



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 01:33 AM UTC

PDB ID : 2QLF / pdb_00002qlf
Title : Crystal Structure of Caspase-7 with inhibitor AC-DNLD-CHO
Authors : Agniswamy, J.; Fang, B.; Weber, I.
Deposited on : 2007-07-12
Resolution : 2.80 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:

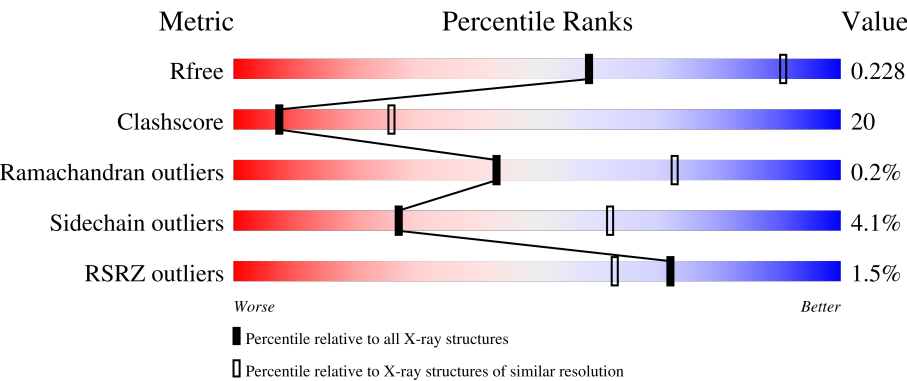
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	3866 (2.80-2.80)
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (2.80-2.80)

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	173	% 47% 33% • 20%
1	C	173	% 47% 32% •• 19%
2	B	97	% 56% 38% • 5%
2	D	97	% 62% 32% ••
3	E	5	80% 20%

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Mol	Chain	Length	Quality of chain
3	F	5	 40% 40% 20%
4	G	5	 40% 60% 60%

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
3	ASJ	F	805	-	-	X	-

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 3887 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 Caspase-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	139	Total	C	N	O	S	0	0	0
			1093	687	187	208	11			
1	C	140	Total	C	N	O	S	0	0	0
			1100	691	188	210	11			

- Molecule 2 is a protein called Caspase-7.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	92	Total	C	N	O	S	0	0	0
			758	487	128	139	4			
2	D	93	Total	C	N	O	S	0	0	0
			770	496	129	141	4			

- Molecule 3 is a protein called Inhibitor AC-DNLD-CHO.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	E	5	Total	C	N	O	0	0	0
			35	20	5	10			
3	F	5	Total	C	N	O	0	0	0
			35	20	5	10			

- Molecule 4 is a protein called Peptide QGHGE.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
4	G	5	Total	C	N	O	0	0	0
			37	20	8	9			

- Molecule 5 is water.

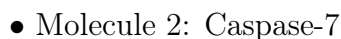
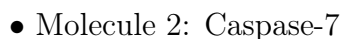
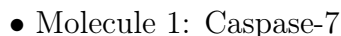
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	16	Total	O	0	0
			16	16		

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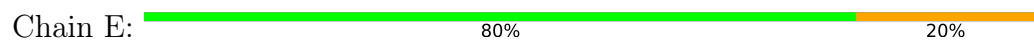
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	14	Total 14	O 14	0	0
5	C	17	Total 17	O 17	0	0
5	D	11	Total 11	O 11	0	0
5	E	1	Total 1	O 1	0	0

- Molecule 1: Caspase-7

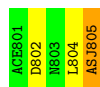




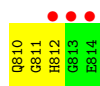
- Molecule 3: Inhibitor AC-DNLD-CHO



- Molecule 3: Inhibitor AC-DNLD-CHO



- Molecule 4: Peptide QGHGE



4 Data and refinement statistics

Property	Value	Source
Space group	P 32 2 1	Depositor
Cell constants a, b, c, α , β , γ	87.46Å 87.46Å 185.82Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	50.00 – 2.80 50.00 – 2.84	Depositor EDS
% Data completeness (in resolution range)	76.6 (50.00-2.80) 83.1 (50.00-2.84)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.80 (at 2.86Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.196 , 0.229 0.197 , 0.228	Depositor DCC
R_{free} test set	872 reflections (4.83%)	wwPDB-VP
Wilson B-factor (Å ²)	55.4	Xtriage
Anisotropy	0.606	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 30.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.024 for -h,-k,l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	3887	wwPDB-VP
Average B, all atoms (Å ²)	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.05% 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: ACE, ASJ

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	0.42	0/1110	0.92	3/1486 (0.2%)
1	C	0.42	0/1117	0.98	5/1496 (0.3%)
2	B	0.41	0/780	0.89	3/1054 (0.3%)
2	D	0.42	0/793	0.94	1/1072 (0.1%)
3	E	0.63	0/24	0.80	0/32
3	F	0.84	0/24	1.53	1/32 (3.1%)
4	G	0.66	0/37	1.37	1/46 (2.2%)
All	All	0.43	0/3885	0.94	14/5218 (0.3%)

There are no bond length outliers.

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	152	GLY	N-CA-C	-8.26	97.07	112.10
1	C	452	GLY	N-CA-C	-8.18	97.22	112.10
2	D	594	MET	N-CA-C	-7.29	102.67	112.94
1	C	483	ILE	N-CA-C	6.74	118.56	107.24
2	B	294	MET	N-CA-C	-6.61	103.81	112.41
1	A	183	ILE	N-CA-C	6.61	117.78	107.28
1	C	402	ARG	N-CA-C	-6.54	104.23	111.36
4	G	812	HIS	N-CA-C	-6.48	97.80	108.76
1	C	456	VAL	N-CA-C	5.76	116.77	108.48
3	F	802	ASP	N-CA-CB	-5.55	101.06	110.50
1	A	180	LEU	N-CA-C	5.51	118.22	109.24
2	B	218	ASP	N-CA-C	5.30	119.03	112.24
2	B	293	SER	N-CA-C	5.19	117.42	109.07
1	C	408	VAL	N-CA-C	5.05	116.07	109.21

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	1093	0	1078	53	0
1	C	1100	0	1085	54	0
2	B	758	0	731	30	0
2	D	770	0	740	28	0
3	E	35	0	29	3	0
3	F	35	0	29	5	0
4	G	37	0	26	1	0
5	A	16	0	0	1	0
5	B	14	0	0	0	0
5	C	17	0	0	0	0
5	D	11	0	0	0	0
5	E	1	0	0	0	0
All	All	3887	0	3718	153	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 20.

All (153) 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:C:450:ILE:HD11	1:C:459:ILE:HG12	1.52	0.90
1:C:369:LYS:NZ	1:C:369:LYS:HB2	1.90	0.85
2:D:533:ARG:HA	2:D:539:SER:HA	1.62	0.82
2:B:233:ARG:HA	2:B:239:SER:HA	1.64	0.79
1:C:376:LYS:HB2	1:C:390:THR:HG21	1.65	0.78
1:A:149:VAL:HG23	1:A:157:THR:O	1.85	0.77
1:C:463:THR:HG21	2:D:521:PHE:HE2	1.49	0.76
1:A:80:LYS:HE2	1:A:80:LYS:HA	1.67	0.75
1:A:186:CYS:H	3:E:705:ASJ:H	1.49	0.75
1:A:163:THR:HG21	2:B:221:PHE:HE1	1.49	0.74
2:D:566:ASN:OD1	2:D:589:PRO:HB2	1.86	0.74
1:C:369:LYS:HB2	1:C:369:LYS:HZ3	1.50	0.74
2:D:552:HIS:HB3	2:D:556:LEU:HG	1.69	0.73
2:B:257:GLU:OE2	2:B:258:ILE:HG22	1.88	0.73
1:A:72:ILE:HG12	1:A:140:ILE:HD12	1.71	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:450:ILE:CD1	1:C:459:ILE:HG12	2.21	0.70
1:C:375:ASN:HB2	1:C:443:SER:HB2	1.72	0.70
1:A:195:ILE:O	1:A:196:GLN:HG3	1.92	0.70
1:C:449:VAL:CG1	1:C:456:VAL:HG13	2.23	0.69
1:C:416:CYS:H	1:C:454:ASP:HB2	1.57	0.68
2:B:220:LEU:C	2:B:220:LEU:HD23	2.19	0.67
1:A:136:CYS:HB3	1:A:178:PRO:HG2	1.77	0.67
1:C:397:LEU:HD13	1:C:440:ILE:HG21	1.76	0.67
2:D:568:ARG:HH11	2:D:568:ARG:HG3	1.60	0.66
1:A:97:LEU:HD13	1:A:140:ILE:HG21	1.78	0.66
1:C:486:CYS:H	3:F:805:ASJ:H	1.61	0.65
2:B:266:ASN:OD1	2:B:289:PRO:HB2	1.96	0.64
1:A:186:CYS:N	3:E:705:ASJ:H	2.12	0.64
1:C:463:THR:HG21	2:D:521:PHE:CE2	2.33	0.64
1:C:486:CYS:N	3:F:805:ASJ:H	2.13	0.64
1:C:450:ILE:HD11	1:C:459:ILE:CG1	2.27	0.64
1:A:149:VAL:HG23	1:A:157:THR:C	2.23	0.63
1:C:449:VAL:HG11	1:C:456:VAL:HG13	1.80	0.62
2:B:261:ILE:O	2:B:265:VAL:HG23	2.00	0.60
1:C:449:VAL:HG11	1:C:456:VAL:CG1	2.32	0.60
1:C:415:SER:HB2	1:C:454:ASP:OD2	2.02	0.59
1:C:464:ALA:O	1:C:467:ARG:HG3	2.03	0.58
1:A:124:LYS:O	1:A:128:GLU:HG3	2.03	0.58
1:A:163:THR:HG21	2:B:221:PHE:CE1	2.36	0.58
2:B:272:HIS:O	2:B:272:HIS:ND1	2.37	0.57
1:A:62:MET:HA	1:A:62:MET:HE2	1.86	0.57
1:A:84:MET:HB3	1:A:144:HIS:CD2	2.38	0.57
1:C:436:CYS:HB3	1:C:478:PRO:HG2	1.86	0.57
1:C:360:TYR:CD1	1:C:478:PRO:HD3	2.40	0.57
1:C:423:LEU:HD12	1:C:462:LEU:HD22	1.87	0.57
1:C:463:THR:HG22	1:C:481:PHE:CE2	2.40	0.56
1:A:163:THR:HG22	1:A:181:PHE:CE2	2.40	0.56
1:A:150:ILE:HD11	1:A:162:LEU:HD21	1.88	0.56
1:C:469:ASP:OD1	1:C:470:ARG:HG3	2.06	0.56
1:C:450:ILE:HD12	1:C:450:ILE:N	2.21	0.55
1:A:164:ALA:O	1:A:167:ARG:HG3	2.07	0.55
1:A:194:GLY:HA2	2:D:513:ILE:O	2.06	0.55
1:A:150:ILE:HD11	1:A:162:LEU:CD2	2.37	0.55
1:A:80:LYS:HE2	1:A:80:LYS:CA	2.37	0.54
1:A:136:CYS:CB	1:A:178:PRO:HG2	2.37	0.54
1:C:449:VAL:CG1	1:C:456:VAL:HG22	2.38	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:255:ASP:OD1	2:B:256:LEU:HG	2.07	0.53
2:B:226:VAL:HG23	2:B:229:TYR:CD1	2.42	0.53
2:D:557:GLU:OE2	2:D:558:ILE:HG22	2.09	0.53
1:A:120:GLN:NE2	1:A:162:LEU:HD12	2.23	0.53
1:C:495:ILE:HG13	1:C:496:GLN:N	2.24	0.52
1:A:126:ALA:O	1:A:129:GLU:HB2	2.10	0.52
1:C:443:SER:OG	1:C:444:HIS:N	2.39	0.52
1:A:97:LEU:HD23	2:B:246:CYS:SG	2.50	0.52
1:C:449:VAL:HG11	1:C:456:VAL:HG22	1.92	0.52
2:B:268:ARG:HD2	2:B:272:HIS:HB3	1.92	0.51
1:C:449:VAL:HG11	1:C:456:VAL:CG2	2.41	0.51
2:D:530:TYR:HB3	3:F:804:LEU:HD22	1.92	0.51
2:B:257:GLU:OE1	2:B:259:MET:HB2	2.11	0.51
2:D:512:LYS:C	2:D:513:ILE:HD12	2.37	0.50
1:C:369:LYS:HD2	1:C:409:ILE:HD12	1.94	0.49
1:A:123:LEU:HD22	1:A:162:LEU:HB3	1.95	0.49
1:C:369:LYS:HD2	1:C:409:ILE:CD1	2.41	0.49
2:D:574:GLU:HG2	2:D:584:GLU:HA	1.93	0.49
1:C:450:ILE:CG1	1:C:459:ILE:HG12	2.41	0.49
2:B:233:ARG:HE	3:E:705:ASJ:CG	2.26	0.49
4:G:810:GLN:HG3	4:G:811:GLY:H	1.78	0.49
1:A:177:LYS:O	1:A:179:LYS:HE2	2.13	0.49
2:D:559:MET:HE1	2:D:591:VAL:HG11	1.95	0.49
1:A:97:LEU:HD21	2:B:242:VAL:HG13	1.94	0.48
1:C:371:ILE:HG21	1:C:422:LEU:HD21	1.95	0.48
1:C:373:ILE:HD12	1:C:441:LEU:CD2	2.43	0.48
1:C:387:ARG:HE	3:F:805:ASJ:CG	2.26	0.48
1:C:449:VAL:HG13	1:C:456:VAL:HG13	1.94	0.48
1:C:450:ILE:HD11	1:C:459:ILE:HA	1.95	0.48
1:A:62:MET:CE	1:A:135:ALA:HB1	2.43	0.48
2:B:288:ILE:O	2:B:288:ILE:HG23	2.13	0.48
1:C:376:LYS:HB2	1:C:390:THR:CG2	2.40	0.48
2:D:533:ARG:HE	3:F:805:ASJ:CG	2.27	0.48
2:B:215:VAL:HG23	2:B:216:GLU:HG2	1.95	0.48
1:C:450:ILE:HD12	1:C:450:ILE:H	1.78	0.48
2:B:220:LEU:HD23	2:B:221:PHE:N	2.29	0.48
2:D:583:HIS:CE1	2:D:584:GLU:HG3	2.49	0.48
1:C:393:ASP:HB3	2:D:542:VAL:HG11	1.96	0.47
2:B:239:SER:O	2:B:243:GLN:HG3	2.14	0.47
1:A:149:VAL:HG21	1:A:156:VAL:HB	1.95	0.47
1:A:123:LEU:CD2	1:A:162:LEU:HB3	2.45	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:238:GLY:O	2:B:243:GLN:NE2	2.48	0.47
1:C:411:TYR:CG	1:C:422:LEU:HD11	2.50	0.47
1:A:98:PHE:O	1:A:102:ARG:HB2	2.16	0.46
1:A:149:VAL:CG2	1:A:156:VAL:HB	2.45	0.46
1:A:145:GLY:O	1:A:186:CYS:HB2	2.14	0.46
2:B:259:MET:HE1	2:B:291:VAL:HG11	1.97	0.46
1:A:93:ASP:HB3	2:B:242:VAL:HG11	1.97	0.46
1:C:424:LYS:O	1:C:428:GLU:HG3	2.16	0.46
1:A:72:ILE:HB	1:A:110:VAL:HG22	1.98	0.45
1:A:160:LYS:HD3	1:A:160:LYS:HA	1.78	0.45
2:D:568:ARG:HG3	2:D:568:ARG:NH1	2.31	0.45
2:B:252:HIS:HB3	2:B:256:LEU:HD12	1.99	0.45
1:C:360:TYR:CD2	2:D:597:LYS:HB2	2.51	0.45
2:D:511:TYR:N	2:D:511:TYR:CD2	2.84	0.45
2:B:218:ASP:HA	2:B:295:LEU:HA	1.99	0.45
1:A:141:LEU:HD13	1:A:150:ILE:HD13	1.99	0.44
2:B:220:LEU:C	2:B:220:LEU:CD2	2.90	0.44
1:A:195:ILE:HG13	1:A:196:GLN:N	2.33	0.44
1:A:66:LYS:O	1:A:134:ALA:HA	2.18	0.44
1:A:130:ASP:OD1	1:A:173:THR:HG21	2.17	0.44
2:D:572:HIS:O	2:D:572:HIS:CG	2.71	0.44
2:D:588:ILE:O	2:D:588:ILE:HG23	2.18	0.44
1:C:362:MET:CE	1:C:435:ALA:HB1	2.48	0.43
2:B:285:LYS:HA	2:B:285:LYS:HD3	1.76	0.43
1:C:366:LYS:O	1:C:434:ALA:HA	2.19	0.43
2:D:581:HIS:O	2:D:585:LYS:NZ	2.46	0.43
1:A:118:LYS:HE3	1:A:122:LEU:HD11	2.00	0.43
1:A:175:LEU:O	1:A:176:GLU:HB2	2.19	0.43
1:A:143:SER:OG	1:A:144:HIS:N	2.52	0.42
1:C:436:CYS:CB	1:C:478:PRO:HG2	2.49	0.42
1:A:136:CYS:HB2	1:A:178:PRO:O	2.20	0.42
1:A:167:ARG:HD2	5:A:210:HOH:O	2.19	0.42
1:A:157:THR:HA	1:A:158:PRO:HD3	1.90	0.42
2:D:574:GLU:OE2	2:D:584:GLU:HB3	2.20	0.42
1:C:412:ASN:O	1:C:413:ASP:C	2.62	0.42
1:A:187:ARG:HG3	2:B:225:THR:HG23	2.02	0.42
1:C:446:GLU:O	1:C:447:GLU:C	2.62	0.42
1:C:431:HIS:HB2	1:C:473:THR:OG1	2.21	0.41
2:D:568:ARG:HH11	2:D:568:ARG:CG	2.28	0.41
1:A:149:VAL:HG22	1:A:150:ILE:N	2.35	0.41
1:A:166:PHE:N	1:A:166:PHE:CD1	2.88	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:378:PHE:CD1	1:C:378:PHE:N	2.88	0.41
1:A:195:ILE:HG23	1:C:475:LEU:HD21	2.02	0.41
1:A:188:GLY:HA3	2:B:228:GLY:O	2.20	0.41
1:C:450:ILE:HD13	1:C:462:LEU:HD12	2.01	0.41
1:A:60:TYR:CD1	1:A:178:PRO:HD3	2.56	0.41
1:C:397:LEU:HD22	1:C:440:ILE:HD13	2.03	0.41
2:D:602:SER:HB2	2:D:603:GLN:NE2	2.36	0.41
1:A:97:LEU:CD1	1:A:140:ILE:HG21	2.50	0.40
2:D:560:GLN:O	2:D:564:ARG:HG3	2.20	0.40
2:D:583:HIS:CD2	2:D:584:GLU:HG3	2.57	0.40
2:B:258:ILE:HG23	2:B:259:MET:N	2.36	0.40
1:C:449:VAL:CG1	1:C:450:ILE:N	2.84	0.40
2:D:558:ILE:HG23	2:D:559:MET:N	2.37	0.40
2:D:520:LEU:HB2	2:D:595:LEU:HD21	2.04	0.40
2:B:283:HIS:CE1	2:B:284:GLU:HG3	2.57	0.40

There are no symmetry-related clashes.

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	137/173 (79%)	132 (96%)	4 (3%)	1 (1%)	18	47
1	C	138/173 (80%)	130 (94%)	8 (6%)	0	100	100
2	B	90/97 (93%)	85 (94%)	5 (6%)	0	100	100
2	D	91/97 (94%)	87 (96%)	4 (4%)	0	100	100
3	E	3/5 (60%)	3 (100%)	0	0	100	100
3	F	3/5 (60%)	3 (100%)	0	0	100	100
4	G	3/5 (60%)	3 (100%)	0	0	100	100
All	All	465/555 (84%)	443 (95%)	21 (4%)	1 (0%)	43	72

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	171	CYS

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	119/152 (78%)	116 (98%)	3 (2%)	42	76
1	C	120/152 (79%)	112 (93%)	8 (7%)	15	42
2	B	84/88 (96%)	81 (96%)	3 (4%)	31	66
2	D	85/88 (97%)	82 (96%)	3 (4%)	32	67
3	E	3/3 (100%)	3 (100%)	0	100	100
3	F	3/3 (100%)	3 (100%)	0	100	100
4	G	3/3 (100%)	3 (100%)	0	100	100
All	All	417/489 (85%)	400 (96%)	17 (4%)	27	62

All (17) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	59	GLN
1	A	108	VAL
1	A	160	LYS
2	B	234	SER
2	B	278	ASP
2	B	303	GLN
1	C	369	LYS
1	C	398	PHE
1	C	400	CYS
1	C	418	LYS
1	C	422	LEU
1	C	450	ILE
1	C	456	VAL
1	C	480	LEU
2	D	511	TYR

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Mol	Chain	Res	Type
2	D	547	SER
2	D	568	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	59	GLN
1	A	63	ASN
1	A	88	ASN
1	A	112	ASN
1	A	120	GLN
1	A	184	GLN
1	A	196	GLN
2	B	281	HIS
1	C	361	ASN
1	C	420	GLN
1	C	433	ASN
1	C	465	HIS
1	C	496	GLN
2	D	581	HIS
2	D	603	GLN
4	G	810	GLN

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
3	ASJ	E	705	3,1	7,7,7	0.74	0	5,8,8	1.51	1 (20%)
3	ASJ	F	805	3,1	7,7,7	1.22	1 (14%)	5,8,8	1.19	0

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
3	ASJ	E	705	3,1	-	4/6/6/6	-
3	ASJ	F	805	3,1	-	4/6/6/6	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	F	805	ASJ	C-CA	2.27	1.56	1.52

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	E	705	ASJ	CB-CA-C	-2.63	107.46	112.21

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	E	705	ASJ	O-C-CA-N
3	E	705	ASJ	O-C-CA-CB
3	E	705	ASJ	C-CA-CB-CG
3	E	705	ASJ	N-CA-CB-CG
3	F	805	ASJ	O-C-CA-N
3	F	805	ASJ	O-C-CA-CB
3	F	805	ASJ	C-CA-CB-CG
3	F	805	ASJ	N-CA-CB-CG

There are no ring outliers.

2 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	705	ASJ	3	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	F	805	ASJ	4	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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 [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	139/173 (80%)	-0.09	1 (0%) 84 77	42, 58, 71, 75	0
1	C	140/173 (80%)	-0.32	1 (0%) 84 77	39, 49, 67, 86	0
2	B	92/97 (94%)	-0.18	1 (1%) 78 70	39, 55, 84, 92	0
2	D	93/97 (95%)	-0.22	1 (1%) 78 70	35, 52, 82, 94	0
3	E	3/5 (60%)	-0.41	0 100 100	66, 66, 71, 73	0
3	F	3/5 (60%)	-0.20	0 100 100	56, 56, 59, 64	0
4	G	5/5 (100%)	2.05	3 (60%) 0 0	116, 117, 119, 119	0
All	All	475/555 (85%)	-0.18	7 (1%) 72 63	35, 54, 79, 119	0

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	G	812	HIS	2.6
4	G	814	GLU	2.4
1	A	85	GLY	2.4
4	G	813	GLY	2.3
1	C	453	LYS	2.2
2	B	253	GLY	2.0
2	D	511	TYR	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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(Å ²)	Q<0.9
3	ASJ	E	705	8/8	0.95	0.07	60,64,67,68	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	ASJ	F	805	8/8	0.95	0.09	56,56,57,58	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.