Full wwPDB X-ray Structure Validation Report ⓘ

Apr 10, 2023 – 06:07 PM EDT

PDB ID	:	1C8F
Title	:	FELINE PANLEUKOPENIA VIRUS EMPTY CAPSID STRUCTURE
Authors	:	Rossmann, M.G.; Simpson, A.A.
Deposited on	:	2000-05-05
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.

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

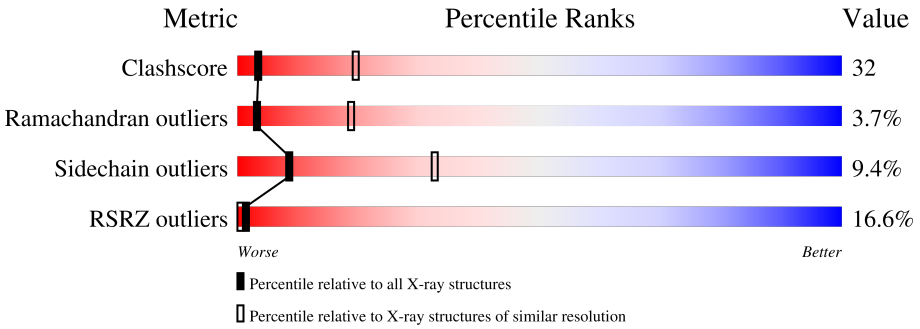
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.32.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.32.2

1 Overall quality at a glance (i)

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	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
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	548	17% 53% 40% 7% •

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	CA	A	587	-	-	-	X

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 4354 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 FELINE PANLEUKOPENIA VIRUS CAPSID.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	548	Total	C	N	O	S	0	0	0
			4351	2766	739	830	16			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	101	ILE	THR	conflict	UNP P24840
A	104	GLU	GLN	conflict	UNP P24840
A	232	VAL	ILE	conflict	UNP P24840
A	484	ILE	VAL	conflict	UNP P24840
A	509	GLN	GLU	conflict	UNP P24840
A	562	VAL	LEU	conflict	UNP P24840

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

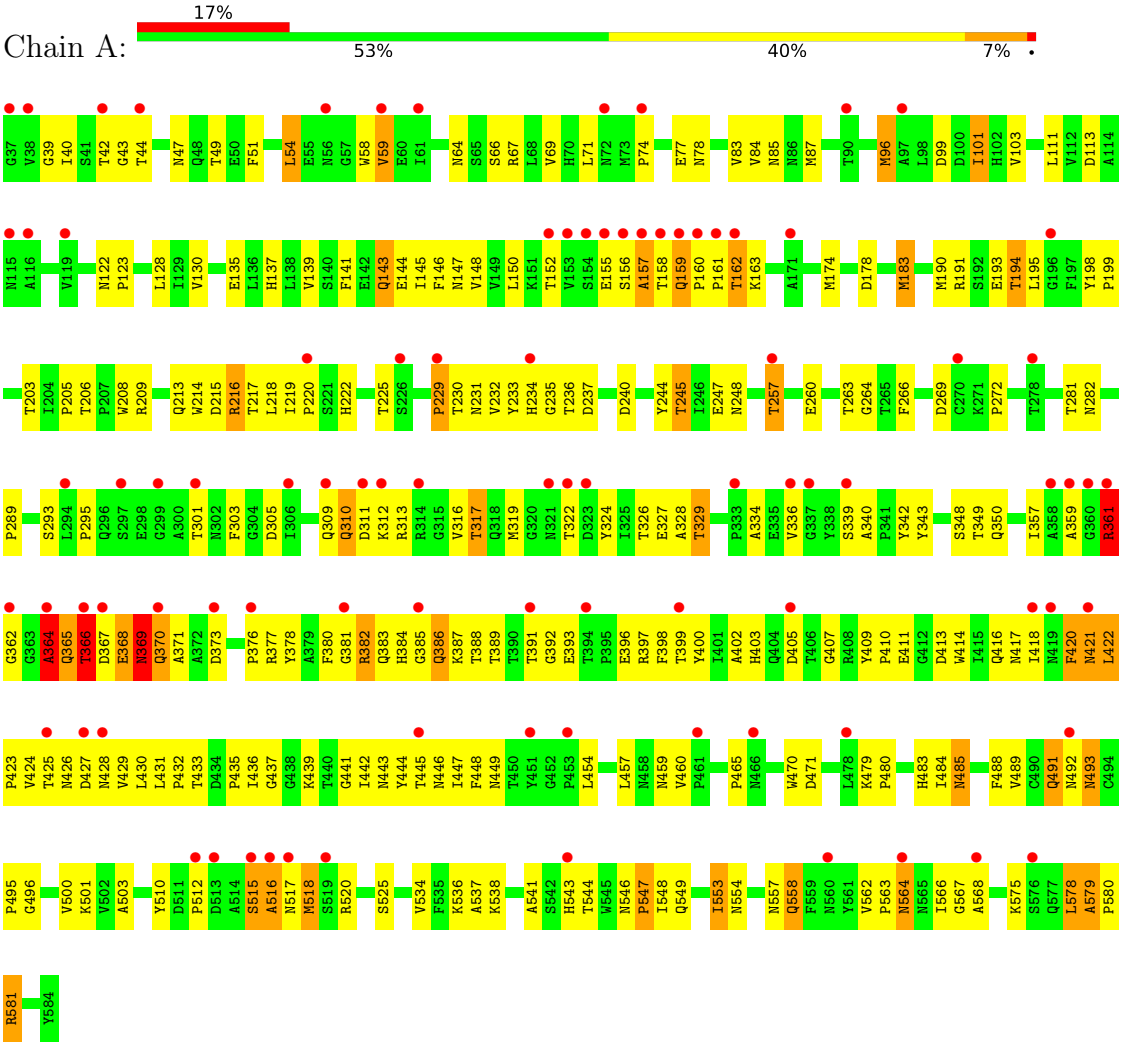
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	3	Total	Ca	0	0
			3	3		

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

• Molecule 1: FELINE PANLEUKOPENIA VIRUS CAPSID

Chain A:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	380.12Å 379.25Å 350.82Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	9.00 – 3.00 37.82 – 2.70	Depositor EDS
% Data completeness (in resolution range)	59.6 (9.00-3.00) 39.0 (37.82-2.70)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.68 (at 2.69Å)	Xtriage
Refinement program	CNS 0.5	Depositor
R, R_{free}	0.285 , (Not available) 0.436 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å^2)	19.7	Xtriage
Anisotropy	0.348	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.25 , -57.3	EDS
L-test for twinning[2]	$< \|L\| > = 0.35$, $< L^2 > = 0.18$	Xtriage
Estimated twinning fraction	0.096 for k,h,-l	Xtriage
F_o,F_c correlation	0.26	EDS
Total number of atoms	4354	wwPDB-VP
Average B, all atoms (Å^2)	17.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.97% of the height of the origin peak. No significant pseudotranslation is detected.*

[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: CA

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	0.44	0/4480	0.75	4/6128 (0.1%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	457	LEU	CA-CB-CG	5.97	129.03	115.30
1	A	366	THR	O-C-N	5.75	131.91	122.70
1	A	364	ALA	C-N-CA	5.74	136.06	121.70
1	A	364	ALA	N-CA-C	5.02	124.54	111.00

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	4351	0	4153	276	0
2	A	3	0	0	0	0
All	All	4354	0	4153	276	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 32.

All (276) 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:365:GLN:N	1:A:365:GLN:HE21	1.44	1.16
1:A:193:GLU:HB3	1:A:206:THR:HG21	1.30	1.08
1:A:317:THR:HG23	1:A:319:MET:H	1.17	1.04
1:A:156:SER:HB3	1:A:162:THR:HB	1.40	1.02
1:A:365:GLN:N	1:A:365:GLN:NE2	2.12	0.96
1:A:245:THR:HG22	1:A:248:ASN:H	1.28	0.96
1:A:365:GLN:NE2	1:A:365:GLN:CA	2.28	0.95
1:A:364:ALA:C	1:A:365:GLN:HE21	1.68	0.95
1:A:485:ASN:H	1:A:485:ASN:HD22	1.10	0.93
1:A:459:ASN:ND2	1:A:460:VAL:H	1.67	0.92
1:A:326:THR:HG22	1:A:328:ALA:H	1.31	0.92
1:A:382:ARG:H	1:A:386:GLN:HB3	1.37	0.89
1:A:459:ASN:HD22	1:A:460:VAL:H	1.19	0.89
1:A:159:GLN:HB2	1:A:160:PRO:CD	2.04	0.88
1:A:549:GLN:OE1	1:A:578:LEU:HB3	1.75	0.87
1:A:326:THR:H	1:A:329:THR:HG22	1.40	0.87
1:A:159:GLN:HB2	1:A:160:PRO:HD2	1.57	0.86
1:A:432:PRO:HA	1:A:443:ASN:HD22	1.45	0.82
1:A:364:ALA:C	1:A:365:GLN:NE2	2.33	0.81
1:A:322:THR:HG21	1:A:420:PHE:HD2	1.44	0.81
1:A:391:THR:HG22	1:A:392:GLY:H	1.44	0.80
1:A:368:GLU:HG3	1:A:370:GLN:OE1	1.81	0.80
1:A:263:THR:HG22	1:A:264:GLY:O	1.81	0.80
1:A:564:ASN:ND2	1:A:568:ALA:H	1.82	0.78
1:A:324:TYR:O	1:A:329:THR:HG21	1.84	0.77
1:A:365:GLN:NE2	1:A:365:GLN:HA	2.00	0.77
1:A:459:ASN:ND2	1:A:460:VAL:N	2.32	0.77
1:A:414:TRP:HE1	1:A:416:GLN:HE21	1.32	0.77
1:A:137:HIS:CE1	1:A:272:PRO:HB3	2.21	0.75
1:A:549:GLN:OE1	1:A:578:LEU:CB	2.35	0.75
1:A:47:ASN:ND2	1:A:66:SER:H	1.84	0.74
1:A:74:PRO:O	1:A:520:ARG:NH2	2.21	0.74
1:A:435:PRO:HB3	1:A:439:LYS:O	1.87	0.74
1:A:370:GLN:HE22	1:A:399:THR:HG21	1.53	0.74
1:A:216:ARG:C	1:A:216:ARG:HD3	2.09	0.73
1:A:554:ASN:HB2	1:A:557:ASN:ND2	2.03	0.73
1:A:326:THR:HB	1:A:329:THR:HB	1.70	0.73
1:A:370:GLN:NE2	1:A:399:THR:HG21	2.05	0.72
1:A:47:ASN:HD22	1:A:66:SER:H	1.36	0.72
1:A:160:PRO:HG2	1:A:161:PRO:C	2.09	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:368:GLU:HG2	1:A:369:ASN:H	1.53	0.72
1:A:111:LEU:CD2	1:A:113:ASP:HB2	2.20	0.72
1:A:564:ASN:HD21	1:A:568:ALA:H	1.37	0.72
1:A:562:VAL:CG1	1:A:563:PRO:HD2	2.20	0.71
1:A:361:ARG:NH2	1:A:365:GLN:OE1	2.23	0.70
1:A:409:TYR:CE1	1:A:411:GLU:HB2	2.27	0.70
1:A:424:VAL:CG2	1:A:429:VAL:HG22	2.21	0.70
1:A:368:GLU:HG2	1:A:369:ASN:N	2.07	0.69
1:A:386:GLN:HE21	1:A:396:GLU:HB2	1.55	0.69
1:A:158:THR:O	1:A:161:PRO:HA	1.93	0.69
1:A:293:SER:HB3	1:A:305:ASP:HB3	1.75	0.68
1:A:485:ASN:H	1:A:485:ASN:ND2	1.89	0.68
1:A:217:THR:HB	1:A:232:VAL:HG13	1.76	0.68
1:A:381:GLY:HA2	1:A:386:GLN:HB3	1.75	0.68
1:A:553:ILE:CD1	1:A:558:GLN:HA	2.23	0.68
1:A:96:MET:HE2	1:A:96:MET:H	1.60	0.67
1:A:361:ARG:HD3	1:A:402:ALA:O	1.95	0.67
1:A:155:GLU:OE2	1:A:163:LYS:HG3	1.95	0.66
1:A:518:MET:O	1:A:518:MET:HG3	1.93	0.66
1:A:158:THR:N	1:A:161:PRO:HB2	2.10	0.66
1:A:432:PRO:HA	1:A:443:ASN:ND2	2.10	0.66
1:A:213:GLN:HG3	1:A:240:ASP:CB	2.26	0.66
1:A:282:ASN:HD21	1:A:336:VAL:H	1.44	0.66
1:A:424:VAL:HG22	1:A:429:VAL:HG22	1.78	0.66
1:A:216:ARG:CZ	1:A:218:LEU:HB2	2.25	0.65
1:A:59:VAL:HG22	1:A:537:ALA:HB3	1.78	0.65
1:A:101:ILE:CD1	1:A:233:TYR:HB2	2.26	0.65
1:A:141:PHE:CZ	1:A:143:GLN:HG2	2.31	0.65
1:A:382:ARG:N	1:A:386:GLN:HB3	2.09	0.65
1:A:562:VAL:HG12	1:A:563:PRO:HD2	1.77	0.65
1:A:213:GLN:HG3	1:A:240:ASP:HB3	1.78	0.65
1:A:361:ARG:HB3	1:A:405:ASP:HA	1.78	0.65
1:A:368:GLU:CG	1:A:369:ASN:N	2.61	0.64
1:A:99:ASP:OD1	1:A:101:ILE:HG22	1.97	0.63
1:A:174:MET:CE	1:A:503:ALA:HA	2.28	0.63
1:A:174:MET:HE2	1:A:503:ALA:HA	1.80	0.63
1:A:429:VAL:HB	1:A:431:LEU:HD11	1.79	0.63
1:A:322:THR:HG21	1:A:420:PHE:CD2	2.30	0.63
1:A:368:GLU:HG2	1:A:370:GLN:H	1.64	0.62
1:A:431:LEU:N	1:A:431:LEU:HD12	2.14	0.62
1:A:392:GLY:O	1:A:393:GLU:HG2	1.98	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:459:ASN:HD22	1:A:460:VAL:N	1.93	0.62
1:A:564:ASN:C	1:A:564:ASN:HD22	2.02	0.62
1:A:159:GLN:CB	1:A:160:PRO:CD	2.78	0.62
1:A:382:ARG:H	1:A:386:GLN:CB	2.10	0.61
1:A:554:ASN:CB	1:A:557:ASN:HD21	2.13	0.61
1:A:183:MET:CE	1:A:244:TYR:HB3	2.31	0.61
1:A:339:SER:O	1:A:449:ASN:HA	2.01	0.61
1:A:553:ILE:HD11	1:A:558:GLN:HA	1.82	0.60
1:A:215:ASP:N	1:A:235:GLY:O	2.30	0.60
1:A:366:THR:O	1:A:366:THR:HG22	2.01	0.60
1:A:222:HIS:H	1:A:225:THR:HG1	1.47	0.60
1:A:377:ARG:HG3	1:A:377:ARG:HH11	1.66	0.60
1:A:564:ASN:ND2	1:A:567:GLY:H	1.98	0.60
1:A:162:THR:HG22	1:A:163:LYS:H	1.67	0.59
1:A:101:ILE:HD11	1:A:233:TYR:CD2	2.38	0.59
1:A:420:PHE:O	1:A:421:ASN:HB2	2.01	0.59
1:A:193:GLU:HB3	1:A:206:THR:CG2	2.21	0.59
1:A:364:ALA:O	1:A:365:GLN:NE2	2.35	0.59
1:A:84:VAL:O	1:A:101:ILE:HA	2.03	0.58
1:A:183:MET:HE1	1:A:244:TYR:HB3	1.85	0.58
1:A:364:ALA:HB3	1:A:367:ASP:HB3	1.85	0.58
1:A:39:GLY:C	1:A:40:ILE:HD12	2.24	0.58
1:A:266:PHE:HZ	1:A:493:ASN:HD22	1.52	0.58
1:A:491:GLN:HE21	1:A:491:GLN:C	2.06	0.58
1:A:382:ARG:HD2	1:A:388:THR:O	2.04	0.58
1:A:158:THR:H	1:A:161:PRO:HB2	1.68	0.57
1:A:386:GLN:O	1:A:387:LYS:C	2.42	0.57
1:A:364:ALA:HB3	1:A:367:ASP:CB	2.34	0.56
1:A:281:THR:HG22	1:A:282:ASN:N	2.20	0.56
1:A:564:ASN:HD22	1:A:567:GLY:H	1.54	0.56
1:A:431:LEU:C	1:A:433:THR:H	2.09	0.56
1:A:137:HIS:HB2	1:A:536:LYS:HB3	1.85	0.56
1:A:310:GLN:HG2	1:A:313:ARG:NH1	2.20	0.56
1:A:430:LEU:C	1:A:431:LEU:HD12	2.26	0.56
1:A:420:PHE:O	1:A:421:ASN:CB	2.53	0.56
1:A:483:HIS:HB3	1:A:485:ASN:ND2	2.21	0.55
1:A:289:PRO:HD3	1:A:327:GLU:OE1	2.06	0.55
1:A:158:THR:N	1:A:161:PRO:CB	2.70	0.55
1:A:470:TRP:HA	1:A:488:PHE:O	2.07	0.55
1:A:217:THR:OG1	1:A:234:HIS:HE1	1.90	0.55
1:A:83:VAL:HG22	1:A:103:VAL:HG22	1.88	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:174:MET:CE	1:A:501:LYS:HE2	2.37	0.54
1:A:544:THR:HB	1:A:546:ASN:ND2	2.22	0.54
1:A:326:THR:H	1:A:329:THR:CG2	2.17	0.54
1:A:387:LYS:HD3	1:A:389:THR:OG1	2.07	0.54
1:A:554:ASN:CB	1:A:557:ASN:ND2	2.71	0.54
1:A:317:THR:HG23	1:A:319:MET:N	2.03	0.54
1:A:135:GLU:HG2	1:A:538:LYS:HB3	1.90	0.54
1:A:71:LEU:HD22	1:A:500:VAL:CG1	2.38	0.54
1:A:160:PRO:HG2	1:A:161:PRO:O	2.07	0.53
1:A:578:LEU:O	1:A:579:ALA:HB2	2.08	0.53
1:A:43:GLY:HA3	1:A:146:PHE:CD2	2.43	0.53
1:A:190:MET:HG2	1:A:191:ARG:HG3	1.90	0.53
1:A:424:VAL:HG21	1:A:429:VAL:HG22	1.90	0.53
1:A:156:SER:O	1:A:158:THR:N	2.34	0.53
1:A:553:ILE:HA	1:A:557:ASN:OD1	2.08	0.53
1:A:160:PRO:N	1:A:161:PRO:HA	2.24	0.53
1:A:245:THR:HG21	1:A:248:ASN:OD1	2.09	0.53
1:A:111:LEU:HD21	1:A:113:ASP:HB2	1.91	0.52
1:A:391:THR:HG22	1:A:392:GLY:N	2.18	0.52
1:A:174:MET:HE3	1:A:501:LYS:HE2	1.89	0.52
1:A:183:MET:CE	1:A:183:MET:HA	2.40	0.52
1:A:54:LEU:CD1	1:A:54:LEU:N	2.73	0.52
1:A:334:ALA:HB1	1:A:454:LEU:O	2.09	0.52
1:A:359:ALA:HB3	1:A:373:ASP:HB2	1.91	0.52
1:A:389:THR:HG23	1:A:568:ALA:HB2	1.90	0.52
1:A:443:ASN:O	1:A:446:ASN:HB2	2.10	0.52
1:A:485:ASN:HD22	1:A:485:ASN:N	1.90	0.52
1:A:510:TYR:CE2	1:A:512:PRO:HG3	2.45	0.51
1:A:77:GLU:OE1	1:A:77:GLU:HA	2.10	0.51
1:A:213:GLN:O	1:A:236:THR:HG23	2.09	0.51
1:A:266:PHE:CD1	1:A:495:PRO:HG3	2.46	0.51
1:A:564:ASN:ND2	1:A:566:ILE:H	2.08	0.51
1:A:381:GLY:HA2	1:A:386:GLN:CB	2.41	0.51
1:A:562:VAL:HG13	1:A:563:PRO:HD2	1.91	0.51
1:A:554:ASN:CG	1:A:557:ASN:HD21	2.15	0.50
1:A:245:THR:CG2	1:A:248:ASN:H	2.14	0.50
1:A:564:ASN:ND2	1:A:567:GLY:N	2.60	0.50
1:A:111:LEU:HD23	1:A:111:LEU:C	2.32	0.50
1:A:425:THR:HG22	1:A:427:ASP:H	1.77	0.49
1:A:309:GLN:HG2	1:A:311:ASP:OD2	2.11	0.49
1:A:396:GLU:HG3	1:A:397:ARG:N	2.28	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:564:ASN:ND2	1:A:564:ASN:C	2.65	0.49
1:A:422:LEU:HA	1:A:423:PRO:C	2.33	0.49
1:A:340:ALA:HB3	1:A:357:ILE:CD1	2.42	0.49
1:A:74:PRO:HG2	1:A:520:ARG:HH12	1.75	0.49
1:A:156:SER:CB	1:A:162:THR:HB	2.27	0.49
1:A:58:TRP:CE2	1:A:538:LYS:HD3	2.48	0.49
1:A:389:THR:CG2	1:A:568:ALA:HB2	2.42	0.49
1:A:263:THR:CG2	1:A:264:GLY:N	2.76	0.49
1:A:77:GLU:OE2	1:A:520:ARG:NH1	2.47	0.48
1:A:403:HIS:CE1	1:A:549:GLN:HE22	2.30	0.48
1:A:146:PHE:HD2	1:A:147:ASN:HD22	1.62	0.48
1:A:578:LEU:O	1:A:579:ALA:CB	2.62	0.48
1:A:51:PHE:CZ	1:A:128:LEU:HD23	2.49	0.48
1:A:145:ILE:O	1:A:260:GLU:HG2	2.13	0.48
1:A:562:VAL:HG12	1:A:563:PRO:CD	2.43	0.48
1:A:361:ARG:NE	1:A:365:GLN:OE1	2.46	0.47
1:A:424:VAL:HG22	1:A:429:VAL:CG2	2.43	0.47
1:A:510:TYR:HE2	1:A:512:PRO:HG3	1.78	0.47
1:A:122:ASN:HB2	1:A:123:PRO:HD2	1.96	0.47
1:A:162:THR:HG22	1:A:163:LYS:N	2.29	0.47
1:A:385:GLY:O	1:A:386:GLN:O	2.33	0.47
1:A:386:GLN:HE21	1:A:396:GLU:CB	2.23	0.47
1:A:148:VAL:O	1:A:257:THR:HG23	2.15	0.47
1:A:359:ALA:CB	1:A:373:ASP:HB2	2.45	0.47
1:A:376:PRO:HG2	1:A:400:TYR:HB3	1.97	0.46
1:A:245:THR:HG22	1:A:248:ASN:N	2.12	0.46
1:A:247:GLU:OE1	1:A:247:GLU:N	2.39	0.46
1:A:431:LEU:C	1:A:433:THR:N	2.69	0.46
1:A:216:ARG:HD3	1:A:217:THR:N	2.31	0.46
1:A:150:LEU:CD2	1:A:525:SER:HB2	2.46	0.46
1:A:47:ASN:HD21	1:A:67:ARG:NH2	2.14	0.45
1:A:43:GLY:HA3	1:A:146:PHE:CG	2.51	0.45
1:A:111:LEU:HD22	1:A:113:ASP:HB2	1.96	0.45
1:A:216:ARG:NH2	1:A:231:ASN:OD1	2.50	0.45
1:A:174:MET:HG3	1:A:503:ALA:HB2	1.99	0.45
1:A:263:THR:HG22	1:A:264:GLY:N	2.32	0.45
1:A:361:ARG:O	1:A:407:GLY:HA3	2.16	0.45
1:A:378:TYR:HB2	1:A:398:PHE:CE1	2.52	0.45
1:A:368:GLU:HG2	1:A:370:GLN:HG2	1.98	0.45
1:A:413:ASP:O	1:A:432:PRO:HD3	2.17	0.45
1:A:42:THR:H	1:A:147:ASN:ND2	2.15	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:369:ASN:OD1	1:A:410:PRO:HG2	2.18	0.44
1:A:447:ILE:HD13	1:A:447:ILE:HA	1.82	0.44
1:A:156:SER:HB3	1:A:162:THR:CB	2.30	0.44
1:A:309:GLN:HB3	1:A:312:LYS:CG	2.48	0.44
1:A:400:TYR:OH	1:A:575:LYS:HA	2.18	0.44
1:A:155:GLU:O	1:A:157:ALA:N	2.47	0.44
1:A:343:TYR:CZ	1:A:371:ALA:HB2	2.52	0.44
1:A:156:SER:O	1:A:161:PRO:HB2	2.17	0.44
1:A:436:ILE:HG12	1:A:443:ASN:HA	2.00	0.44
1:A:183:MET:HG3	1:A:208:TRP:HH2	1.83	0.43
1:A:361:ARG:HB3	1:A:362:GLY:H	1.58	0.43
1:A:417:ASN:HB3	1:A:428:ASN:HB3	2.00	0.43
1:A:47:ASN:HD21	1:A:67:ARG:HH21	1.66	0.43
1:A:99:ASP:CG	1:A:216:ARG:HH12	2.21	0.43
1:A:326:THR:HG22	1:A:328:ALA:N	2.15	0.43
1:A:546:ASN:HA	1:A:547:PRO:HD3	1.88	0.43
1:A:54:LEU:N	1:A:54:LEU:HD13	2.33	0.43
1:A:361:ARG:CZ	1:A:365:GLN:OE1	2.66	0.43
1:A:69:VAL:CG1	1:A:205:PRO:HD3	2.48	0.43
1:A:380:PHE:CD1	1:A:380:PHE:N	2.86	0.43
1:A:382:ARG:HH11	1:A:382:ARG:HG2	1.83	0.43
1:A:183:MET:HG3	1:A:208:TRP:CH2	2.53	0.43
1:A:581:ARG:HH11	1:A:581:ARG:HD2	1.72	0.43
1:A:113:ASP:O	1:A:194:THR:HG22	2.19	0.43
1:A:130:VAL:HG11	1:A:578:LEU:HD21	2.01	0.42
1:A:322:THR:CG2	1:A:420:PHE:HD2	2.24	0.42
1:A:385:GLY:O	1:A:386:GLN:C	2.58	0.42
1:A:122:ASN:HB2	1:A:123:PRO:CD	2.48	0.42
1:A:361:ARG:CB	1:A:405:ASP:HA	2.48	0.42
1:A:370:GLN:H	1:A:370:GLN:HG2	1.59	0.42
1:A:483:HIS:HB3	1:A:485:ASN:HD21	1.84	0.42
1:A:310:GLN:HA	1:A:313:ARG:HD2	2.00	0.42
1:A:67:ARG:HG2	1:A:203:THR:CG2	2.49	0.42
1:A:362:GLY:HA3	1:A:407:GLY:C	2.39	0.42
1:A:437:GLY:C	1:A:439:LYS:H	2.23	0.42
1:A:178:ASP:O	1:A:496:GLY:HA3	2.20	0.42
1:A:219:ILE:HA	1:A:220:PRO:HD3	1.80	0.42
1:A:316:VAL:HG12	1:A:317:THR:N	2.35	0.42
1:A:368:GLU:CG	1:A:370:GLN:HG2	2.50	0.42
1:A:546:ASN:ND2	1:A:546:ASN:H	2.18	0.42
1:A:190:MET:HG2	1:A:191:ARG:CG	2.49	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:431:LEU:N	1:A:431:LEU:CD1	2.82	0.42
1:A:441:GLY:O	1:A:442:ILE:HD13	2.20	0.42
1:A:471:ASP:O	1:A:489:VAL:HA	2.20	0.42
1:A:515:SER:O	1:A:516:ALA:C	2.58	0.42
1:A:377:ARG:HH11	1:A:377:ARG:CG	2.31	0.42
1:A:536:LYS:HE3	1:A:536:LYS:HB2	1.84	0.42
1:A:237:ASP:OD1	1:A:237:ASP:C	2.58	0.42
1:A:295:PRO:HG3	1:A:303:PHE:C	2.40	0.42
1:A:311:ASP:OD2	1:A:312:LYS:HG2	2.20	0.42
1:A:317:THR:CG2	1:A:319:MET:H	2.08	0.42
1:A:217:THR:OG1	1:A:234:HIS:CE1	2.72	0.41
1:A:281:THR:HG22	1:A:282:ASN:H	1.83	0.41
1:A:198:TYR:HA	1:A:199:PRO:HD3	1.95	0.41
1:A:158:THR:O	1:A:160:PRO:HD2	2.20	0.41
1:A:348:SER:O	1:A:350:GLN:N	2.54	0.41
1:A:47:ASN:HA	1:A:64:ASN:O	2.21	0.41
1:A:414:TRP:HE1	1:A:416:GLN:NE2	2.09	0.41
1:A:368:GLU:O	1:A:369:ASN:HB2	2.21	0.41
1:A:49:THR:HG22	1:A:51:PHE:CE1	2.56	0.41
1:A:174:MET:HE1	1:A:503:ALA:HA	1.99	0.41
1:A:479:LYS:HB3	1:A:480:PRO:HD2	2.02	0.41
1:A:96:MET:HE2	1:A:96:MET:N	2.33	0.41
1:A:383:GLN:HG2	1:A:384:HIS:CE1	2.56	0.40
1:A:139:VAL:HB	1:A:534:VAL:O	2.22	0.40
1:A:214:TRP:HA	1:A:235:GLY:O	2.20	0.40
1:A:444:TYR:O	1:A:445:THR:C	2.59	0.40
1:A:101:ILE:HD13	1:A:216:ARG:HG3	2.03	0.40
1:A:269:ASP:OD2	1:A:492:ASN:N	2.54	0.40
1:A:357:ILE:HG21	1:A:373:ASP:HA	2.03	0.40
1:A:554:ASN:H	1:A:557:ASN:CG	2.25	0.40
1:A:541:ALA:HB3	1:A:543:HIS:CE1	2.57	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	546/548 (100%)	488 (89%)	38 (7%)	20 (4%)	3 19

All (20) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	157	ALA
1	A	159	GLN
1	A	229	PRO
1	A	361	ARG
1	A	364	ALA
1	A	369	ASN
1	A	386	GLN
1	A	517	ASN
1	A	518	MET
1	A	579	ALA
1	A	349	THR
1	A	230	THR
1	A	366	THR
1	A	370	GLN
1	A	516	ALA
1	A	515	SER
1	A	558	GLN
1	A	310	GLN
1	A	426	ASN
1	A	547	PRO

5.3.2 Protein sidechains (i)

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	477/477 (100%)	432 (91%)	45 (9%)	8 32

All (45) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	44	THR
1	A	54	LEU
1	A	59	VAL
1	A	78	ASN
1	A	85	ASN
1	A	87	MET
1	A	96	MET
1	A	101	ILE
1	A	143	GLN
1	A	144	GLU
1	A	152	THR
1	A	162	THR
1	A	183	MET
1	A	194	THR
1	A	195	LEU
1	A	209	ARG
1	A	216	ARG
1	A	229	PRO
1	A	245	THR
1	A	257	THR
1	A	301	THR
1	A	317	THR
1	A	329	THR
1	A	342	TYR
1	A	361	ARG
1	A	365	GLN
1	A	368	GLU
1	A	369	ASN
1	A	382	ARG
1	A	418	ILE
1	A	420	PHE
1	A	421	ASN
1	A	422	LEU
1	A	448	PHE
1	A	465	PRO
1	A	484	ILE
1	A	485	ASN
1	A	491	GLN
1	A	493	ASN
1	A	548	ILE
1	A	553	ILE
1	A	564	ASN
1	A	578	LEU

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Mol	Chain	Res	Type
1	A	580	PRO
1	A	581	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (27) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	47	ASN
1	A	48	GLN
1	A	85	ASN
1	A	147	ASN
1	A	180	ASN
1	A	234	HIS
1	A	242	GLN
1	A	282	ASN
1	A	292	ASN
1	A	310	GLN
1	A	350	GLN
1	A	383	GLN
1	A	384	HIS
1	A	386	GLN
1	A	403	HIS
1	A	416	GLN
1	A	443	ASN
1	A	459	ASN
1	A	466	ASN
1	A	468	GLN
1	A	485	ASN
1	A	491	GLN
1	A	493	ASN
1	A	497	GLN
1	A	546	ASN
1	A	560	ASN
1	A	564	ASN

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

Of 3 ligands modelled in this entry, 3 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, 95^{th} 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	548/548 (100%)	1.05	91 (16%) 1 0	2, 13, 50, 85	0

All (91) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	156	SER	8.5
1	A	360	GLY	6.9
1	A	297	SER	6.9
1	A	153	VAL	6.8
1	A	568	ALA	5.6
1	A	419	ASN	5.5
1	A	515	SER	4.9
1	A	425	THR	4.7
1	A	358	ALA	4.7
1	A	152	THR	4.6
1	A	160	PRO	4.4
1	A	309	GLN	4.4
1	A	492	ASN	4.3
1	A	220	PRO	3.9
1	A	312	LYS	3.9
1	A	333	PRO	3.8
1	A	323	ASP	3.7
1	A	421	ASN	3.7
1	A	158	THR	3.7
1	A	519	SER	3.7
1	A	381	GLY	3.6
1	A	364	ALA	3.6
1	A	229	PRO	3.5
1	A	56	ASN	3.4
1	A	44	THR	3.4
1	A	161	PRO	3.3
1	A	321	ASN	3.3

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Mol	Chain	Res	Type	RSRZ
1	A	90	THR	3.2
1	A	299	GLY	3.2
1	A	564	ASN	3.2
1	A	367	ASP	3.2
1	A	301	THR	3.1
1	A	427	ASP	3.0
1	A	359	ALA	3.0
1	A	196	GLY	3.0
1	A	257	THR	3.0
1	A	337	GLY	3.0
1	A	155	GLU	3.0
1	A	226	SER	2.9
1	A	159	GLN	2.9
1	A	61	ILE	2.9
1	A	576	SER	2.8
1	A	311	ASP	2.8
1	A	512	PRO	2.8
1	A	376	PRO	2.8
1	A	339	SER	2.8
1	A	115	ASN	2.8
1	A	38	VAL	2.8
1	A	445	THR	2.7
1	A	171	ALA	2.7
1	A	428	ASN	2.7
1	A	391	THR	2.7
1	A	399	THR	2.7
1	A	116	ALA	2.7
1	A	42	THR	2.7
1	A	461	PRO	2.7
1	A	322	THR	2.6
1	A	362	GLY	2.6
1	A	97	ALA	2.6
1	A	157	ALA	2.6
1	A	373	ASP	2.6
1	A	366	THR	2.5
1	A	385	GLY	2.5
1	A	361	ARG	2.5
1	A	543	HIS	2.5
1	A	72	ASN	2.4
1	A	560	ASN	2.4
1	A	119	VAL	2.4
1	A	405	ASP	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	154	SER	2.4
1	A	162	THR	2.4
1	A	418	ILE	2.4
1	A	394	THR	2.3
1	A	453	PRO	2.3
1	A	59	VAL	2.3
1	A	513	ASP	2.2
1	A	234	HIS	2.2
1	A	278	THR	2.2
1	A	37	GLY	2.2
1	A	466	ASN	2.2
1	A	74	PRO	2.2
1	A	516	ALA	2.2
1	A	270	CYS	2.2
1	A	306	ILE	2.2
1	A	294	LEU	2.1
1	A	336	VAL	2.1
1	A	451	TYR	2.1
1	A	517	ASN	2.1
1	A	478	LEU	2.1
1	A	314	ARG	2.1
1	A	370	GLN	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 monosaccharides 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, 95^{th} 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	CA	A	587	1/1	0.08	0.69	30,30,30,30	1

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	CA	A	586	1/1	0.61	0.17	20,20,20,20	0
2	CA	A	585	1/1	0.93	0.24	20,20,20,20	1

6.5 Other polymers (i)

There are no such residues in this entry.