Full wwPDB X-ray Structure Validation Report ⓘ

Oct 24, 2023 – 07:39 PM EDT

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PDB ID	:	3A8J
Title	:	Crystal Structure of ET-EHred complex
Authors	:	Okamura-Ikeda, K.; Hosaka, H.
Deposited on	:	2009-10-06
Resolution	:	1.98 Å(reported)

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 1.98 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.
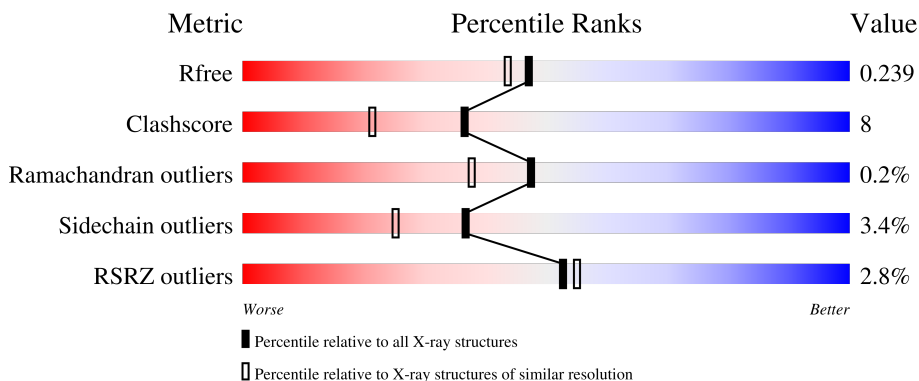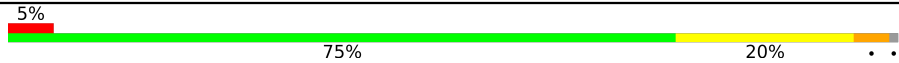
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	11647 (2.00-1.96)
Clashscore	141614	1014 (1.98-1.98)
Ramachandran outliers	138981	1006 (1.98-1.98)
Sidechain outliers	138945	1006 (1.98-1.98)
RSRZ outliers	127900	11410 (2.00-1.96)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	364	86% 13%
1	B	364	84% 15%
1	C	364	85% 14%
1	D	364	82% 16%
2	E	129	88% 8%

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Mol	Chain	Length	Quality of chain
2	F	129	

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 14613 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 Aminomethyltransferase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	363	Total	C	N	O	S	0	2	0
			2823	1782	492	534	15			
1	B	363	Total	C	N	O	S	0	2	0
			2825	1784	492	533	16			
1	C	363	Total	C	N	O	S	0	1	0
			2818	1779	492	532	15			
1	D	363	Total	C	N	O	S	0	2	0
			2839	1794	497	533	15			

- Molecule 2 is a protein called Glycine cleavage system H protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	E	127	Total	C	N	O	S	0	0	0
			964	606	146	208	4			
2	F	128	Total	C	N	O	S	0	1	0
			982	616	148	213	5			

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	332	Total	O	0	0
			332	332		
3	B	326	Total	O	0	0
			326	326		
3	C	280	Total	O	0	0
			280	280		
3	D	273	Total	O	0	0
			273	273		
3	E	77	Total	O	0	0
			77	77		
3	F	74	Total	O	0	0
			74	74		

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: Aminomethyltransferase
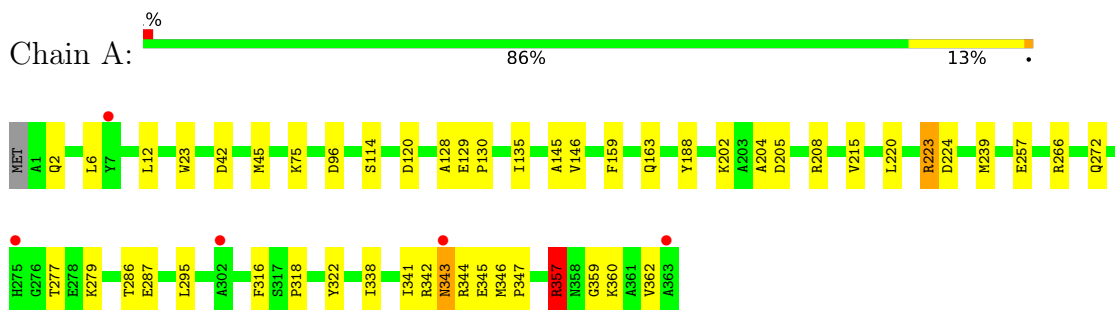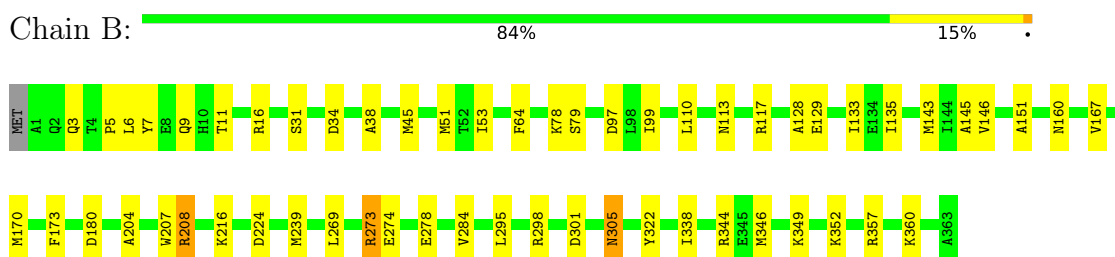
● Molecule 1: Aminomethyltransferase

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R223 L228 Y235 M239 N249 W256 E257 R266 L269 E270 R273 E274 H275 K279 M285 G289 R292 L295 F299 T300 D301 A302 Q303 G304 N305 Q306 H307 F316 L320 G321 Y322 R328 V329 P330 E331 G332 I333 I338 V339 Q340 I341

R342 N343 R344 V348 K349 R357 N358 G359 K360 A361 V362 A363

• Molecule 2: Glycine cleavage system H protein

Chain E:

6%

88%　　　　　　　　8%　• •

MET S1 K11 A20 G27 L35 M39 V42 D56 K64 Y70 I101 S110 S114 L115 L116 T119 A120 L124 L125 E126 D127 GLU

• Molecule 2: Glycine cleavage system H protein

Chain F:

5%

75%　　　　　　　20%　• •

MET S1 N2 V3 P4 Y9 S10 K11 L16 R17 A20 T25 E34 L35 L36 M39 P45 E46 S52 A53 A58 E61 K64 I69 S74 A79 V80 N81 D82 D86 K103 I104 K105 S110 E111 L112 E113 S114 L115 E122 A123 L124

L125 E126 D127 E128
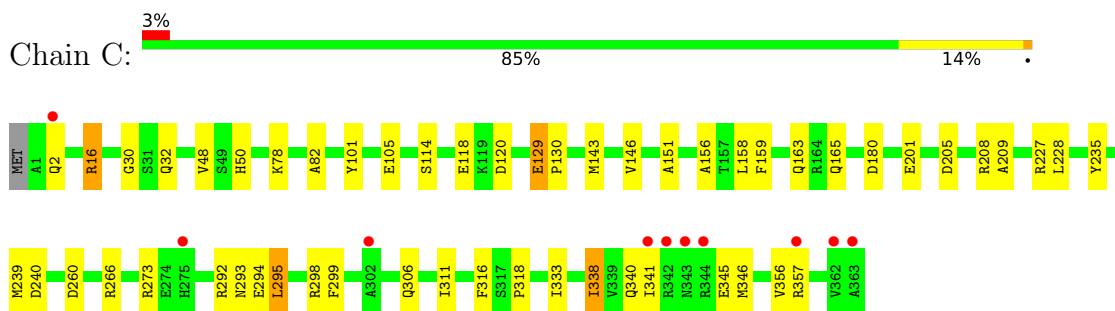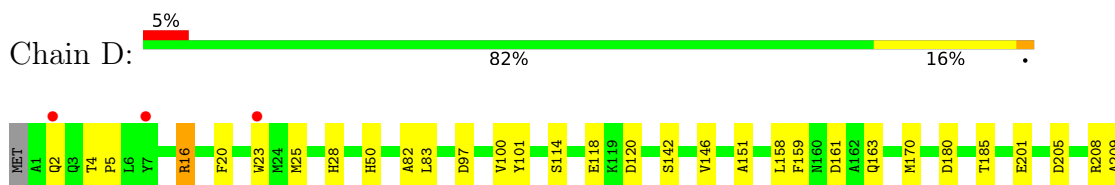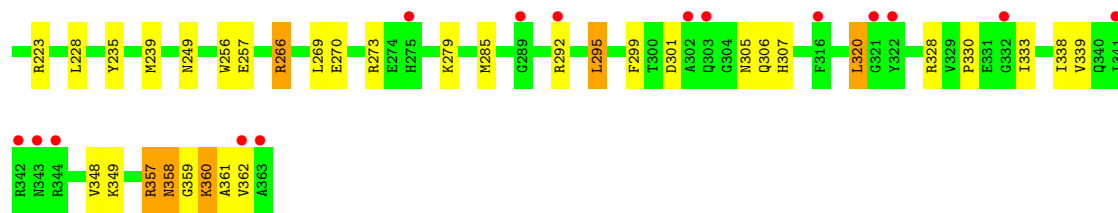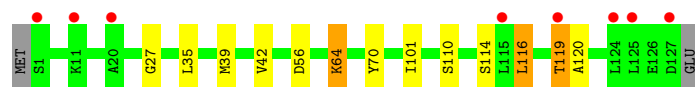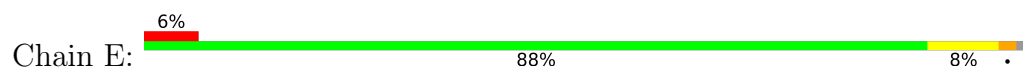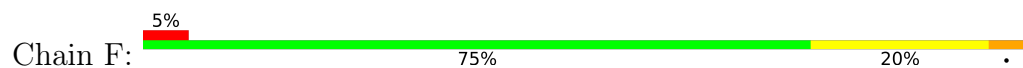
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	54.02Å 88.53Å 97.24Å 91.51° 102.16° 89.66°	Depositor
Resolution (Å)	44.42 – 1.98 44.42 – 1.98	Depositor EDS
% Data completeness (in resolution range)	97.2 (44.42-1.98) 97.1 (44.42-1.98)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.07 (at 1.98Å)	Xtriage
Refinement program	REFMAC 5.5.0102	Depositor
R, R_{free}	0.172 , 0.238 0.172 , 0.239	Depositor DCC
R_{free} test set	5960 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å^2)	22.6	Xtriage
Anisotropy	0.158	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.37 , 54.5	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.066 for -h,k,-l	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	14613	wwPDB-VP
Average B, all atoms (Å^2)	27.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.46% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: LA2

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	1.11	1/2887 (0.0%)	0.95	5/3910 (0.1%)
1	B	1.04	1/2889 (0.0%)	0.95	6/3912 (0.2%)
1	C	1.02	4/2879 (0.1%)	0.92	5/3899 (0.1%)
1	D	0.99	3/2900 (0.1%)	0.92	8/3929 (0.2%)
2	E	0.89	0/960	0.81	1/1309 (0.1%)
2	F	0.84	0/978	0.85	3/1331 (0.2%)
All	All	1.02	9/13493 (0.1%)	0.92	28/18290 (0.2%)

All (9) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	180	ASP	CB-CG	6.79	1.66	1.51
1	D	235	TYR	CD2-CE2	6.19	1.48	1.39
1	D	180	ASP	CB-CG	5.83	1.64	1.51
1	C	129	GLU	CB-CG	5.74	1.63	1.52
1	B	31	SER	CB-OG	5.53	1.49	1.42
1	C	201	GLU	CG-CD	5.49	1.60	1.51
1	D	118	GLU	CG-CD	5.44	1.60	1.51
1	A	188	TYR	CD1-CE1	5.33	1.47	1.39
1	C	118	GLU	CB-CG	5.09	1.61	1.52

All (28) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	208	ARG	NE-CZ-NH1	9.50	125.05	120.30
1	C	180	ASP	CB-CG-OD1	8.63	126.07	118.30
1	B	208	ARG	NE-CZ-NH1	8.40	124.50	120.30
1	D	266	ARG	NE-CZ-NH2	-8.00	116.30	120.30
2	F	16	LEU	CA-CB-CG	7.84	133.33	115.30
1	B	357	ARG	NE-CZ-NH1	-6.82	116.89	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	120	ASP	CB-CG-OD2	-6.76	112.22	118.30
1	D	180	ASP	CB-CG-OD1	6.55	124.20	118.30
2	F	17	ARG	NE-CZ-NH1	6.34	123.47	120.30
1	A	223	ARG	NE-CZ-NH1	6.33	123.47	120.30
1	C	266	ARG	NE-CZ-NH2	-6.31	117.14	120.30
1	B	97	ASP	CB-CG-OD1	6.31	123.98	118.30
2	E	35	LEU	CA-CB-CG	6.29	129.77	115.30
1	D	97	ASP	CB-CG-OD1	6.25	123.93	118.30
1	B	117	ARG	NE-CZ-NH1	-6.01	117.29	120.30
1	D	328	ARG	NE-CZ-NH1	6.00	123.30	120.30
1	B	180	ASP	CB-CG-OD2	-5.99	112.91	118.30
2	F	17	ARG	NE-CZ-NH2	-5.71	117.44	120.30
1	D	161	ASP	CB-CG-OD1	5.46	123.21	118.30
1	A	266	ARG	NE-CZ-NH1	5.46	123.03	120.30
1	A	357	ARG	NE-CZ-NH1	5.42	123.01	120.30
1	C	260	ASP	CB-CG-OD1	5.14	122.92	118.30
1	D	223	ARG	NE-CZ-NH1	5.11	122.85	120.30
1	B	110	LEU	CB-CG-CD2	-5.08	102.37	111.00
1	C	120	ASP	CB-CG-OD1	5.08	122.87	118.30
1	C	120	ASP	CB-CG-OD2	-5.06	113.75	118.30
1	D	320	LEU	CA-CB-CG	5.03	126.86	115.30
1	A	266	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 ⓘ

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	2823	0	2780	43	0
1	B	2825	0	2784	37	0
1	C	2818	0	2776	38	0
1	D	2839	0	2786	56	0
2	E	964	0	917	14	0
2	F	982	0	931	28	0
3	A	332	0	0	9	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	326	0	0	7	0
3	C	280	0	0	5	1
3	D	273	0	0	6	1
3	E	77	0	0	2	0
3	F	74	0	0	3	0
All	All	14613	0	12974	207	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 (207) 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:D:23[B]:TRP:CE3	1:D:50[B]:HIS:CD2	1.96	1.53
1:D:23[B]:TRP:CZ3	1:D:50[B]:HIS:NE2	1.80	1.46
1:D:23[B]:TRP:CD2	1:D:50[B]:HIS:CD2	2.17	1.30
2:F:36:LEU:HD21	2:F:39[B]:MET:SD	1.72	1.27
1:D:23[B]:TRP:CZ3	1:D:50[B]:HIS:CE1	2.28	1.20
1:D:23[B]:TRP:CH2	1:D:50[B]:HIS:CE1	2.36	1.12
1:D:23[B]:TRP:CE3	1:D:50[B]:HIS:NE2	2.09	1.10
1:D:23[B]:TRP:CZ3	1:D:50[B]:HIS:CD2	2.33	1.08
2:F:39[B]:MET:HA	2:F:39[B]:MET:CE	1.84	1.06
2:F:39[B]:MET:HA	2:F:39[B]:MET:HE3	1.44	0.98
2:E:64:LA2:S6	2:E:64:LA2:S8	2.62	0.98
1:D:23[B]:TRP:CE2	1:D:50[B]:HIS:CG	2.55	0.94
1:A:75:LYS:HD3	3:A:590:HOH:O	1.71	0.89
1:D:23[B]:TRP:CZ2	1:D:50[B]:HIS:CG	2.62	0.88
2:F:36:LEU:CD2	2:F:39[B]:MET:SD	2.60	0.88
1:D:23[B]:TRP:CE3	1:D:50[B]:HIS:HD2	1.93	0.86
1:A:362:VAL:O	1:A:362:VAL:HG23	1.75	0.84
2:F:64:LA2:S6	2:F:64:LA2:S8	2.75	0.84
1:A:223:ARG:HD3	2:E:64:LA2:H8A	1.63	0.81
1:D:23[B]:TRP:CH2	1:D:50[B]:HIS:ND1	2.48	0.81
1:D:23[B]:TRP:CE2	1:D:50[B]:HIS:HB3	2.17	0.80
1:D:23[B]:TRP:CE2	1:D:50[B]:HIS:CD2	2.69	0.80
1:B:346:MET:HA	1:B:346:MET:HE2	1.63	0.79
1:D:23[B]:TRP:CD2	1:D:50[B]:HIS:HD2	1.92	0.79
2:F:39[B]:MET:HA	2:F:39[B]:MET:HE2	1.64	0.78
1:D:349:LYS:HD3	3:D:614:HOH:O	1.83	0.78
1:C:146:VAL:HG12	1:C:151:ALA:HB1	1.67	0.76
1:D:23[B]:TRP:CD2	1:D:50[B]:HIS:CG	2.75	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:16:ARG:HD2	1:D:28:HIS:CE1	2.23	0.73
1:A:338:ILE:CG2	1:A:345:GLU:HB3	2.18	0.72
1:B:9:GLN:HE21	1:B:207:TRP:HD1	1.36	0.72
1:D:23[B]:TRP:NE1	1:D:50[B]:HIS:HB3	2.06	0.71
1:D:23[B]:TRP:NE1	1:D:114:SER:OG	2.24	0.70
1:A:362:VAL:O	1:A:362:VAL:CG2	2.40	0.70
1:D:23[B]:TRP:CH2	1:D:50[B]:HIS:CG	2.78	0.70
1:D:23[B]:TRP:CE2	1:D:50[B]:HIS:CB	2.75	0.69
1:A:12:LEU:HD23	1:A:12:LEU:O	1.91	0.69
1:C:16:ARG:HH21	1:C:30:GLY:HA2	1.58	0.68
2:E:119:THR:HG23	3:E:225:HOH:O	1.93	0.68
1:C:2:GLN:NE2	1:C:2:GLN:HA	2.07	0.67
1:D:146:VAL:HG12	1:D:151:ALA:HB1	1.77	0.67
1:C:16:ARG:NH2	1:C:30:GLY:HA2	2.10	0.66
2:F:39[B]:MET:HE2	2:F:61:GLU:O	1.95	0.66
1:C:16:ARG:HH21	1:C:30:GLY:CA	2.09	0.64
1:D:23[B]:TRP:CH2	1:D:50[B]:HIS:CD2	2.83	0.64
1:C:298:ARG:NH1	1:C:340:GLN:OE1	2.29	0.64
2:E:39:MET:CE	2:E:42:VAL:HB	2.29	0.63
1:C:50:HIS:CD2	1:C:114:SER:HB2	2.34	0.62
1:A:338:ILE:HG21	1:A:345:GLU:HB3	1.80	0.62
1:A:12:LEU:HD23	1:A:12:LEU:C	2.19	0.62
1:B:7:TYR:HD1	3:B:463:HOH:O	1.82	0.62
1:A:129:GLU:OE1	3:A:731:HOH:O	2.16	0.61
1:A:359:GLY:HA3	3:A:526:HOH:O	2.00	0.61
1:D:170:MET:HE3	1:D:185:THR:HG23	1.83	0.61
1:A:272:GLN:HG3	1:A:277:THR:HG22	1.84	0.60
1:D:257:GLU:OE1	3:D:622:HOH:O	2.17	0.60
1:B:208:ARG:HD3	3:B:723:HOH:O	2.01	0.60
1:B:360:LYS:NZ	1:B:360:LYS:CB	2.64	0.60
1:D:23[B]:TRP:CD1	1:D:114:SER:OG	2.55	0.59
3:A:614:HOH:O	1:C:2:GLN:HG2	2.00	0.59
1:C:2:GLN:HA	1:C:2:GLN:HE21	1.68	0.58
1:A:279:LYS:NZ	3:A:544:HOH:O	2.27	0.58
1:B:301:ASP:OD2	1:B:305:ASN:ND2	2.36	0.58
1:C:316:PHE:O	1:C:318:PRO:HD3	2.04	0.58
1:C:205:ASP:OD1	1:C:208:ARG:NH1	2.38	0.57
1:B:269:LEU:HD12	3:B:608:HOH:O	2.04	0.57
1:B:146:VAL:HG12	1:B:151:ALA:HB1	1.87	0.57
1:D:292:ARG:H	1:D:295:LEU:HD22	1.69	0.56
1:A:359:GLY:CA	3:A:526:HOH:O	2.52	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:341:ILE:HD12	1:C:346:MET:HG3	1.86	0.56
2:F:74:SER:OG	2:F:111:GLU:OE2	2.23	0.56
1:A:220:LEU:HD22	2:E:64:LA2:H8	1.87	0.56
2:F:39[B]:MET:HE3	2:F:39[B]:MET:CA	2.26	0.56
2:F:39[B]:MET:CE	2:F:39[B]:MET:CA	2.67	0.55
1:B:298:ARG:HB2	1:B:338:ILE:HD11	1.88	0.55
1:B:64:PHE:CB	1:B:133:ILE:HD11	2.37	0.55
1:C:293:ASN:O	1:C:294:GLU:HB2	2.08	0.54
1:B:349:LYS:HE2	3:B:626:HOH:O	2.08	0.53
1:A:287:GLU:HG3	1:A:346:MET:CE	2.40	0.52
1:A:114:SER:HA	3:A:685:HOH:O	2.09	0.52
1:B:7:TYR:O	1:B:11:THR:HG23	2.10	0.52
1:D:299:PHE:CE2	1:D:333:ILE:HA	2.44	0.52
1:D:359:GLY:H	1:D:360:LYS:HD2	1.75	0.52
1:A:344:ARG:HD3	1:A:346:MET:SD	2.50	0.51
1:A:341:ILE:O	1:A:344:ARG:HG3	2.11	0.51
2:F:123:ALA:HA	2:F:126:GLU:HB2	1.93	0.51
1:C:16:ARG:HH21	1:C:30:GLY:N	2.09	0.51
1:A:128:ALA:HB3	1:A:135:ILE:HD11	1.92	0.51
2:E:116:LEU:HB3	2:E:120:ALA:HB3	1.92	0.51
1:B:360:LYS:HZ3	1:B:360:LYS:HB3	1.76	0.50
1:B:34[C]:ASP:OD2	1:B:216:LYS:HE2	2.11	0.50
2:E:27:GLY:HA2	2:E:101:ILE:HG12	1.93	0.50
1:B:51[B]:MET:SD	1:B:113:ASN:HA	2.52	0.49
1:A:45:MET:HA	1:A:145:ALA:O	2.12	0.49
1:B:346:MET:HA	1:B:346:MET:CE	2.38	0.49
1:D:285:MET:HG3	1:D:348:VAL:HG12	1.95	0.49
1:D:20:PHE:O	1:D:23[B]:TRP:HB2	2.12	0.49
1:D:279:LYS:HE2	3:D:577:HOH:O	2.13	0.48
1:A:272:GLN:HG3	1:A:277:THR:CG2	2.43	0.48
2:E:114:SER:HB2	3:E:236:HOH:O	2.13	0.48
1:D:205:ASP:OD1	1:D:208:ARG:NH1	2.46	0.48
1:D:23[B]:TRP:CZ2	1:D:50[B]:HIS:ND1	2.75	0.48
1:B:360:LYS:NZ	1:B:360:LYS:HB3	2.28	0.48
1:C:299:PHE:CE2	1:C:333:ILE:HA	2.49	0.48
1:C:105:GLU:OE1	3:C:667:HOH:O	2.20	0.48
1:C:293:ASN:ND2	3:C:491:HOH:O	2.47	0.48
1:D:307:HIS:HB3	1:D:330:PRO:CG	2.44	0.48
2:F:123:ALA:HB2	3:F:245:HOH:O	2.13	0.48
1:A:96:ASP:OD2	1:A:120:ASP:OD2	2.32	0.48
1:D:5:PRO:HG2	1:D:142:SER:OG	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:39[B]:MET:CE	2:F:61:GLU:O	2.62	0.48
1:C:158:LEU:HD22	1:C:209:ALA:HB1	1.96	0.48
1:D:159:PHE:HB3	1:D:163:GLN:HB2	1.95	0.48
1:B:38:ALA:HB2	1:B:216:LYS:HD3	1.96	0.47
1:C:357:ARG:NH2	3:C:583:HOH:O	2.46	0.47
2:E:39:MET:HE1	2:E:42:VAL:HB	1.94	0.47
1:A:224:ASP:HB2	2:E:64:LA2:H5	1.95	0.47
1:C:292:ARG:H	1:C:295:LEU:HD22	1.78	0.47
1:B:53:ILE:HD11	1:B:143:MET:HE2	1.97	0.47
1:B:224:ASP:HB2	2:F:64:LA2:H5	1.97	0.47
1:D:201:GLU:H	1:D:201:GLU:CD	2.18	0.47
2:F:25:THR:OG1	2:F:103:LYS:HD3	2.14	0.47
2:F:46:GLU:HA	2:F:46:GLU:OE1	2.15	0.47
1:B:360:LYS:HE3	3:B:674:HOH:O	2.14	0.47
1:A:287:GLU:HG3	1:A:346:MET:HE3	1.97	0.47
1:A:286:THR:HA	1:A:322:TYR:CD1	2.50	0.47
1:A:6:LEU:CD2	1:A:204:ALA:HA	2.45	0.46
1:D:357:ARG:O	1:D:358:ASN:HB2	2.15	0.46
2:F:64:LA2:H4A	2:F:64:LA2:H7	1.49	0.46
1:D:360:LYS:HE3	1:D:360:LYS:HB3	1.60	0.46
2:F:45:PRO:O	2:F:80:VAL:HG11	2.15	0.46
1:C:78:LYS:HB2	1:C:78:LYS:HE2	1.75	0.46
1:D:16:ARG:HD2	1:D:28:HIS:HE1	1.78	0.46
1:B:129:GLU:OE2	1:D:23[A]:TRP:CH2	2.69	0.46
1:B:273:ARG:HG2	1:B:274:GLU:N	2.31	0.46
1:C:50:HIS:CD2	1:C:114:SER:CB	2.99	0.46
1:C:338:ILE:HG12	1:C:345:GLU:HB3	1.97	0.45
1:B:6:LEU:HD21	1:B:204:ALA:HA	1.97	0.45
1:B:128:ALA:HB3	1:B:135:ILE:HD11	1.97	0.45
1:A:338:ILE:HD13	1:A:347:PRO:HA	1.97	0.45
1:B:269:LEU:CD1	3:B:608:HOH:O	2.63	0.45
2:E:56:ASP:HB3	2:E:70:TYR:CE1	2.52	0.45
1:D:4:THR:HG22	1:D:50[B]:HIS:CE1	2.51	0.45
1:A:257:GLU:OE2	3:A:709:HOH:O	2.21	0.45
2:F:64:LA2:HDA	2:F:64:LA2:HA	1.69	0.44
1:A:287:GLU:OE2	1:A:347:PRO:HD2	2.18	0.44
1:A:357:ARG:HG3	1:A:362:VAL:CG1	2.48	0.44
1:D:266:ARG:O	1:D:270:GLU:HG2	2.16	0.44
2:F:52:SER:O	2:F:53:ALA:C	2.54	0.44
1:D:2:GLN:OE1	1:D:23[B]:TRP:CH2	2.70	0.44
1:A:2:GLN:HB2	1:A:23:TRP:CE3	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:320:LEU:O	3:D:582:HOH:O	2.21	0.44
2:E:39:MET:HE3	2:E:42:VAL:HB	1.99	0.43
1:A:202:LYS:NZ	3:A:615:HOH:O	2.50	0.43
1:C:50:HIS:HD2	1:C:114:SER:CB	2.32	0.43
1:D:158:LEU:HD13	1:D:209:ALA:CB	2.48	0.43
1:C:32:GLN:HG3	3:C:406:HOH:O	2.17	0.43
1:C:356:VAL:HG12	1:C:357:ARG:N	2.33	0.43
1:B:6:LEU:CD2	1:B:204:ALA:HA	2.49	0.42
1:C:293:ASN:HA	1:C:311:ILE:HG22	2.00	0.42
1:C:129:GLU:HB3	1:C:130:PRO:HD3	2.00	0.42
1:B:64:PHE:CD2	1:B:133:ILE:CD1	3.02	0.42
1:B:99:ILE:HD12	1:B:173:PHE:HE2	1.84	0.42
1:B:344:ARG:NH2	1:B:346:MET:HE1	2.35	0.42
1:A:220:LEU:HD22	2:E:64:LA2:C8	2.50	0.42
1:A:6:LEU:HD23	1:A:204:ALA:HA	2.00	0.42
1:A:159:PHE:HB3	1:A:163:GLN:HB2	2.01	0.42
1:D:301:ASP:OD2	1:D:305:ASN:HB2	2.20	0.42
1:D:307:HIS:HB3	1:D:330:PRO:HG2	2.01	0.41
1:B:16:ARG:NH2	2:F:34:GLU:OE2	2.30	0.41
1:C:82:ALA:HB2	1:C:101:TYR:CD2	2.55	0.41
2:F:17:ARG:NH2	3:F:221:HOH:O	2.54	0.41
2:F:126:GLU:HB3	3:F:263:HOH:O	2.20	0.41
1:B:360:LYS:NZ	1:B:360:LYS:HB2	2.34	0.41
1:C:48:VAL:HA	1:C:50:HIS:CE1	2.55	0.41
1:C:235:TYR:CZ	1:C:240:ASP:HA	2.56	0.41
1:D:82:ALA:HB2	1:D:101:TYR:CD2	2.55	0.41
1:A:146:VAL:HG13	1:A:215:VAL:HG11	2.02	0.41
1:D:249:ASN:HA	3:D:453:HOH:O	2.19	0.41
1:C:227:ARG:HD2	1:C:227:ARG:C	2.41	0.41
2:F:58:ALA:HB3	2:F:69:ILE:HB	2.01	0.41
1:A:128:ALA:CB	1:A:135:ILE:HD11	2.50	0.41
1:B:45:MET:HA	1:B:145:ALA:O	2.21	0.41
1:B:167:VAL:HG12	1:B:170:MET:HE1	2.02	0.41
1:C:156:ALA:HA	1:C:159:PHE:CD2	2.56	0.41
1:C:165:GLN:HE21	1:C:165:GLN:HB2	1.67	0.41
1:D:256:TRP:CZ2	1:D:273:ARG:HD3	2.56	0.41
1:A:12:LEU:C	1:A:12:LEU:CD2	2.88	0.41
1:C:159:PHE:HB3	1:C:163:GLN:HB2	2.03	0.41
2:F:79:ALA:HB3	2:F:103:LYS:HG3	2.02	0.41
1:B:129:GLU:OE2	1:D:23[A]:TRP:HH2	2.04	0.40
1:B:284:VAL:HG13	1:B:322:TYR:CE1	2.55	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:23[B]:TRP:HB3	1:D:25:MET:HG2	2.03	0.40
1:D:279:LYS:CE	3:D:577:HOH:O	2.68	0.40
2:E:64:LA2:H4A	2:E:64:LA2:H7	1.86	0.40
1:A:129:GLU:HB3	1:A:130:PRO:HD3	2.02	0.40
1:A:357:ARG:HG3	1:A:362:VAL:HG12	2.04	0.40
1:B:160:ASN:HB2	3:B:504:HOH:O	2.21	0.40
1:D:2:GLN:CD	1:D:23[B]:TRP:CH2	2.95	0.40
1:A:130:PRO:HG3	1:C:2:GLN:HG3	2.02	0.40
2:F:4:PRO:HD2	2:F:9:TYR:OH	2.21	0.40
1:C:16:ARG:HB3	3:C:662:HOH:O	2.20	0.40
2:F:105:LYS:HA	2:F:105:LYS:HD2	1.89	0.40
1:A:316:PHE:O	1:A:318:PRO:HD3	2.22	0.40
1:A:342:ARG:HB2	1:A:343:ASN:H	1.49	0.40
1:C:293:ASN:O	1:C:294:GLU:CB	2.68	0.40
2:F:124:LEU:O	2:F:127:ASP:HB3	2.21	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)
3:C:678:HOH:O	3:D:674:HOH:O[1_656]	2.05	0.15

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	363/364 (100%)	353 (97%)	9 (2%)	1 (0%)	41	29
1	B	363/364 (100%)	354 (98%)	8 (2%)	1 (0%)	41	29
1	C	362/364 (100%)	348 (96%)	14 (4%)	0	100	100
1	D	363/364 (100%)	347 (96%)	14 (4%)	2 (1%)	25	14

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	E	124/129 (96%)	122 (98%)	2 (2%)	0	100	100
2	F	126/129 (98%)	121 (96%)	5 (4%)	0	100	100
All	All	1701/1714 (99%)	1645 (97%)	52 (3%)	4 (0%)	47	38

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	358	ASN
1	B	278	GLU
1	A	42	ASP
1	D	361	ALA

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	293/292 (100%)	287 (98%)	6 (2%)	55	48
1	B	293/292 (100%)	284 (97%)	9 (3%)	40	28
1	C	292/292 (100%)	284 (97%)	8 (3%)	44	35
1	D	293/292 (100%)	280 (96%)	13 (4%)	28	16
2	E	101/103 (98%)	98 (97%)	3 (3%)	41	29
2	F	103/103 (100%)	95 (92%)	8 (8%)	12	4
All	All	1375/1374 (100%)	1328 (97%)	47 (3%)	37	25

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	205	ASP
1	A	239	MET
1	A	295	LEU
1	A	343	ASN
1	A	357	ARG
1	A	360	LYS

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Mol	Chain	Res	Type
1	B	3	GLN
1	B	5	PRO
1	B	78	LYS
1	B	79	SER
1	B	239	MET
1	B	273	ARG
1	B	295	LEU
1	B	305	ASN
1	B	352	LYS
1	C	16	ARG
1	C	143	MET
1	C	228	LEU
1	C	239	MET
1	C	273	ARG
1	C	295	LEU
1	C	306	GLN
1	C	338	ILE
1	D	16	ARG
1	D	83	LEU
1	D	100	VAL
1	D	228	LEU
1	D	239	MET
1	D	269	LEU
1	D	295	LEU
1	D	306	GLN
1	D	338	ILE
1	D	339	VAL
1	D	357	ARG
1	D	360	LYS
1	D	362	VAL
2	E	110	SER
2	E	116	LEU
2	E	119	THR
2	F	2	ASN
2	F	11	LYS
2	F	16	LEU
2	F	74	SER
2	F	82	ASP
2	F	86	ASP
2	F	122	GLU
2	F	124	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (20)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	113	ASN
1	A	249	ASN
1	A	272	GLN
1	A	303	GLN
1	A	358	ASN
1	B	9	GLN
1	B	113	ASN
1	B	303	GLN
1	B	305	ASN
1	C	3	GLN
1	C	37	HIS
1	C	165	GLN
1	C	293	ASN
1	C	358	ASN
1	D	9	GLN
1	D	126	GLN
1	D	237	GLN
1	D	303	GLN
1	D	306	GLN
2	E	2	ASN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

5.4   Non-standard residues in protein, DNA, RNA chains ⓘ

2 non-standard protein/DNA/RNA residues are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#|Z| > 2$	Counts	RMSZ	$\#|Z| > 2$
2	LA2	E	64	2	17,19,20	0.61	0	12,21,23	2.97	2 (16%)
2	LA2	F	64	2	17,19,20	0.63	0	12,21,23	2.69	4 (33%)

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
2	LA2	E	64	2	-	9/18/20/22	-
2	LA2	F	64	2	-	9/18/20/22	-

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	E	64	LA2	C7-C8-S8	-8.23	105.17	113.74
2	F	64	LA2	C7-C8-S8	-6.84	106.61	113.74
2	E	64	LA2	CE-NZ-C1	5.59	133.21	122.84
2	F	64	LA2	CE-NZ-C1	3.74	129.78	122.84
2	F	64	LA2	CD-CE-NZ	-3.49	102.23	112.21
2	F	64	LA2	C3-C2-C1	-2.56	106.08	113.26

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	E	64	LA2	C5-C6-C7-C8
2	E	64	LA2	C6-C7-C8-S8
2	F	64	LA2	C4-C5-C6-C7
2	F	64	LA2	C5-C6-C7-C8
2	F	64	LA2	C6-C7-C8-S8
2	E	64	LA2	CG-CD-CE-NZ
2	E	64	LA2	CA-CB-CG-CD
2	E	64	LA2	C3-C4-C5-C6
2	F	64	LA2	C3-C4-C5-C6
2	E	64	LA2	C1-C2-C3-C4
2	F	64	LA2	CD-CE-NZ-C1
2	F	64	LA2	C2-C3-C4-C5
2	F	64	LA2	C1-C2-C3-C4
2	F	64	LA2	CE-CD-CG-CB
2	F	64	LA2	CA-CB-CG-CD
2	E	64	LA2	CE-CD-CG-CB
2	E	64	LA2	C2-C3-C4-C5
2	E	64	LA2	C4-C5-C6-C7

There are no ring outliers.

2 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	E	64	LA2	6	0
2	F	64	LA2	4	0

5.5 Carbohydrates ⓘ

There are no monosaccharides 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 (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	363/364 (99%)	-0.18	5 (1%)	75	77	13, 19, 41, 59	0
1	B	363/364 (99%)	-0.22	0	100	100	13, 20, 40, 56	0
1	C	363/364 (99%)	-0.11	10 (2%)	53	55	14, 23, 46, 66	0
1	D	363/364 (99%)	0.02	18 (4%)	28	31	15, 26, 46, 71	0
2	E	126/129 (97%)	0.19	8 (6%)	20	22	20, 33, 58, 69	0
2	F	127/129 (98%)	0.34	7 (5%)	25	27	23, 36, 51, 66	0
All	All	1705/1714 (99%)	-0.06	48 (2%)	53	55	13, 24, 48, 71	0

All (48) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	363	ALA	7.8
1	A	363	ALA	6.7
2	E	1	SER	5.7
1	C	363	ALA	5.2
1	D	316	PHE	4.3
1	C	343	ASN	4.2
1	D	23[A]	TRP	4.1
1	A	302	ALA	3.9
1	D	362	VAL	3.5
1	C	2	GLN	3.4
2	F	20	ALA	3.3
1	C	302	ALA	3.2
1	C	362	VAL	3.1
1	A	275	HIS	3.1
1	D	342	ARG	3.0
1	C	341	ILE	3.0
2	E	11	LYS	3.0
2	E	20	ALA	3.0
1	D	322	TYR	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	343	ASN	2.8
1	D	302	ALA	2.7
2	F	113	GLU	2.7
1	C	342	ARG	2.7
2	E	125	LEU	2.6
1	D	2	GLN	2.6
1	D	332	GLY	2.6
1	D	275	HIS	2.6
2	F	110	SER	2.5
2	E	124	LEU	2.4
2	F	115	LEU	2.4
1	D	7	TYR	2.4
2	F	128	GLU	2.4
1	D	321	GLY	2.4
1	D	344	ARG	2.4
1	D	343	ASN	2.4
2	E	115	LEU	2.3
1	D	303	GLN	2.3
1	D	341	ILE	2.3
2	F	114	SER	2.2
2	E	127	ASP	2.2
1	C	275	HIS	2.2
1	C	344	ARG	2.2
1	C	357	ARG	2.1
1	D	289	GLY	2.1
1	D	292	ARG	2.1
2	F	112	LEU	2.1
1	A	7	TYR	2.0
2	E	119	THR	2.0

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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
2	LA2	F	64	20/21	0.93	0.12	23,47,55,61	0
2	LA2	E	64	20/21	0.96	0.10	24,30,45,51	0

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.