WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Oct 31, 2023 – 10:40 AM JST

PDB ID	:	5C3N
Title	:	Crystal structure of MERS coronavirus main protease in spacegroup C2221
Authors	:	Chou, C.Y.; Cheng, S.C.
Deposited on	:	2015-06-17
Resolution	:	3.00 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
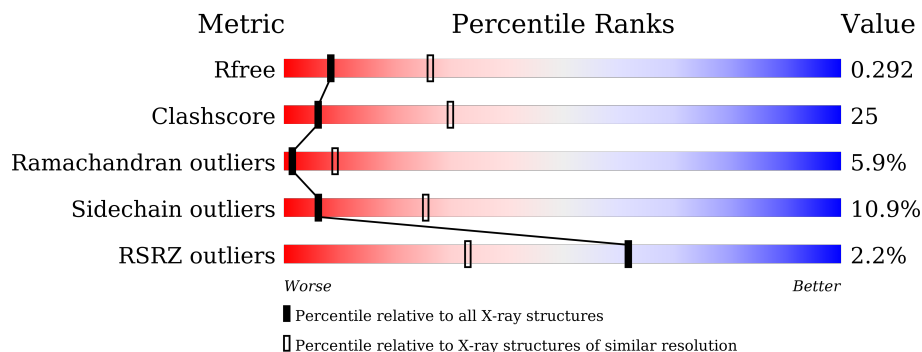http://www.wwpdb.org/validation/2017/FAQs#types.

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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 3.00 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	Percentile Ranks	Value
Rfree		0.292
Clashscore		25
Ramachandran outliers		5.9%
Sidechain outliers		10.9%
RSRZ outliers		2.2%

Worse ← → Better

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2092 (3.00-3.00)
Clashscore	141614	2416 (3.00-3.00)
Ramachandran outliers	138981	2333 (3.00-3.00)
Sidechain outliers	138945	2336 (3.00-3.00)
RSRZ outliers	127900	1990 (3.00-3.00)

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	306	2% / 70% 20% 8% ·
1	B	306	3% / 63% 27% 8% ·

2 Entry composition ⓘ

There is only 1 type of molecule in this entry. The entry contains 4580 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 ORF1a protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	301	Total	C	N	O	S	0	0	0
			2294	1457	380	432	25			
1	B	300	Total	C	N	O	S	0	0	0
			2286	1452	379	431	24			

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: ORF1a protein

Chain A:

- Molecule 1: ORF1a protein

Chain B:
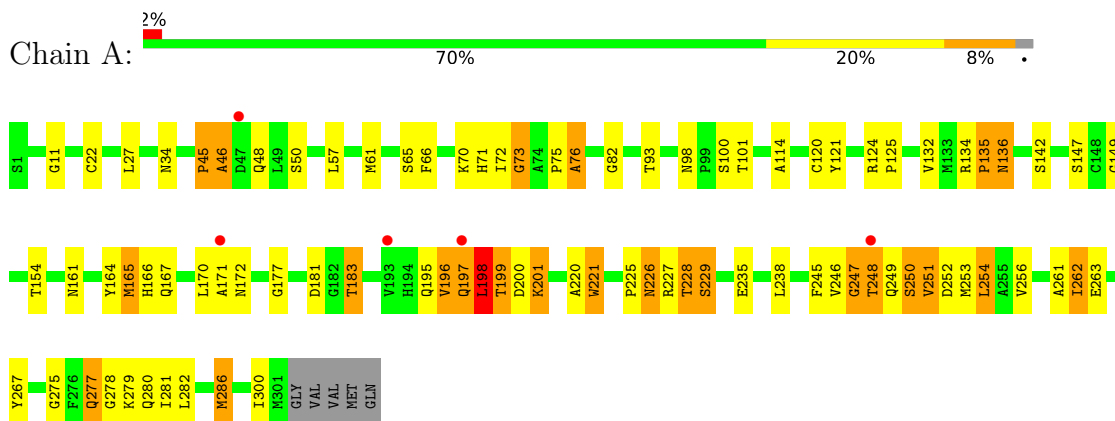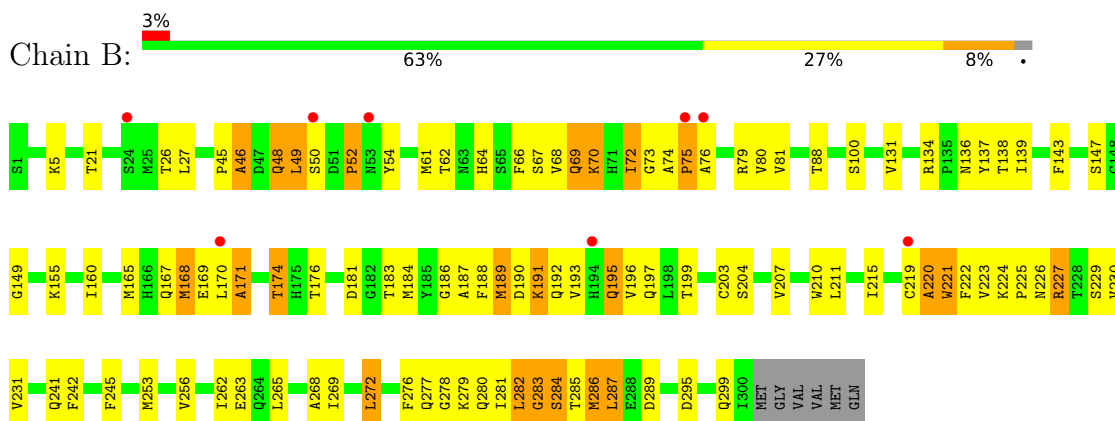
4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	87.23Å 94.04Å 155.06Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 3.00 26.15 – 3.00	Depositor EDS
% Data completeness (in resolution range)	93.3 (30.00-3.00) 93.5 (26.15-3.00)	Depositor EDS
R_{merge}	0.17	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	4.55 (at 3.00Å)	Xtriage
Refinement program	REFMAC 5.8.0123	Depositor
R, R_{free}	0.218 , 0.282 0.233 , 0.292	Depositor DCC
R_{free} test set	578 reflections (4.72%)	wwPDB-VP
Wilson B-factor (Å^2)	58.5	Xtriage
Anisotropy	0.410	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 32.8	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	4580	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 4.24% 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 ⓘ

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	0.48	0/2348	0.70	0/3196
1	B	0.53	1/2340 (0.0%)	0.68	0/3186
All	All	0.51	1/4688 (0.0%)	0.69	0/6382

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	52	PRO	N-CD	5.28	1.55	1.47

There are no bond angle outliers.

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	2294	0	2241	92	1
1	B	2286	0	2232	136	1
All	All	4580	0	4473	223	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 25.

All (223) 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:75:PRO:HB2	1:B:76:ALA:CB	1.41	1.46
1:B:285:THR:O	1:B:286:MET:HG2	1.20	1.33
1:A:252:ASP:O	1:A:254:LEU:N	1.67	1.26
1:B:75:PRO:CB	1:B:76:ALA:HB2	1.66	1.25
1:B:189:MET:HE2	1:B:191:LYS:HE3	1.20	1.18
1:B:189:MET:CE	1:B:191:LYS:HE3	1.72	1.18
1:B:75:PRO:HB2	1:B:76:ALA:CA	1.75	1.14
1:A:149:GLY:O	1:A:165:MET:HE3	1.50	1.10
1:B:210:TRP:CZ2	1:B:281:ILE:HD11	1.87	1.10
1:B:219:CYS:HA	1:B:220:ALA:HB3	1.23	1.10
1:B:210:TRP:CH2	1:B:281:ILE:HD11	1.89	1.08
1:B:155:LYS:HG2	1:B:160:ILE:HD13	1.37	1.07
1:B:272:LEU:HB2	1:B:286:MET:HE3	1.35	1.06
1:B:285:THR:O	1:B:286:MET:CG	2.04	1.05
1:B:189:MET:HE2	1:B:191:LYS:CE	1.85	1.05
1:B:169:GLU:O	1:B:170:LEU:HD12	1.57	1.05
1:A:249:GLN:O	1:A:251:VAL:N	1.88	1.03
1:B:70:LYS:HE2	1:B:72:ILE:CG1	1.88	1.03
1:B:283:GLY:CA	1:B:284:SER:HB2	1.86	1.03
1:A:149:GLY:O	1:A:165:MET:CE	2.06	1.03
1:B:272:LEU:HB2	1:B:286:MET:CE	1.90	1.01
1:B:70:LYS:HE2	1:B:72:ILE:HB	1.43	1.01
1:B:283:GLY:HA3	1:B:284:SER:HB2	1.42	0.98
1:A:196:VAL:HG22	1:A:197:GLN:H	1.29	0.97
1:A:227:ARG:O	1:A:267:TYR:HB2	1.64	0.97
1:B:70:LYS:HE2	1:B:72:ILE:CB	1.94	0.97
1:B:75:PRO:HB2	1:B:76:ALA:HB2	0.95	0.94
1:B:189:MET:CE	1:B:191:LYS:CE	2.41	0.93
1:B:75:PRO:CB	1:B:76:ALA:CB	2.36	0.93
1:A:245:PHE:HZ	1:A:262:ILE:HD11	1.34	0.92
1:B:227:ARG:NH1	1:B:263:GLU:OE1	2.04	0.91
1:B:48:GLN:HA	1:B:48:GLN:HE21	1.34	0.90
1:B:272:LEU:CB	1:B:286:MET:CE	2.47	0.90
1:B:70:LYS:CE	1:B:72:ILE:HB	2.01	0.90
1:A:72:ILE:HD11	1:A:125:PRO:HD2	1.54	0.89
1:B:155:LYS:HE3	1:B:160:ILE:HD11	1.55	0.89
1:A:252:ASP:C	1:A:254:LEU:H	1.76	0.87
1:B:50:SER:O	1:B:52:PRO:HD3	1.75	0.87
1:B:219:CYS:HA	1:B:220:ALA:CB	2.05	0.87
1:A:251:VAL:HA	1:A:252:ASP:C	1.96	0.86
1:A:75:PRO:HB3	1:A:76:ALA:HB2	1.58	0.86
1:B:75:PRO:CG	1:B:76:ALA:HB2	2.05	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:281:ILE:HG13	1:B:282:LEU:N	1.90	0.85
1:B:224:LYS:HD3	1:B:226:ASN:HB2	1.57	0.85
1:A:136:ASN:HB3	1:A:198:LEU:O	1.78	0.83
1:B:169:GLU:C	1:B:170:LEU:HD12	1.99	0.82
1:B:75:PRO:CB	1:B:76:ALA:CA	2.53	0.81
1:B:272:LEU:CB	1:B:286:MET:HE1	2.09	0.81
1:B:272:LEU:CB	1:B:286:MET:HE3	2.08	0.81
1:A:136:ASN:CB	1:A:198:LEU:O	2.29	0.80
1:B:283:GLY:HA3	1:B:284:SER:CB	2.10	0.80
1:B:281:ILE:HG13	1:B:282:LEU:H	1.42	0.80
1:B:189:MET:HE1	1:B:191:LYS:HE3	1.62	0.79
1:B:210:TRP:CH2	1:B:281:ILE:CD1	2.66	0.78
1:B:75:PRO:HB2	1:B:76:ALA:HA	1.65	0.78
1:B:224:LYS:HG2	1:B:226:ASN:H	1.49	0.77
1:B:272:LEU:HD12	1:B:287:LEU:HD11	1.66	0.77
1:B:272:LEU:HD12	1:B:287:LEU:CD1	2.14	0.76
1:B:50:SER:O	1:B:52:PRO:CD	2.34	0.76
1:B:155:LYS:HG2	1:B:160:ILE:CD1	2.14	0.75
1:B:225:PRO:O	1:B:227:ARG:HG3	1.86	0.75
1:A:245:PHE:CZ	1:A:262:ILE:HD11	2.20	0.73
1:B:283:GLY:N	1:B:284:SER:HB2	2.03	0.73
1:B:75:PRO:CB	1:B:76:ALA:HA	2.20	0.72
1:B:168:MET:HG2	1:B:170:LEU:CD1	2.19	0.72
1:B:221:TRP:HZ2	1:B:281:ILE:HG22	1.51	0.71
1:B:70:LYS:HE2	1:B:72:ILE:HG13	1.72	0.71
1:A:196:VAL:HG22	1:A:197:GLN:N	2.04	0.71
1:B:224:LYS:HG3	1:B:225:PRO:HD2	1.74	0.69
1:A:22:CYS:SG	1:A:66:PHE:CE1	2.85	0.69
1:A:170:LEU:O	1:A:172:ASN:N	2.26	0.69
1:A:246:VAL:HG22	1:A:248:THR:HG22	1.75	0.68
1:B:215:ILE:HA	1:B:220:ALA:HB2	1.76	0.68
1:A:286:MET:HG2	1:B:285:THR:CG2	2.24	0.68
1:B:48:GLN:HA	1:B:48:GLN:NE2	2.08	0.67
1:A:251:VAL:HG23	1:A:252:ASP:O	1.95	0.67
1:A:70:LYS:O	1:A:71:HIS:HB2	1.93	0.66
1:B:88:THR:HG21	1:B:184:MET:HE3	1.78	0.66
1:B:136:ASN:O	1:B:137:TYR:HB2	1.95	0.66
1:B:221:TRP:CZ2	1:B:281:ILE:HG22	2.31	0.66
1:A:246:VAL:HG13	1:A:247:GLY:N	2.10	0.66
1:B:272:LEU:HB3	1:B:286:MET:HE1	1.76	0.66
1:A:22:CYS:HB2	1:A:66:PHE:CD1	2.32	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:203:CYS:HB2	1:B:289:ASP:HB2	1.78	0.65
1:B:224:LYS:CG	1:B:225:PRO:HD2	2.27	0.64
1:A:246:VAL:O	1:A:248:THR:HG22	1.97	0.64
1:B:88:THR:HG21	1:B:184:MET:CE	2.26	0.64
1:B:155:LYS:HE3	1:B:160:ILE:CD1	2.28	0.64
1:B:224:LYS:HG2	1:B:225:PRO:N	2.13	0.63
1:B:48:GLN:C	1:B:50:SER:H	2.00	0.63
1:A:121:TYR:CE1	1:A:147:SER:HB3	2.34	0.62
1:A:251:VAL:N	1:A:252:ASP:HB2	2.13	0.62
1:A:226:ASN:O	1:A:227:ARG:HG2	1.99	0.62
1:A:251:VAL:CG2	1:A:254:LEU:HD23	2.30	0.61
1:B:219:CYS:CA	1:B:220:ALA:HB3	2.15	0.61
1:B:54:TYR:OH	1:B:190:ASP:OD2	2.18	0.61
1:B:50:SER:C	1:B:52:PRO:HD3	2.21	0.61
1:B:242:PHE:CE2	1:B:269:ILE:HD11	2.37	0.60
1:B:276:PHE:HA	1:B:286:MET:HG3	1.82	0.60
1:A:75:PRO:CB	1:A:76:ALA:HB2	2.32	0.59
1:A:249:GLN:C	1:A:251:VAL:H	1.97	0.59
1:A:72:ILE:HD11	1:A:125:PRO:CD	2.31	0.59
1:A:136:ASN:HB2	1:A:198:LEU:O	2.02	0.59
1:A:251:VAL:CA	1:A:252:ASP:HB2	2.32	0.58
1:A:246:VAL:HG22	1:A:248:THR:CG2	2.32	0.58
1:A:225:PRO:O	1:A:226:ASN:O	2.21	0.58
1:A:164:TYR:CE1	1:A:177:GLY:HA3	2.39	0.58
1:B:189:MET:CE	1:B:191:LYS:HE2	2.32	0.57
1:A:251:VAL:HG21	1:A:254:LEU:CD2	2.35	0.57
1:A:251:VAL:CG2	1:A:254:LEU:CD2	2.82	0.57
1:A:196:VAL:HG13	1:A:197:GLN:N	2.20	0.57
1:A:221:TRP:CZ2	1:A:281:ILE:HD11	2.40	0.57
1:A:120:CYS:O	1:A:147:SER:HA	2.04	0.57
1:A:252:ASP:C	1:A:254:LEU:N	2.40	0.57
1:B:189:MET:HE1	1:B:191:LYS:CE	2.24	0.56
1:B:81:VAL:O	1:B:81:VAL:HG12	2.05	0.56
1:B:168:MET:HG2	1:B:170:LEU:HD11	1.87	0.56
1:B:70:LYS:HE2	1:B:72:ILE:HG12	1.85	0.56
1:A:277:GLN:N	1:A:278:GLY:HA2	2.21	0.55
1:B:169:GLU:C	1:B:170:LEU:CD1	2.71	0.55
1:A:197:GLN:O	1:A:198:LEU:CB	2.54	0.55
1:B:170:LEU:O	1:B:171:ALA:HB3	2.05	0.55
1:A:22:CYS:HB2	1:A:66:PHE:HD1	1.71	0.54
1:B:186:GLY:O	1:B:187:ALA:HB3	2.07	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:272:LEU:HB3	1:B:286:MET:CE	2.30	0.54
1:B:48:GLN:C	1:B:50:SER:N	2.61	0.54
1:B:224:LYS:CG	1:B:225:PRO:CD	2.86	0.54
1:A:249:GLN:C	1:A:251:VAL:N	2.55	0.53
1:A:227:ARG:NH1	1:A:261:ALA:CB	2.71	0.53
1:B:219:CYS:HB3	1:B:221:TRP:HD1	1.73	0.53
1:A:251:VAL:HG21	1:A:254:LEU:HD23	1.91	0.53
1:A:70:LYS:O	1:A:71:HIS:CB	2.56	0.52
1:A:72:ILE:O	1:A:73:GLY:C	2.46	0.52
1:A:136:ASN:N	1:A:136:ASN:HD22	2.06	0.52
1:B:21:THR:OG1	1:B:26:THR:HG23	2.09	0.52
1:A:196:VAL:HG22	1:A:197:GLN:HG3	1.90	0.52
1:A:45:PRO:O	1:A:46:ALA:HB2	2.09	0.52
1:A:149:GLY:C	1:A:165:MET:HE3	2.26	0.52
1:B:168:MET:CG	1:B:170:LEU:HD11	2.40	0.52
1:A:22:CYS:SG	1:A:66:PHE:HE1	2.31	0.51
1:A:57:LEU:O	1:A:61:MET:HG2	2.11	0.51
1:A:286:MET:HG2	1:B:285:THR:HG22	1.93	0.51
1:B:224:LYS:HD3	1:B:226:ASN:CB	2.34	0.51
1:B:189:MET:HE2	1:B:191:LYS:HE2	1.84	0.51
1:B:69:GLN:HA	1:B:76:ALA:O	2.10	0.51
1:A:251:VAL:CA	1:A:252:ASP:C	2.72	0.50
1:B:54:TYR:CZ	1:B:190:ASP:OD2	2.64	0.50
1:A:197:GLN:O	1:A:198:LEU:HB2	2.09	0.50
1:B:283:GLY:CA	1:B:284:SER:CB	2.67	0.50
1:A:164:TYR:CZ	1:A:166:HIS:HA	2.47	0.50
1:B:131:VAL:HG21	1:B:139:ILE:HB	1.93	0.49
1:A:221:TRP:HZ2	1:A:281:ILE:CG1	2.26	0.49
1:A:149:GLY:O	1:A:165:MET:HE2	2.09	0.49
1:B:272:LEU:O	1:B:286:MET:HE2	2.13	0.49
1:A:196:VAL:CG2	1:A:197:GLN:H	2.07	0.49
1:B:276:PHE:HD1	1:B:286:MET:HG3	1.78	0.49
1:B:66:PHE:HB2	1:B:80:VAL:HG21	1.95	0.48
1:A:262:ILE:HG23	1:A:263:GLU:N	2.28	0.48
1:B:70:LYS:CD	1:B:72:ILE:HB	2.44	0.48
1:A:246:VAL:HG13	1:A:247:GLY:H	1.79	0.48
1:B:143:PHE:HB3	1:B:147:SER:OG	2.14	0.48
1:A:251:VAL:HG13	1:A:251:VAL:O	2.13	0.47
1:A:226:ASN:HB2	1:A:267:TYR:CD2	2.49	0.47
1:B:75:PRO:HG2	1:B:76:ALA:HB2	1.95	0.47
1:B:265:LEU:O	1:B:268:ALA:N	2.47	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:50:SER:O	1:B:52:PRO:HD2	2.14	0.47
1:A:246:VAL:CG1	1:A:247:GLY:N	2.78	0.47
1:A:286:MET:CG	1:B:285:THR:CG2	2.93	0.46
1:B:67:SER:C	1:B:68:VAL:CG1	2.84	0.46
1:B:211:LEU:HD22	1:B:222:PHE:CZ	2.51	0.46
1:A:164:TYR:HE2	1:A:166:HIS:HB2	1.81	0.46
1:B:46:ALA:HA	1:B:49:LEU:HG	1.97	0.46
1:B:48:GLN:O	1:B:50:SER:N	2.49	0.46
1:B:79:ARG:O	1:B:81:VAL:HG23	2.16	0.45
1:B:134:ARG:NH2	1:B:289:ASP:OD2	2.39	0.45
1:B:189:MET:H	1:B:195:GLN:HE22	1.63	0.45
1:A:134:ARG:HB2	1:A:136:ASN:ND2	2.31	0.45
1:A:251:VAL:CG2	1:A:252:ASP:O	2.65	0.45
1:B:73:GLY:HA2	1:B:74:ALA:C	2.34	0.45
1:A:98:ASN:HB3	1:A:101:THR:OG1	2.17	0.44
1:A:286:MET:CG	1:B:285:THR:HG21	2.47	0.44
1:B:181:ASP:OD1	1:B:183:THR:HG23	2.17	0.44
1:B:284:SER:C	1:B:285:THR:HG23	2.36	0.44
1:B:67:SER:O	1:B:68:VAL:HG12	2.17	0.44
1:B:219:CYS:CA	1:B:220:ALA:CB	2.85	0.44
1:B:70:LYS:O	1:B:75:PRO:HB3	2.17	0.44
1:B:272:LEU:CA	1:B:286:MET:HE1	2.48	0.44
1:A:142:SER:OG	1:B:299:GLN:NE2	2.50	0.44
1:A:226:ASN:C	1:A:227:ARG:HG2	2.37	0.44
1:A:34:ASN:ND2	1:A:93:THR:HG23	2.34	0.43
1:A:198:LEU:O	1:A:199:THR:O	2.35	0.43
1:B:149:GLY:O	1:B:165:MET:HG3	2.18	0.43
1:A:135:PRO:HG2	1:A:201:LYS:O	2.18	0.43
1:B:272:LEU:O	1:B:286:MET:CE	2.67	0.43
1:B:170:LEU:O	1:B:174:THR:HB	2.19	0.43
1:A:247:GLY:O	1:A:249:GLN:N	2.52	0.43
1:B:134:ARG:HG2	1:B:138:THR:O	2.19	0.42
1:A:114:ALA:HB2	1:A:132:VAL:HG22	2.02	0.42
1:B:62:THR:OG1	1:B:64:HIS:CE1	2.72	0.42
1:A:220:ALA:C	1:A:221:TRP:CD1	2.92	0.42
1:B:278:GLY:N	1:B:279:LYS:HA	2.35	0.42
1:A:247:GLY:C	1:A:248:THR:HG22	2.40	0.42
1:A:181:ASP:OD1	1:A:183:THR:HG22	2.20	0.42
1:A:227:ARG:O	1:A:267:TYR:CB	2.51	0.42
1:B:263:GLU:O	1:B:265:LEU:N	2.53	0.41
1:A:196:VAL:CG2	1:A:197:GLN:N	2.73	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:224:LYS:CG	1:B:225:PRO:N	2.80	0.41
1:B:263:GLU:C	1:B:265:LEU:N	2.72	0.41
1:A:235:GLU:HA	1:A:238:LEU:HD12	2.02	0.41
1:A:246:VAL:O	1:A:247:GLY:C	2.57	0.41
1:B:207:VAL:HG12	1:B:211:LEU:HD12	2.01	0.41
1:A:262:ILE:CG2	1:A:263:GLU:N	2.84	0.41
1:A:154:THR:O	1:A:161:ASN:HB2	2.20	0.41
1:B:224:LYS:HG2	1:B:225:PRO:CD	2.50	0.41
1:A:228:THR:O	1:A:229:SER:O	2.39	0.41
1:B:155:LYS:CE	1:B:160:ILE:CD1	2.98	0.41
1:B:229:SER:O	1:B:231:VAL:N	2.54	0.41
1:A:22:CYS:HB2	1:A:66:PHE:CE1	2.55	0.40
1:B:207:VAL:HG11	1:B:269:ILE:HD12	2.03	0.40
1:B:245:PHE:CZ	1:B:262:ILE:HD11	2.57	0.40
1:B:67:SER:C	1:B:68:VAL:HG13	2.41	0.40
1:B:281:ILE:O	1:B:282:LEU:HD13	2.21	0.40
1:B:221:TRP:CD1	1:B:221:TRP:N	2.89	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:277:GLN:O	1:B:64:HIS:ND1[5_455]	2.09	0.11

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	299/306 (98%)	253 (85%)	25 (8%)	21 (7%)	1	6
1	B	298/306 (97%)	255 (86%)	29 (10%)	14 (5%)	2	14
All	All	597/612 (98%)	508 (85%)	54 (9%)	35 (6%)	1	9

All (35) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	46	ALA
1	A	50	SER
1	A	171	ALA
1	A	199	THR
1	A	221	TRP
1	A	226	ASN
1	A	250	SER
1	A	251	VAL
1	A	253	MET
1	B	284	SER
1	A	73	GLY
1	A	198	LEU
1	A	229	SER
1	A	275	GLY
1	B	45	PRO
1	B	283	GLY
1	B	287	LEU
1	A	76	ALA
1	A	196	VAL
1	A	228	THR
1	A	248	THR
1	B	46	ALA
1	B	49	LEU
1	B	188	PHE
1	B	286	MET
1	B	171	ALA
1	B	72	ILE
1	B	230	VAL
1	A	45	PRO
1	B	75	PRO
1	B	220	ALA
1	A	11	GLY
1	A	247	GLY
1	B	193	VAL
1	A	82	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	253/257 (98%)	228 (90%)	25 (10%)	8	30
1	B	252/257 (98%)	222 (88%)	30 (12%)	5	22
All	All	505/514 (98%)	450 (89%)	55 (11%)	6	25

All (55) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	27	LEU
1	A	48	GLN
1	A	65	SER
1	A	100	SER
1	A	124	ARG
1	A	135	PRO
1	A	136	ASN
1	A	165	MET
1	A	167	GLN
1	A	183	THR
1	A	195	GLN
1	A	197	GLN
1	A	198	LEU
1	A	200	ASP
1	A	201	LYS
1	A	250	SER
1	A	254	LEU
1	A	256	VAL
1	A	262	ILE
1	A	277	GLN
1	A	279	LYS
1	A	280	GLN
1	A	282	LEU
1	A	286	MET
1	A	300	ILE
1	B	5	LYS
1	B	27	LEU
1	B	48	GLN
1	B	61	MET
1	B	69	GLN
1	B	70	LYS
1	B	100	SER
1	B	167	GLN

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Mol	Chain	Res	Type
1	B	168	MET
1	B	174	THR
1	B	176	THR
1	B	189	MET
1	B	191	LYS
1	B	192	GLN
1	B	195	GLN
1	B	196	VAL
1	B	197	GLN
1	B	199	THR
1	B	204	SER
1	B	221	TRP
1	B	223	VAL
1	B	227	ARG
1	B	241	GLN
1	B	253	MET
1	B	256	VAL
1	B	272	LEU
1	B	277	GLN
1	B	280	GLN
1	B	282	LEU
1	B	295	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	8	HIS
1	A	19	GLN
1	A	136	ASN
1	A	195	GLN
1	A	277	GLN
1	A	299	GLN
1	B	48	GLN
1	B	64	HIS
1	B	69	GLN
1	B	122	ASN
1	B	167	GLN
1	B	195	GLN
1	B	240	ASN
1	B	241	GLN
1	B	299	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 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 ⓘ

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(Å²)	Q<0.9
1	A	301/306 (98%)	-0.17	5 (1%)	70	41	32, 53, 90, 115	0
1	B	300/306 (98%)	0.00	8 (2%)	54	26	34, 63, 100, 111	0
All	All	601/612 (98%)	-0.08	13 (2%)	62	33	32, 59, 96, 115	0

All (13) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	248	THR	3.2
1	A	47	ASP	2.9
1	A	193	VAL	2.9
1	B	194	HIS	2.8
1	B	75	PRO	2.4
1	B	53	ASN	2.3
1	A	171	ALA	2.2
1	B	50	SER	2.2
1	A	197	GLN	2.2
1	B	170	LEU	2.1
1	B	219	CYS	2.1
1	B	24	SER	2.1
1	B	76	ALA	2.0

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

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

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.