
1:D:264:GLY:CA	1:D:265:ALA:HB3	2.38	0.52
1:F:72:LEU:HD21	1:F:154:LEU:HD13	1.91	0.51
1:D:160:ASP:HB2	1:D:161:PRO:HD2	1.92	0.51
1:B:398:THR:HG22	1:B:399:GLY:H	1.75	0.51
1:E:160:ASP:HB2	1:E:161:PRO:HD2	1.92	0.51
1:H:326:VAL:O	1:H:330:GLN:HG2	2.11	0.51
1:D:72:LEU:HD21	1:D:154:LEU:HD13	1.92	0.51
1:G:160:ASP:HB2	1:G:161:PRO:HD2	1.92	0.51
1:A:160:ASP:HB2	1:A:161:PRO:HD2	1.92	0.51
1:H:160:ASP:HB2	1:H:161:PRO:HD2	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:264:GLY:CA	1:H:265:ALA:HB3	2.35	0.50
1:F:341:LYS:HE2	3:F:2220:HOH:O	2.11	0.50
1:B:65:ASP:OD1	1:B:67[A]:SER:OG	2.24	0.50
1:G:72:LEU:HD21	1:G:154:LEU:HD13	1.93	0.50
1:G:106:GLY:O	1:G:263:CYS:HB3	2.12	0.49
1:A:7:LYS:HE3	3:A:2003:HOH:O	2.12	0.49
1:G:316:LYS:NZ	3:G:2134:HOH:O	2.44	0.49
1:H:72:LEU:HD21	1:H:154:LEU:HD13	1.93	0.49
1:B:61:VAL:O	1:B:64:VAL:HG12	2.12	0.49
1:G:167:TRP:CD2	1:G:218:ARG:HD3	2.47	0.49
1:C:160:ASP:HB2	1:C:161:PRO:HD2	1.95	0.49
1:F:160:ASP:HB2	1:F:161:PRO:HD2	1.94	0.49
1:G:107:PHE:O	1:G:124:ALA:HA	2.13	0.49
1:H:167:TRP:CD2	1:H:218:ARG:HD3	2.49	0.48
1:C:41:LYS:NZ	3:C:2017:HOH:O	2.44	0.48
1:B:106:GLY:O	1:B:263:CYS:HB3	2.13	0.48
1:B:167:TRP:CD2	1:B:218:ARG:HD3	2.48	0.48
1:C:264:GLY:CA	1:C:265:ALA:HB3	2.38	0.48
1:D:167:TRP:CD2	1:D:218:ARG:HD3	2.48	0.48
1:E:107:PHE:O	1:E:124:ALA:HA	2.14	0.47
1:E:311:ILE:HD13	1:G:218:ARG:HA	1.97	0.47
1:H:107:PHE:O	1:H:124:ALA:HA	2.15	0.47
3:B:2159:HOH:O	1:D:303[A]:LYS:HE2	2.14	0.46
1:C:304:ASP:HB3	3:C:2178:HOH:O	2.15	0.46
1:B:264:GLY:HA3	1:B:265:ALA:O	2.15	0.46
1:F:167:TRP:CD2	1:F:218:ARG:HD3	2.50	0.46
1:A:167:TRP:CD2	1:A:218:ARG:HD3	2.50	0.46
1:B:394:GLN:O	1:B:396:ILE:HG12	2.16	0.46
1:B:97:ARG:HG3	1:B:270:GLY:HA2	1.97	0.46
1:E:137:LYS:HE2	3:E:2060:HOH:O	2.16	0.46
1:G:144:VAL:HG11	1:G:352:LEU:HD11	1.98	0.46
1:E:225:ASP:OD1	1:G:367:ASP:OD2	2.34	0.46
1:B:123:LEU:HD21	3:B:2217:HOH:O	2.15	0.45
1:A:326:VAL:O	1:A:330[B]:GLN:HG2	2.15	0.45
1:C:107:PHE:O	1:C:124:ALA:HA	2.16	0.45
1:H:106:GLY:O	1:H:263:CYS:HB3	2.16	0.45
1:D:107:PHE:O	1:D:124:ALA:HA	2.16	0.45
1:D:106:GLY:O	1:D:263:CYS:HB3	2.17	0.45
1:E:318:LYS:HB3	3:E:2212:HOH:O	2.16	0.45
1:E:89:VAL:HB	1:E:235:VAL:CG1	2.47	0.45
1:A:218:ARG:HA	1:B:311:ILE:HD13	1.97	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:15:TYR:HA	1:B:195:HIS:CD2	2.52	0.44
1:B:132:HIS:HD1	1:C:39:GLU:CD	2.20	0.44
1:D:326:VAL:O	1:D:330:GLN:HG2	2.16	0.44
1:G:15:TYR:HA	1:G:195:HIS:CD2	2.52	0.44
1:E:235:VAL:CG1	1:E:237:PHE:CE1	3.01	0.44
1:E:235:VAL:HG11	1:E:237:PHE:CE1	2.52	0.44
1:A:107:PHE:N	1:A:107:PHE:CD2	2.85	0.43
1:A:107:PHE:O	1:A:124:ALA:HA	2.18	0.43
1:A:200[B]:GLN:HA	1:A:200[B]:GLN:OE1	2.17	0.43
1:D:107:PHE:N	1:D:107:PHE:CD2	2.87	0.43
1:E:89:VAL:HB	1:E:235:VAL:HG12	1.99	0.43
1:F:27:ASP:HA	3:F:2043:HOH:O	2.19	0.43
1:G:352:LEU:HA	1:G:352:LEU:HD12	1.89	0.43
1:H:255:GLN:HG2	1:H:256:GLY:N	2.33	0.43
1:E:65:ASP:OD2	3:E:2074:HOH:O	2.21	0.43
1:A:255:GLN:HG3	1:A:265:ALA:HB2	2.01	0.42
1:A:106:GLY:O	1:A:263:CYS:HB3	2.19	0.42
1:B:303:LYS:HE3	1:D:303[B]:LYS:CG	2.43	0.42
1:D:302:TYR:O	1:D:303[A]:LYS:HD2	2.18	0.42
1:D:379:THR:HG22	1:D:386:ILE:HD11	2.00	0.42
1:D:404:PRO:HD3	3:D:2263:HOH:O	2.19	0.42
1:F:106:GLY:O	1:F:263:CYS:HB3	2.20	0.42
1:F:107:PHE:CD2	1:F:107:PHE:N	2.88	0.42
1:D:137:LYS:HE2	3:D:2065:HOH:O	2.19	0.42
1:E:167:TRP:CD2	1:E:218:ARG:HD3	2.55	0.42
1:B:199:MET:HA	3:B:2121:HOH:O	2.19	0.41
1:C:167:TRP:CD2	1:C:218:ARG:HD3	2.55	0.41
1:G:202:GLU:HG3	1:G:203:ALA:N	2.35	0.41
1:H:167:TRP:CD2	1:H:218:ARG:CD	3.03	0.41
1:D:330:GLN:HB3	3:D:2227:HOH:O	2.20	0.41
1:B:199:MET:HB3	1:B:204:ARG:HB2	2.02	0.41
1:C:218:ARG:HA	1:D:311:ILE:HD13	2.02	0.41
1:E:106:GLY:O	1:E:263:CYS:HB3	2.20	0.41
1:G:255:GLN:HG2	1:G:256:GLY:N	2.35	0.41
1:A:15:TYR:HA	1:A:195:HIS:CD2	2.55	0.41
1:H:15:TYR:HA	1:H:195:HIS:CD2	2.55	0.41
1:G:107:PHE:CD2	1:G:107:PHE:N	2.86	0.41
1:F:107:PHE:O	1:F:124:ALA:HA	2.20	0.41
1:H:107:PHE:CD2	1:H:107:PHE:N	2.86	0.41
1:H:395:LYS:HE2	1:H:395:LYS:HB3	1.67	0.41
1:B:264:GLY:CA	1:B:265:ALA:HB3	2.47	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:15:TYR:HA	1:E:195:HIS:CD2	2.56	0.41
1:G:394:GLN:HG2	1:G:396:ILE:HD12	2.03	0.41
1:G:206:LYS:O	1:G:210:GLU:HG2	2.20	0.41
1:B:62:ARG:HH21	1:B:63:ASP:CG	2.23	0.40
1:H:204:ARG:HD3	1:H:204:ARG:C	2.42	0.40
1:B:352:LEU:HA	1:B:352:LEU:HD12	1.82	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)
1:A:169:GLU:OE1	1:C:178:ASP:OD1[1_545]	1.66	0.54

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	411/409 (100%)	392 (95%)	19 (5%)	0	100	100
1	B	407/409 (100%)	384 (94%)	23 (6%)	0	100	100
1	C	407/409 (100%)	385 (95%)	22 (5%)	0	100	100
1	D	408/409 (100%)	390 (96%)	18 (4%)	0	100	100
1	E	407/409 (100%)	385 (95%)	20 (5%)	2 (0%)	34	29
1	F	407/409 (100%)	383 (94%)	24 (6%)	0	100	100
1	G	406/409 (99%)	384 (95%)	22 (5%)	0	100	100
1	H	408/409 (100%)	386 (95%)	21 (5%)	1 (0%)	52	52
All	All	3261/3272 (100%)	3089 (95%)	169 (5%)	3 (0%)	56	57

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	H	398	THR
1	E	201	GLY
1	E	399	GLY

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	334/330 (101%)	321 (96%)	13 (4%)	39	38
1	B	330/330 (100%)	314 (95%)	16 (5%)	31	28
1	C	330/330 (100%)	318 (96%)	12 (4%)	42	42
1	D	331/330 (100%)	320 (97%)	11 (3%)	45	46
1	E	330/330 (100%)	316 (96%)	14 (4%)	36	34
1	F	330/330 (100%)	314 (95%)	16 (5%)	31	28
1	G	329/330 (100%)	319 (97%)	10 (3%)	48	50
1	H	331/330 (100%)	316 (96%)	15 (4%)	34	31
All	All	2645/2640 (100%)	2538 (96%)	107 (4%)	38	37

All (107) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	46	ASP
1	A	107	PHE
1	A	163	MET
1	A	195	HIS
1	A	200[A]	GLN
1	A	200[B]	GLN
1	A	204	ARG
1	A	220	HIS
1	A	229	LEU
1	A	262	PHE
1	A	303	LYS
1	A	318	LYS
1	A	401	VAL

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Mol	Chain	Res	Type
1	B	46	ASP
1	B	47	TRP
1	B	57	SER
1	B	60	ASP
1	B	107	PHE
1	B	163	MET
1	B	180	ASP
1	B	195	HIS
1	B	200	GLN
1	B	204	ARG
1	B	220	HIS
1	B	229	LEU
1	B	262	PHE
1	B	303	LYS
1	B	391	GLU
1	B	409	LYS
1	C	46	ASP
1	C	107	PHE
1	C	163	MET
1	C	195	HIS
1	C	204	ARG
1	C	206	LYS
1	C	220	HIS
1	C	229	LEU
1	C	262	PHE
1	C	303	LYS
1	C	318	LYS
1	C	401	VAL
1	D	46	ASP
1	D	47	TRP
1	D	107	PHE
1	D	163	MET
1	D	195	HIS
1	D	200	GLN
1	D	220	HIS
1	D	229	LEU
1	D	262	PHE
1	D	318	LYS
1	D	396	ILE
1	E	46	ASP
1	E	47	TRP
1	E	107	PHE

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Mol	Chain	Res	Type
1	E	163	MET
1	E	195	HIS
1	E	202	GLU
1	E	204	ARG
1	E	205	ASP
1	E	220	HIS
1	E	229	LEU
1	E	262	PHE
1	E	303	LYS
1	E	318	LYS
1	E	401	VAL
1	F	46	ASP
1	F	47	TRP
1	F	107	PHE
1	F	163	MET
1	F	195	HIS
1	F	204	ARG
1	F	220	HIS
1	F	229	LEU
1	F	262	PHE
1	F	303	LYS
1	F	330	GLN
1	F	377	LEU
1	F	395	LYS
1	F	396	ILE
1	F	398	THR
1	F	401	VAL
1	G	46	ASP
1	G	47	TRP
1	G	107	PHE
1	G	195	HIS
1	G	202	GLU
1	G	204	ARG
1	G	220	HIS
1	G	229	LEU
1	G	262	PHE
1	G	394	GLN
1	H	35	GLU
1	H	46	ASP
1	H	47	TRP
1	H	107	PHE
1	H	161	PRO

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Mol	Chain	Res	Type
1	H	163	MET
1	H	195	HIS
1	H	220	HIS
1	H	229	LEU
1	H	262	PHE
1	H	303	LYS
1	H	391	GLU
1	H	394	GLN
1	H	395	LYS
1	H	409	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	125	GLN
1	E	394	GLN
1	G	394	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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 16 ligands modelled in this entry, 16 are 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

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	A	408/409 (99%)	0.17	7 (1%) 73 77	20, 36, 56, 72	0
1	B	408/409 (99%)	0.21	21 (5%) 32 39	20, 36, 61, 97	0
1	C	408/409 (99%)	0.19	15 (3%) 45 54	20, 36, 61, 83	0
1	D	408/409 (99%)	0.11	6 (1%) 76 80	20, 36, 58, 71	0
1	E	408/409 (99%)	0.12	10 (2%) 61 66	20, 36, 61, 80	0
1	F	408/409 (99%)	0.08	15 (3%) 45 54	20, 36, 59, 77	0
1	G	408/409 (99%)	0.15	13 (3%) 51 59	20, 36, 62, 84	0
1	H	408/409 (99%)	0.15	19 (4%) 35 43	20, 36, 61, 86	0
All	All	3264/3272 (99%)	0.15	106 (3%) 51 59	20, 36, 61, 97	0

All (106) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	409	LYS	5.3
1	H	180	ASP	5.1
1	D	201	GLY	4.8
1	F	201	GLY	4.8
1	B	201	GLY	4.6
1	B	202	GLU	4.1
1	C	180	ASP	4.0
1	G	409	LYS	3.9
1	E	202	GLU	3.8
1	H	176	ALA	3.8
1	G	397	ILE	3.8
1	H	202	GLU	3.8
1	E	400	GLY	3.7
1	C	396	ILE	3.7
1	B	399	GLY	3.7
1	D	316	LYS	3.7

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Mol	Chain	Res	Type	RSRZ
1	A	398	THR	3.6
1	H	396	ILE	3.6
1	G	10	LEU	3.5
1	B	396	ILE	3.5
1	B	182	ILE	3.4
1	B	192	THR	3.4
1	B	176	ALA	3.3
1	E	409	LYS	3.2
1	G	398	THR	3.2
1	G	182	ILE	3.2
1	B	203	ALA	3.1
1	C	209	ALA	3.1
1	G	396	ILE	3.1
1	H	209	ALA	3.0
1	G	394	GLN	3.0
1	B	398	THR	2.9
1	B	397	ILE	2.9
1	A	400	GLY	2.9
1	B	205	ASP	2.9
1	F	202	GLU	2.9
1	E	200	GLN	2.8
1	F	176	ALA	2.8
1	C	182	ILE	2.8
1	F	175	ILE	2.8
1	C	177	THR	2.7
1	F	180	ASP	2.7
1	F	178	ASP	2.7
1	G	209	ALA	2.7
1	A	200[A]	GLN	2.6
1	F	179	PRO	2.6
1	C	399	GLY	2.6
1	E	316	LYS	2.6
1	E	201	GLY	2.6
1	C	206	LYS	2.6
1	H	175	ILE	2.6
1	E	162	LYS	2.6
1	G	401	VAL	2.6
1	E	180	ASP	2.6
1	H	192	THR	2.5
1	C	65	ASP	2.5
1	H	179	PRO	2.5
1	F	409	LYS	2.4

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Mol	Chain	Res	Type	RSRZ
1	B	383	ASP	2.4
1	F	399	GLY	2.4
1	H	399	GLY	2.4
1	B	384	PHE	2.4
1	H	178	ASP	2.4
1	H	409	LYS	2.4
1	C	397	ILE	2.4
1	G	316	LYS	2.4
1	G	9	ASP	2.3
1	C	162	LYS	2.3
1	B	11	ASN	2.3
1	B	161	PRO	2.3
1	E	284	ALA	2.3
1	A	316	LYS	2.3
1	B	206	LYS	2.3
1	G	205	ASP	2.3
1	A	28	ILE	2.3
1	F	182	ILE	2.3
1	D	51	ALA	2.3
1	F	177	THR	2.3
1	H	172	THR	2.3
1	B	49	GLY	2.2
1	B	165	ALA	2.2
1	D	265	ALA	2.2
1	F	205	ASP	2.2
1	H	398	THR	2.2
1	D	205	ASP	2.2
1	A	162	LYS	2.2
1	C	353	LEU	2.2
1	D	72	LEU	2.2
1	H	177	THR	2.2
1	F	316	LYS	2.1
1	H	162	LYS	2.1
1	C	11	ASN	2.1
1	H	165	ALA	2.1
1	C	202	GLU	2.1
1	E	182	ILE	2.1
1	G	395	LYS	2.1
1	B	409	LYS	2.1
1	B	353	LEU	2.1
1	B	394	GLN	2.1
1	C	201	GLY	2.0

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Mol	Chain	Res	Type	RSRZ
1	F	400	GLY	2.0
1	H	316	LYS	2.0
1	H	397	ILE	2.0
1	H	201	GLY	2.0
1	A	409	LYS	2.0
1	F	28	ILE	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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å ²)	Q<0.9
2	ZN	F	411	1/1	0.97	0.09	-0.85	68,68,68,68	0
2	ZN	D	411	1/1	0.96	0.09	-1.37	55,55,55,55	0
2	ZN	C	412	1/1	0.99	0.07	-2.16	47,47,47,47	0
2	ZN	A	411	1/1	0.98	0.06	-2.37	55,55,55,55	0
2	ZN	E	411	1/1	0.98	0.06	-2.42	61,61,61,61	0
2	ZN	E	412	1/1	0.99	0.02	-2.46	46,46,46,46	0
2	ZN	B	412	1/1	0.98	0.06	-2.52	45,45,45,45	0
2	ZN	F	412	1/1	0.98	0.03	-2.68	46,46,46,46	0
2	ZN	D	412	1/1	0.99	0.03	-2.71	38,38,38,38	0
2	ZN	C	411	1/1	0.92	0.04	-2.74	56,56,56,56	0
2	ZN	H	412	1/1	0.98	0.03	-3.32	49,49,49,49	0
2	ZN	B	411	1/1	0.96	0.06	-3.70	48,48,48,48	0
2	ZN	G	411	1/1	0.96	0.04	-3.74	67,67,67,67	0
2	ZN	H	411	1/1	0.98	0.03	-3.95	59,59,59,59	0
2	ZN	A	412	1/1	0.98	0.03	-4.13	42,42,42,42	0
2	ZN	G	412	1/1	0.98	0.04	-6.22	51,51,51,51	0

6.5 Other polymers

There are no such residues in this entry.