



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 6, 2026 – 05:34 PM UTC

PDB ID : 4CO6 / pdb_00004co6
Title : Crystal structure of the Nipah virus RNA free nucleoprotein- phosphoprotein complex
Authors : Yabukarksi, F.; Lawrence, P.; Tarbouriech, N.; Bourhis, J.M.; Jensen, M.R.; Ruigrok, R.W.H.; Blackledge, M.; Volchkov, V.; Jamin, M.
Deposited on : 2014-01-27
Resolution : 2.50 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

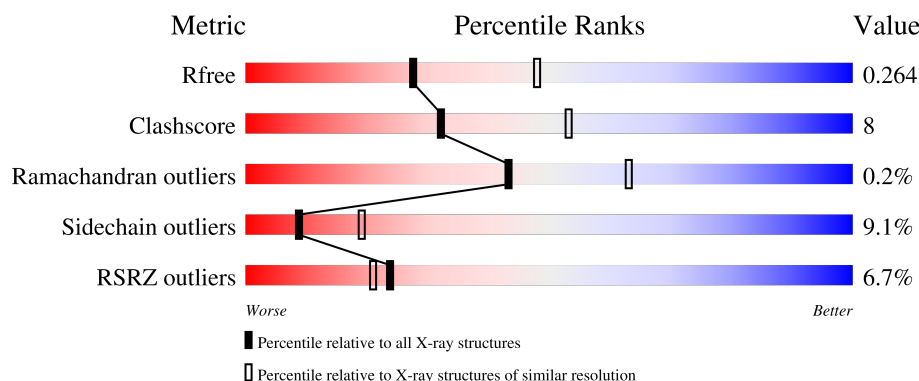
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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	5829 (2.50-2.50)
Clashscore	190562	6492 (2.50-2.50)
Ramachandran outliers	187476	6378 (2.50-2.50)
Sidechain outliers	187428	6380 (2.50-2.50)
RSRZ outliers	180081	5833 (2.50-2.50)

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	356	2% 68% 21% 7%
1	B	356	3% 69% 20% 9%
1	C	356	11% 45% 10% 44%
2	D	52	6% 60% 17% 23%
2	E	52	2% 58% 17% 25%

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Mol	Chain	Length	Quality of chain
2	F	52	6% 46% 23% • 29%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 7650 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 NUCLEOPROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	330	Total	C	N	O	Se	0	1	0
			2599	1666	443	474	16			
1	B	324	Total	C	N	O	Se	0	0	0
			2574	1649	441	469	15			
1	C	200	Total	C	N	O	Se	0	1	0
			1444	920	248	267	9			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	28	GLY	-	expression tag	UNP Q9IK92
A	29	ALA	-	expression tag	UNP Q9IK92
A	30	MSE	-	expression tag	UNP Q9IK92
A	31	ALA	-	expression tag	UNP Q9IK92
B	28	GLY	-	expression tag	UNP Q9IK92
B	29	ALA	-	expression tag	UNP Q9IK92
B	30	MSE	-	expression tag	UNP Q9IK92
B	31	ALA	-	expression tag	UNP Q9IK92
C	28	GLY	-	expression tag	UNP Q9IK92
C	29	ALA	-	expression tag	UNP Q9IK92
C	30	MSE	-	expression tag	UNP Q9IK92
C	31	ALA	-	expression tag	UNP Q9IK92

- Molecule 2 is a protein called PHOSPHOPROTEIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	40	Total	C	N	O	S	0	0	0
			317	198	55	63	1			
2	E	39	Total	C	N	O	S	0	0	0
			309	192	54	62	1			
2	F	37	Total	C	N	O	S	0	0	0
			299	187	52	59	1			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-1	GLY	-	expression tag	UNP Q9IK91
D	0	ALA	-	expression tag	UNP Q9IK91
E	-1	GLY	-	expression tag	UNP Q9IK91
E	0	ALA	-	expression tag	UNP Q9IK91
F	-1	GLY	-	expression tag	UNP Q9IK91
F	0	ALA	-	expression tag	UNP Q9IK91

- Molecule 3 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	5	Total Cl 5 5	0	0
3	B	2	Total Cl 2 2	0	0

- Molecule 4 is BROMIDE ION (CCD ID: BR) (formula: Br).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total Br 1 1	0	0
4	C	1	Total Br 1 1	0	0

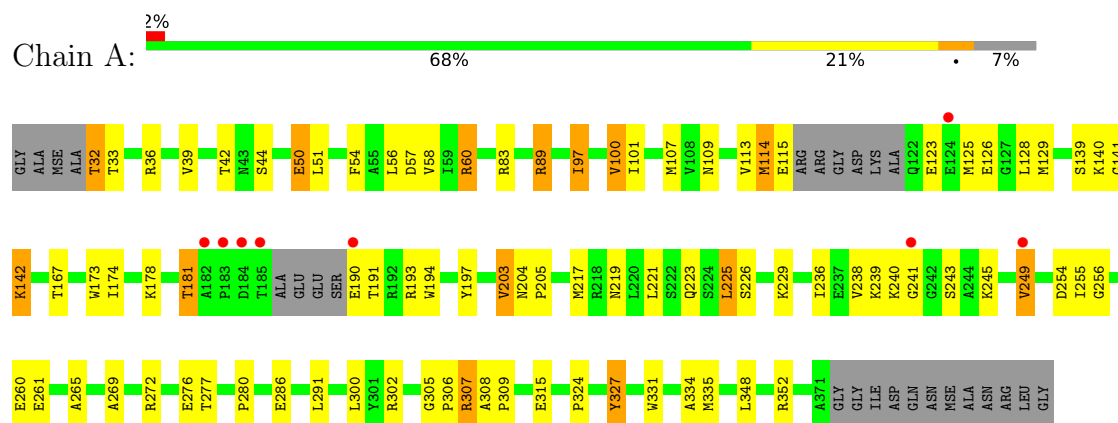
- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	42	Total O 42 42	0	0
5	B	33	Total O 33 33	0	0
5	C	17	Total O 17 17	0	0
5	D	2	Total O 2 2	0	0
5	E	3	Total O 3 3	0	0
5	F	2	Total O 2 2	0	0

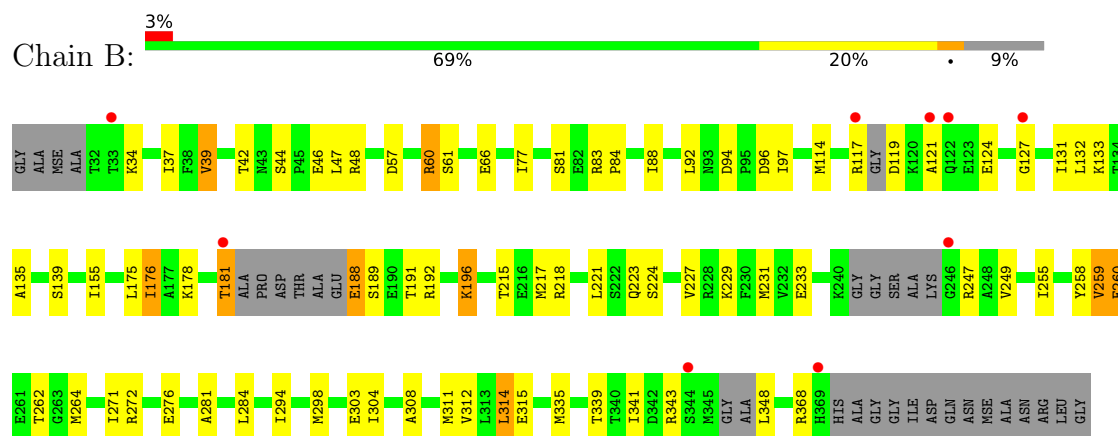
3 Residue-property plots

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.

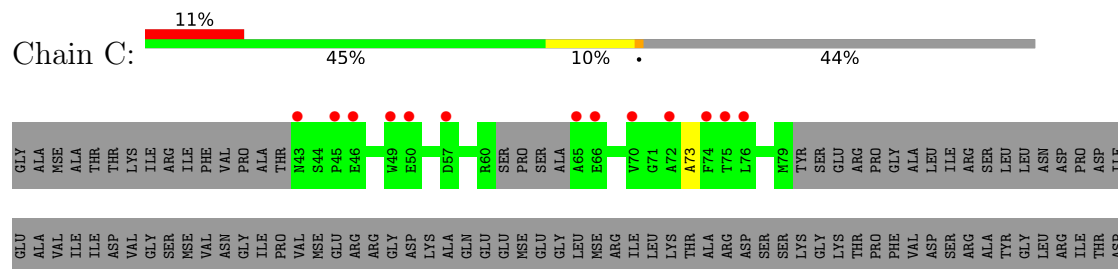
• Molecule 1: NUCLEOPROTEIN

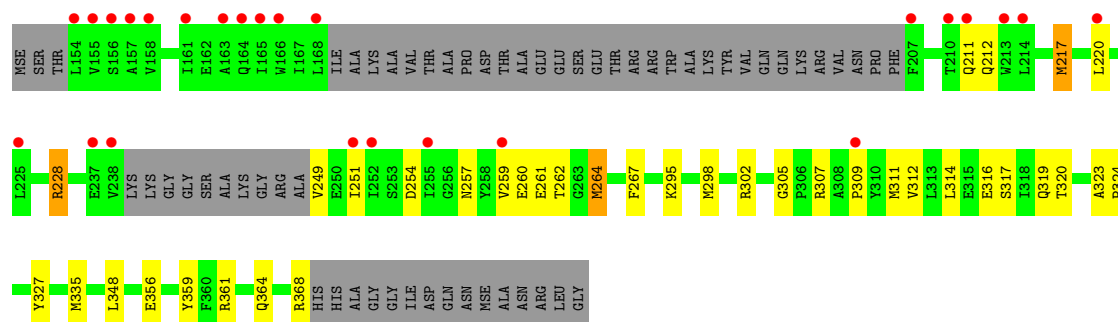


• Molecule 1: NUCLEOPROTEIN

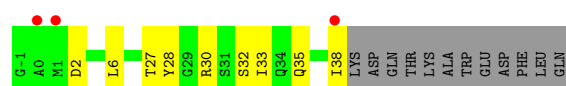


• Molecule 1: NUCLEOPROTEIN

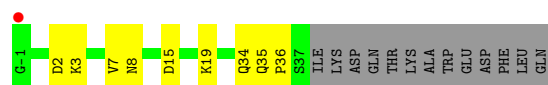




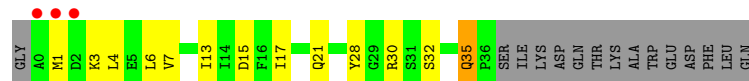
• Molecule 2: PHOSPHOPROTEIN



• Molecule 2: PHOSPHOPROTEIN



• Molecule 2: PHOSPHOPROTEIN



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	82.89Å 98.96Å 156.91Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.19 – 2.50 47.19 – 2.50	Depositor EDS
% Data completeness (in resolution range)	99.5 (47.19-2.50) 99.6 (47.19-2.50)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.00 (at 2.51Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.192 , 0.259 0.202 , 0.264	Depositor DCC
R_{free} test set	2288 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å ²)	46.9	Xtriage
Anisotropy	0.618	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 51.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	7650	wwPDB-VP
Average B, all atoms (Å ²)	61.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 13.52% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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

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	0.61	0/2635	0.91	4/3536 (0.1%)
1	B	0.60	0/2603	0.89	4/3487 (0.1%)
1	C	0.56	0/1458	0.90	4/1958 (0.2%)
2	D	0.62	0/319	0.87	0/426
2	E	0.55	0/311	0.86	0/415
2	F	0.59	0/301	0.79	0/402
All	All	0.60	0/7627	0.89	12/10224 (0.1%)

There are no bond length outliers.

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	94	ASP	CA-C-N	7.12	126.83	119.64
1	B	94	ASP	C-N-CA	7.12	126.83	119.64
1	C	305	GLY	CA-C-N	5.24	125.30	119.32
1	C	305	GLY	C-N-CA	5.24	125.30	119.32
1	A	327	TYR	CA-C-N	5.21	124.82	119.56
1	A	327	TYR	C-N-CA	5.21	124.82	119.56
1	A	83	ARG	CA-C-N	5.13	125.17	119.32
1	A	83	ARG	C-N-CA	5.13	125.17	119.32
1	B	83	ARG	CA-C-N	5.12	125.16	119.32
1	B	83	ARG	C-N-CA	5.12	125.16	119.32
1	C	323	ALA	CA-C-N	5.09	125.17	119.87
1	C	323	ALA	C-N-CA	5.09	125.17	119.87

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	2599	0	2669	46	0
1	B	2574	0	2645	43	0
1	C	1444	0	1322	23	0
2	D	317	0	327	4	0
2	E	309	0	316	5	0
2	F	299	0	308	9	0
3	A	5	0	0	0	0
3	B	2	0	0	1	0
4	A	1	0	0	0	0
4	C	1	0	0	0	0
5	A	42	0	0	0	0
5	B	33	0	0	0	0
5	C	17	0	0	1	0
5	D	2	0	0	0	0
5	E	3	0	0	0	0
5	F	2	0	0	1	0
All	All	7650	0	7587	121	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 8.

All (121) 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:A:193:ARG:HD2	1:A:194:TRP:H	1.34	0.93
1:A:335[B]:MSE:SE	1:A:348:LEU:HG	2.26	0.85
1:A:32:THR:OG1	1:A:33:THR:N	2.10	0.83
1:C:302:ARG:NH1	2:E:8:ASN:OD1	2.13	0.82
1:B:42:THR:HG23	1:B:44:SER:H	1.48	0.78
1:A:42:THR:HG22	1:A:44:SER:H	1.48	0.78
1:A:113:VAL:HA	1:A:125:MSE:HE1	1.64	0.77
1:C:335[B]:MSE:SE	1:C:348:LEU:HG	2.35	0.77
1:A:109:ASN:HB2	1:A:129:MSE:HE1	1.73	0.70
1:C:361:ARG:NH2	5:C:2017:HOH:O	2.25	0.69
1:C:260:GLU:HG3	1:C:309:PRO:HB3	1.76	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:178:LYS:HB3	1:B:218:ARG:HH12	1.60	0.67
1:B:39:VAL:HG22	1:B:84:PRO:HB2	1.76	0.67
1:C:261:GLU:OE1	2:E:3:LYS:NZ	2.25	0.66
1:B:117:ARG:HA	1:B:121:ALA:HB2	1.78	0.65
1:C:356:GLU:HG3	1:C:359:TYR:HD1	1.62	0.64
1:A:219:ASN:O	1:A:223:GLN:HG2	2.00	0.61
1:C:312:VAL:HG12	1:C:319:GLN:HB2	1.83	0.61
1:A:225:LEU:HD11	1:A:315:GLU:HG3	1.83	0.59
1:B:188:GLU:OE1	1:B:192:ARG:NH1	2.36	0.59
1:B:77:ILE:HG13	1:B:231:MSE:HE2	1.85	0.58
1:A:306:PRO:O	1:A:309:PRO:HD2	2.03	0.58
1:A:225:LEU:HD22	1:A:229:LYS:HG3	1.86	0.58
1:A:280:PRO:HB2	2:D:28:TYR:HB2	1.88	0.56
1:C:264:MSE:HB2	1:C:267:PHE:HB3	1.86	0.56
1:B:46:GLU:HG2	1:B:155:ILE:O	2.05	0.56
1:B:335:MSE:O	1:B:339:THR:HG23	2.06	0.56
1:B:114:MSE:HE3	1:B:124:GLU:HB3	1.87	0.56
1:B:176:ILE:HG12	1:B:221:LEU:HD21	1.87	0.55
1:C:259:VAL:HA	1:C:262:THR:HG22	1.88	0.55
1:B:181:THR:O	1:B:181:THR:OG1	2.22	0.55
1:B:298:MSE:HB3	2:F:7:VAL:HG13	1.89	0.54
1:A:60:ARG:NH2	1:A:142:LYS:O	2.41	0.54
1:A:193:ARG:HD2	1:A:194:TRP:N	2.13	0.54
1:B:178:LYS:HB3	1:B:218:ARG:NH1	2.23	0.53
1:B:227:VAL:O	1:B:231:MSE:HG3	2.09	0.53
1:B:66:GLU:OE1	1:B:223:GLN:NE2	2.42	0.53
1:B:61:SER:HB2	1:B:135:ALA:HB2	1.90	0.52
2:F:32:SER:HB3	2:F:35:GLN:HG2	1.92	0.52
1:B:92:LEU:HD11	1:B:97:ILE:HD11	1.92	0.52
1:A:97:ILE:HD12	1:A:226:SER:OG	2.10	0.52
1:B:175:LEU:O	1:B:218:ARG:NH1	2.43	0.51
1:C:257:ASN:O	1:C:261:GLU:HG2	2.10	0.51
1:A:173:TRP:HB3	1:A:255:ILE:HG13	1.91	0.51
1:A:269:ALA:HB1	1:A:335[B]:MSE:HE1	1.93	0.51
1:A:272:ARG:O	1:A:276:GLU:HB2	2.11	0.50
1:A:174:ILE:HD13	1:A:193:ARG:HD3	1.93	0.50
1:B:57:ASP:HA	1:B:60:ARG:HD2	1.94	0.49
1:C:212:GLN:O	1:C:212:GLN:HG2	2.12	0.49
1:A:139:SER:OG	1:A:142:LYS:HB2	2.12	0.49
1:B:264:MSE:HA	3:B:1371:CL:CL	2.50	0.49
1:A:236:ILE:HD11	1:A:307:ARG:HG3	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:256:GLY:O	1:A:260:GLU:HG3	2.11	0.49
1:A:308:ALA:HB3	1:A:309:PRO:HD3	1.95	0.49
1:A:50:GLU:HB2	1:A:107:MSE:HG3	1.95	0.49
1:B:308:ALA:O	1:B:311:MSE:HG2	2.12	0.49
1:A:324:PRO:HA	1:A:327:TYR:CZ	2.48	0.49
2:E:15:ASP:OD2	2:E:19:LYS:NZ	2.38	0.48
1:A:331:TRP:O	1:A:335[A]:MSE:HG3	2.14	0.48
1:C:356:GLU:HG3	1:C:359:TYR:CD1	2.47	0.48
1:C:364:GLN:O	1:C:368:ARG:HG3	2.13	0.48
1:B:311:MSE:HA	1:B:314:LEU:HD22	1.96	0.48
1:A:54:PHE:HZ	1:A:128:LEU:HD22	1.79	0.47
1:C:298:MSE:HB3	2:E:7:VAL:HG13	1.96	0.47
1:B:77:ILE:CG1	1:B:231:MSE:HE2	2.44	0.47
1:B:227:VAL:CG1	1:B:231:MSE:HE3	2.45	0.47
1:B:294:ILE:O	1:B:298:MSE:HG3	2.14	0.47
2:D:30:ARG:NH1	2:D:35:GLN:O	2.48	0.47
1:C:251:ILE:O	1:C:254:ASP:HB3	2.15	0.47
1:C:295:LYS:HA	1:C:298:MSE:HE2	1.97	0.46
1:C:73:ALA:HB2	1:C:217:MSE:HE1	1.96	0.46
1:A:193:ARG:H	1:A:193:ARG:HG3	1.48	0.45
1:B:260:GLU:O	2:F:3:LYS:NZ	2.44	0.45
1:B:258:TYR:CE1	1:B:262:THR:HG21	2.51	0.45
1:B:224:SER:OG	1:B:227:VAL:HG23	2.17	0.45
1:B:255:ILE:O	1:B:259:VAL:HG13	2.16	0.45
1:A:89:ARG:HG2	1:A:101:ILE:HD12	1.99	0.45
2:D:32:SER:O	2:D:35:GLN:HB2	2.17	0.45
1:A:57:ASP:OD1	1:A:60:ARG:HD3	2.17	0.44
1:A:139:SER:O	1:A:141:GLY:N	2.43	0.44
1:B:196:LYS:HE2	1:B:196:LYS:HB3	1.68	0.44
1:A:197:TYR:HB3	1:A:203:VAL:HB	1.99	0.44
2:F:21:GLN:HB3	5:F:2002:HOH:O	2.17	0.44
1:C:228:ARG:HB2	1:C:314:LEU:HD23	2.00	0.44
1:B:217:MSE:HE2	1:B:221:LEU:HD13	1.99	0.43
1:C:356:GLU:CG	1:C:359:TYR:HD1	2.30	0.43
2:F:30:ARG:HD2	2:F:32:SER:O	2.19	0.43
1:B:229:LYS:O	1:B:233:GLU:HG2	2.18	0.43
1:B:271:ILE:HG22	2:F:6:LEU:HD22	2.00	0.43
1:A:245:LYS:O	1:A:249:VAL:HG13	2.19	0.43
1:A:286:GLU:CD	2:D:33:ILE:HG22	2.43	0.43
1:C:217:MSE:HE3	1:C:217:MSE:HA	2.01	0.43
2:F:4:LEU:HD12	2:F:4:LEU:HA	1.72	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:261:GLU:O	1:A:265:ALA:HB2	2.18	0.43
1:B:57:ASP:OD1	1:B:60:ARG:HD2	2.19	0.42
1:A:114:MSE:HE2	1:A:114:MSE:HB3	1.88	0.42
1:A:178:LYS:HA	1:A:181:THR:HG23	2.00	0.42
2:E:35:GLN:HA	2:E:36:PRO:HD3	1.92	0.42
1:A:204:ASN:HA	1:A:205:PRO:HD3	1.87	0.42
1:A:217:MSE:HE3	1:A:221:LEU:HG	2.02	0.42
1:C:335[A]:MSE:HE2	1:C:348:LEU:O	2.20	0.42
1:A:123:GLU:HA	1:A:126:GLU:CD	2.44	0.42
1:B:77:ILE:HD13	1:B:77:ILE:HA	1.81	0.42
1:B:127:GLY:O	1:B:131:ILE:HG13	2.20	0.42
1:B:117:ARG:HD3	1:B:119:ASP:N	2.34	0.42
2:F:13:ILE:O	2:F:17:ILE:HG12	2.19	0.42
1:A:240:LYS:HB3	1:A:241:GLY:HA2	2.01	0.41
1:A:334:ALA:C	1:A:335[B]:MSE:HE2	2.45	0.41
1:B:48:ARG:NH2	1:B:81:SER:O	2.53	0.41
1:A:167:THR:HA	1:A:203:VAL:HG22	2.03	0.41
1:B:42:THR:HG22	1:B:47:LEU:HD23	2.03	0.41
1:B:281:ALA:O	1:B:284:LEU:HG	2.21	0.41
1:C:324:PRO:HA	1:C:327:TYR:CZ	2.56	0.41
1:A:54:PHE:O	1:A:58:VAL:HG23	2.20	0.41
1:A:305:GLY:HA3	1:A:306:PRO:HD3	1.88	0.41
1:B:272:ARG:O	1:B:276:GLU:HB2	2.20	0.41
1:A:36:ARG:HA	1:A:100:VAL:HG13	2.03	0.40
1:A:197:TYR:OH	1:A:254:ASP:OD2	2.31	0.40
1:C:311:MSE:SE	1:C:314:LEU:HD12	2.70	0.40
1:B:284:LEU:HD21	2:F:28:TYR:HE2	1.86	0.40
1:B:37:ILE:HG21	1:B:88:ILE:HD13	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	325/356 (91%)	314 (97%)	10 (3%)	1 (0%)	36	55
1	B	314/356 (88%)	304 (97%)	9 (3%)	1 (0%)	36	55
1	C	191/356 (54%)	184 (96%)	7 (4%)	0	100	100
2	D	38/52 (73%)	38 (100%)	0	0	100	100
2	E	37/52 (71%)	37 (100%)	0	0	100	100
2	F	35/52 (67%)	35 (100%)	0	0	100	100
All	All	940/1224 (77%)	912 (97%)	26 (3%)	2 (0%)	43	63

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	140	LYS
1	B	343	ARG

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	280/278 (101%)	253 (90%)	27 (10%)	8	17
1	B	279/278 (100%)	253 (91%)	26 (9%)	8	18
1	C	128/278 (46%)	118 (92%)	10 (8%)	11	24
2	D	36/47 (77%)	32 (89%)	4 (11%)	6	12
2	E	35/47 (74%)	33 (94%)	2 (6%)	18	39
2	F	34/47 (72%)	31 (91%)	3 (9%)	9	20
All	All	792/975 (81%)	720 (91%)	72 (9%)	9	19

All (72) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	32	THR
1	A	39	VAL
1	A	50	GLU

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Mol	Chain	Res	Type
1	A	51	LEU
1	A	56	LEU
1	A	60	ARG
1	A	89	ARG
1	A	97	ILE
1	A	100	VAL
1	A	114	MSE
1	A	115	GLU
1	A	142	LYS
1	A	181	THR
1	A	190	GLU
1	A	191	THR
1	A	203	VAL
1	A	225	LEU
1	A	238	VAL
1	A	239	LYS
1	A	243	SER
1	A	249	VAL
1	A	277	THR
1	A	291	LEU
1	A	300	LEU
1	A	302	ARG
1	A	307	ARG
1	A	352	ARG
1	B	34	LYS
1	B	39	VAL
1	B	60	ARG
1	B	96	ASP
1	B	132	LEU
1	B	133	LYS
1	B	139	SER
1	B	176	ILE
1	B	181	THR
1	B	188	GLU
1	B	189	SER
1	B	191	THR
1	B	196	LYS
1	B	215	THR
1	B	247	ARG
1	B	249	VAL
1	B	259	VAL
1	B	260	GLU

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Mol	Chain	Res	Type
1	B	303	GLU
1	B	304	ILE
1	B	312	VAL
1	B	314	LEU
1	B	315	GLU
1	B	341	ILE
1	B	348	LEU
1	B	368	ARG
1	C	211	GLN
1	C	217	MSE
1	C	220	LEU
1	C	228	ARG
1	C	249	VAL
1	C	264	MSE
1	C	307	ARG
1	C	316	GLU
1	C	317	SER
1	C	320	THR
2	D	2	ASP
2	D	6	LEU
2	D	27	THR
2	D	38	ILE
2	E	2	ASP
2	E	34	GLN
2	F	1	MET
2	F	15	ASP
2	F	35	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	370	HIS
1	B	122	GLN
1	C	211	GLN
1	C	257	ASN
2	D	34	GLN

5.3.3 RNA ⓘ

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 9 ligands modelled in this entry, 9 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 [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

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	315/356 (88%)	0.02	8 (2%) 58 54	27, 53, 98, 155	0
1	B	309/356 (86%)	0.10	9 (2%) 53 49	28, 56, 93, 122	0
1	C	190/356 (53%)	0.74	38 (20%) 3 2	31, 81, 131, 165	0
2	D	40/52 (76%)	0.18	3 (7%) 20 18	35, 55, 104, 121	0
2	E	39/52 (75%)	0.21	1 (2%) 57 52	43, 58, 96, 114	0
2	F	37/52 (71%)	0.05	3 (8%) 18 15	34, 55, 97, 106	0
All	All	930/1224 (75%)	0.21	62 (6%) 24 21	27, 56, 117, 165	0

All (62) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	255	ILE	6.5
2	D	38	ILE	4.7
1	C	45	PRO	3.7
1	C	156	SER	3.6
1	C	43	ASN	3.4
1	C	237	GLU	3.4
1	C	65	ALA	3.4
1	B	369	HIS	3.4
1	A	182	ALA	3.4
1	B	181	THR	3.3
1	C	76	LEU	3.2
1	B	33	THR	3.2
1	C	161	ILE	3.2
2	E	-1	GLY	3.2
1	C	46	GLU	3.1
1	A	185	THR	3.1
1	C	166	TRP	3.0
1	C	168	LEU	3.0
1	C	220	LEU	3.0

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Mol	Chain	Res	Type	RSRZ
2	F	2	ASP	3.0
1	C	57	ASP	2.8
1	C	252	ILE	2.8
1	B	127	GLY	2.8
1	C	238	VAL	2.8
1	C	164	GLN	2.8
1	C	75	THR	2.7
1	B	122	GLN	2.7
1	A	190	GLU	2.7
1	C	214	LEU	2.6
1	B	344	SER	2.6
1	C	50	GLU	2.6
2	D	0	ALA	2.6
1	C	251	ILE	2.5
1	B	246	GLY	2.5
1	C	259	VAL	2.5
1	A	184	ASP	2.5
1	C	309	PRO	2.5
1	A	124	GLU	2.5
1	C	49	TRP	2.4
1	C	210	THR	2.4
1	C	66	GLU	2.4
1	C	74	PHE	2.4
2	D	1	MET	2.4
2	F	0	ALA	2.4
1	C	213	TRP	2.4
1	B	117	ARG	2.3
1	A	241	GLY	2.3
1	C	155	VAL	2.3
1	C	72	ALA	2.2
1	C	211	GLN	2.2
1	C	157	ALA	2.2
1	C	225	LEU	2.2
1	C	158	VAL	2.2
1	C	207	PHE	2.2
1	C	154	LEU	2.2
1	B	121	ALA	2.1
1	A	183	PRO	2.1
1	C	165	ILE	2.1
2	F	1	MET	2.1
1	C	70	VAL	2.1
1	A	249	VAL	2.0

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Mol	Chain	Res	Type	RSRZ
1	C	163	ALA	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	CL	B	1371	1/1	0.96	0.07	56,56,56,56	0
3	CL	A	1375	1/1	0.97	0.07	48,48,48,48	0
3	CL	A	1377	1/1	0.97	0.06	40,40,40,40	0
3	CL	B	1370	1/1	0.97	0.08	40,40,40,40	0
3	CL	A	1374	1/1	0.97	0.05	43,43,43,43	0
3	CL	A	1372	1/1	0.98	0.12	48,48,48,48	0
4	BR	C	1369	1/1	0.98	0.11	66,66,66,66	0
4	BR	A	1376	1/1	0.99	0.03	58,58,58,58	0
3	CL	A	1373	1/1	0.99	0.05	41,41,41,41	0

6.5 Other polymers [i](#)

There are no such residues in this entry.