



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 06:02 PM UTC

PDB ID : 6GKF / pdb_00006gkf
Title : Structure of 14-3-3 gamma in complex with caspase-2 14-3-3 binding motif Ser139
Authors : Alblova, M.; Obsil, T.; Obsilova, V.
Deposited on : 2018-05-20
Resolution : 2.60 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

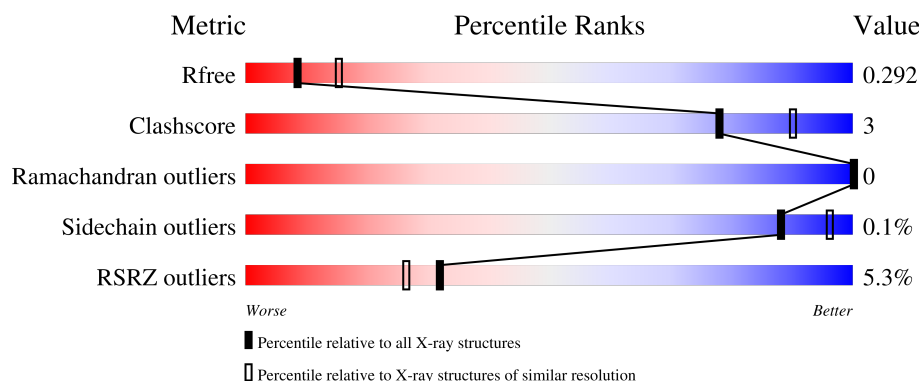
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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	4008 (2.60-2.60)
Clashscore	190562	4347 (2.60-2.60)
Ramachandran outliers	187476	4277 (2.60-2.60)
Sidechain outliers	187428	4277 (2.60-2.60)
RSRZ outliers	180081	4008 (2.60-2.60)

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	234	3% 87% 9% 5%
1	B	234	5% 91% 6% .
1	C	234	% 90% 7% .
1	D	234	9% 87% 10% .
1	E	234	3% 93% 7%

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Mol	Chain	Length	Quality of chain
1	F	234	
1	G	234	
1	H	234	
2	I	8	
2	J	8	
2	K	8	
2	L	8	
2	M	8	
2	N	8	
2	O	8	
2	P	8	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 14108 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 14-3-3 protein gamma.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	223	Total	C	N	O	S	0	0	0
			1746	1097	299	342	8			
1	C	228	Total	C	N	O	S	0	0	0
			1789	1121	305	355	8			
1	E	233	Total	C	N	O	S	0	0	0
			1838	1149	311	369	9			
1	G	217	Total	C	N	O	S	0	0	0
			1596	999	275	315	7			
1	B	227	Total	C	N	O	S	0	0	0
			1729	1087	294	340	8			
1	D	227	Total	C	N	O	S	0	0	0
			1654	1024	292	331	7			
1	F	213	Total	C	N	O	S	0	0	0
			1520	949	265	300	6			
1	H	220	Total	C	N	O	S	0	0	0
			1661	1046	283	324	8			

- Molecule 2 is a protein called Caspase-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	I	8	Total	C	N	O	P	0	0	0
			58	35	8	14	1			
2	J	7	Total	C	N	O	P	0	0	0
			57	36	7	13	1			
2	K	8	Total	C	N	O	P	0	0	0
			65	41	8	15	1			
2	L	6	Total	C	N	O	P	0	0	0
			46	27	6	12	1			
2	M	8	Total	C	N	O	P	0	0	0
			64	41	8	14	1			
2	N	6	Total	C	N	O	P	0	0	0
			46	27	6	12	1			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	O	8	Total	C	N	O	P	0	0	0
			61	38	8	14	1			
2	P	8	Total	C	N	O	P	0	0	0
			64	41	8	14	1			

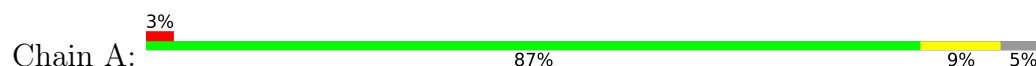
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	22	Total	O	0	0
			22	22		
3	C	27	Total	O	0	0
			27	27		
3	E	10	Total	O	0	0
			10	10		
3	G	10	Total	O	0	0
			10	10		
3	B	11	Total	O	0	0
			11	11		
3	D	9	Total	O	0	0
			9	9		
3	F	7	Total	O	0	0
			7	7		
3	H	13	Total	O	0	0
			13	13		
3	K	2	Total	O	0	0
			2	2		
3	L	1	Total	O	0	0
			1	1		
3	O	1	Total	O	0	0
			1	1		
3	P	1	Total	O	0	0
			1	1		

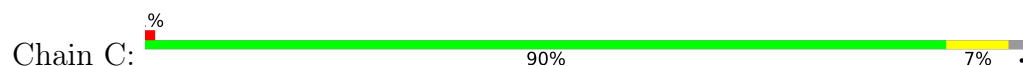
3 Residue-property plots [i](#)

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.

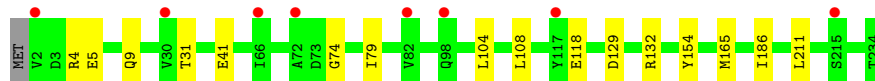
- Molecule 1: 14-3-3 protein gamma



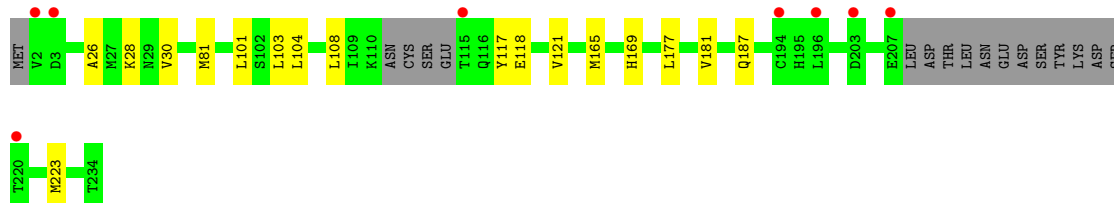
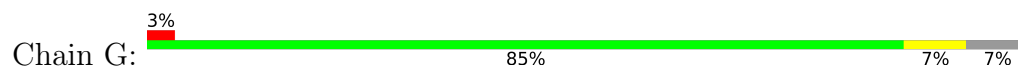
- Molecule 1: 14-3-3 protein gamma



- Molecule 1: 14-3-3 protein gamma

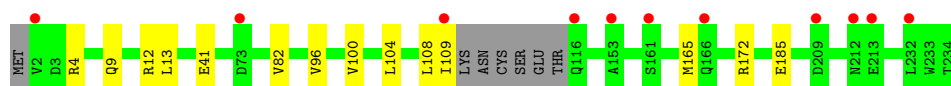


- Molecule 1: 14-3-3 protein gamma

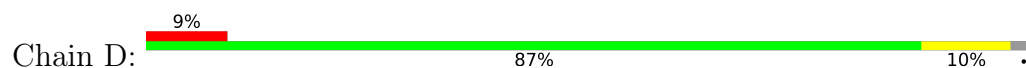


- Molecule 1: 14-3-3 protein gamma

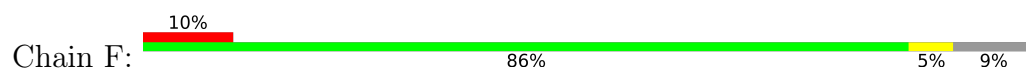




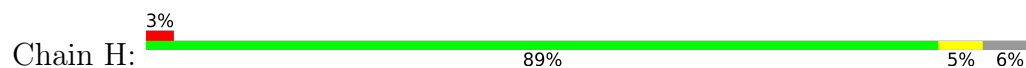
- Molecule 1: 14-3-3 protein gamma



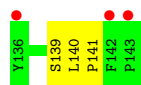
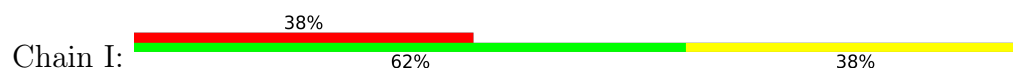
- Molecule 1: 14-3-3 protein gamma



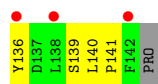
- Molecule 1: 14-3-3 protein gamma



- Molecule 2: Caspase-2

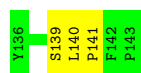


- Molecule 2: Caspase-2



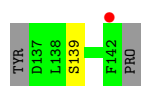
- Molecule 2: Caspase-2

Chain K:  62% 38%



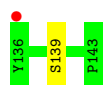
● Molecule 2: Caspase-2

Chain L:  12% 62% 12% 25%



● Molecule 2: Caspase-2

Chain M:  12% 88% 12%



● Molecule 2: Caspase-2

Chain N:  12% 50% 25% 25%



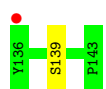
● Molecule 2: Caspase-2

Chain O:  88% 12%



● Molecule 2: Caspase-2

Chain P:  12% 88% 12%



4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, α , β , γ	122.54Å 122.54Å 312.01Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.18 – 2.60 48.18 – 2.60	Depositor EDS
% Data completeness (in resolution range)	99.8 (48.18-2.60) 99.8 (48.18-2.60)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.00 (at 2.61Å)	Xtriage
Refinement program	PHENIX (1.12_2829: ???)	Depositor
R, R_{free}	0.241 , 0.289 0.245 , 0.292	Depositor DCC
R_{free} test set	2100 reflections (2.83%)	wwPDB-VP
Wilson B-factor (Å ²)	59.7	Xtriage
Anisotropy	0.357	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 39.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	14108	wwPDB-VP
Average B, all atoms (Å ²)	64.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.99% 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: SEP

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	0.34	0/1771	0.35	0/2396
1	B	0.07	0/1756	0.22	0/2385
1	C	0.07	0/1814	0.22	0/2454
1	D	0.08	0/1673	0.24	0/2273
1	E	0.08	0/1866	0.22	0/2525
1	F	0.07	0/1536	0.21	0/2086
1	G	0.08	0/1617	0.23	0/2196
1	H	0.07	0/1686	0.21	0/2289
2	I	0.16	0/48	0.31	0/65
2	J	0.13	0/47	0.25	0/62
2	K	0.07	0/56	0.21	0/76
2	L	0.08	0/35	0.12	0/46
2	M	0.11	0/55	0.23	0/74
2	N	0.21	0/35	0.15	0/46
2	O	0.12	0/52	0.35	0/70
2	P	0.14	0/55	0.36	0/74
All	All	0.14	0/14102	0.24	0/19117

There are no bond length outliers.

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	1746	0	1667	11	0
1	B	1729	0	1593	9	0
1	C	1789	0	1709	11	0
1	D	1654	0	1477	14	0
1	E	1838	0	1745	9	0
1	F	1520	0	1338	7	0
1	G	1596	0	1446	11	0
1	H	1661	0	1524	6	0
2	I	58	0	47	1	0
2	J	57	0	47	2	0
2	K	65	0	54	1	0
2	L	46	0	38	0	0
2	M	64	0	54	0	0
2	N	46	0	38	1	0
2	O	61	0	45	0	0
2	P	64	0	54	0	0
3	A	22	0	0	0	0
3	B	11	0	0	0	0
3	C	27	0	0	0	0
3	D	9	0	0	0	0
3	E	10	0	0	0	0
3	F	7	0	0	0	0
3	G	10	0	0	1	0
3	H	13	0	0	0	0
3	K	2	0	0	0	0
3	L	1	0	0	0	0
3	O	1	0	0	0	0
3	P	1	0	0	0	0
All	All	14108	0	12876	75	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 3.

All (75) 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:82:VAL:HG22	1:B:13:LEU:HD11	1.72	0.72
1:A:13:LEU:HD11	1:B:82:VAL:HG22	1.74	0.69
1:G:118:GLU:HA	1:G:165:MET:HE3	1.80	0.64
1:B:104:LEU:HA	1:B:108:LEU:HB2	1.80	0.63
1:G:28:LYS:HG3	1:G:103:LEU:HD11	1.83	0.60
1:D:34:ASN:OD1	1:D:111:ASN:ND2	2.35	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:106:ASN:OD1	1:H:34:ASN:ND2	2.36	0.59
1:B:9:GLN:OE1	1:B:12:ARG:NH1	2.38	0.57
1:B:104:LEU:O	1:B:109:ILE:N	2.28	0.56
1:E:4:ARG:NH2	1:E:41:GLU:OE1	2.41	0.53
1:A:28:LYS:HG3	1:A:103:LEU:HD11	1.91	0.52
1:C:82:VAL:HG22	1:D:13:LEU:HD21	1.91	0.52
1:A:129:ASP:OD1	1:A:154:TYR:OH	2.26	0.51
1:C:169:HIS:HE1	1:C:171:ILE:HD12	1.75	0.51
1:D:41:GLU:HA	1:D:44:LEU:HD12	1.92	0.51
2:N:137:ASP:N	2:N:137:ASP:OD1	2.44	0.51
1:D:124:LEU:HB3	1:D:157:ALA:HB2	1.92	0.51
1:H:39:ASN:OD1	1:H:42:ARG:NH2	2.43	0.51
1:E:74:GLY:HA2	1:E:79:ILE:HD11	1.92	0.51
1:C:83:ARG:NH2	1:C:87:GLU:OE2	2.43	0.50
1:D:188:ASN:O	1:D:188:ASN:ND2	2.44	0.50
1:F:4:ARG:HD2	1:F:33:LEU:HD12	1.93	0.49
1:E:118:GLU:HG3	1:E:165:MET:HE3	1.95	0.49
1:E:129:ASP:OD1	1:E:154:TYR:OH	2.30	0.49
1:G:165:MET:HE2	1:G:169:HIS:ND1	2.28	0.49
1:G:187:GLN:NE2	3:G:302:HOH:O	2.45	0.49
1:D:143:ARG:O	1:D:147:VAL:HG13	2.12	0.49
1:A:83:ARG:NH1	1:A:87:GLU:OE2	2.46	0.49
1:D:67:GLU:OE1	1:D:86:ARG:NE	2.46	0.48
1:B:185:GLU:OE2	2:J:136:TYR:N	2.46	0.48
1:G:101:LEU:HA	1:G:104:LEU:HD12	1.95	0.47
1:B:4:ARG:NH2	1:B:41:GLU:OE1	2.48	0.47
1:F:4:ARG:NH2	1:F:41:GLU:OE1	2.47	0.47
1:A:121:VAL:HG21	1:A:165:MET:SD	2.54	0.47
1:H:158:HIS:HA	1:H:175:LEU:HD21	1.97	0.47
1:H:129:ASP:OD1	1:H:154:TYR:OH	2.27	0.47
1:A:12:ARG:HH21	1:A:40:GLU:CD	2.23	0.47
1:F:117:TYR:O	1:F:121:VAL:HG23	2.15	0.46
1:C:59:SER:OG	1:D:17:ALA:O	2.33	0.46
1:D:167:PRO:HA	1:D:172:ARG:HD3	1.98	0.45
1:A:141:GLU:HB3	1:C:34:ASN:HB2	1.98	0.45
1:E:132:ARG:HG3	1:E:186:ILE:HG13	1.98	0.45
1:D:96:VAL:O	1:D:100:VAL:HG23	2.17	0.45
1:D:108:LEU:HD22	1:D:123:TYR:CZ	2.53	0.44
1:C:129:ASP:OD1	1:C:154:TYR:OH	2.33	0.44
1:G:81:MET:HE3	1:G:81:MET:HB3	1.86	0.44
1:G:223:MET:HE2	1:G:223:MET:HB3	1.82	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:104:LEU:HA	1:E:108:LEU:HB2	2.00	0.44
1:F:79:ILE:HD12	1:F:79:ILE:HA	1.86	0.44
1:G:117:TYR:O	1:G:121:VAL:HG23	2.17	0.44
1:E:211:LEU:HD23	1:E:211:LEU:HA	1.88	0.43
2:J:140:LEU:HA	2:J:141:PRO:HD3	1.86	0.43
1:C:13:LEU:HD11	1:D:82:VAL:HG22	1.99	0.43
1:G:104:LEU:HA	1:G:108:LEU:HB2	2.00	0.43
1:A:5:GLU:O	1:A:9:GLN:HG3	2.19	0.42
1:F:181:VAL:HG13	1:F:185:GLU:HG3	2.01	0.42
2:K:140:LEU:HD12	2:K:141:PRO:HD2	2.00	0.42
1:B:165:MET:O	1:B:172:ARG:NH1	2.51	0.42
1:B:96:VAL:O	1:B:100:VAL:HG23	2.20	0.42
2:I:140:LEU:HA	2:I:141:PRO:HD3	1.84	0.42
1:E:31:THR:HG23	1:E:108:LEU:HD21	2.02	0.42
1:D:151:GLU:HG2	1:D:182:PHE:HE2	1.83	0.42
1:C:67:GLU:CD	1:C:86:ARG:HH21	2.27	0.42
1:F:219:SER:O	1:F:223:MET:HG3	2.19	0.42
1:C:96:VAL:O	1:C:100:VAL:HG23	2.19	0.42
1:A:124:LEU:HB2	1:A:157:ALA:HB2	2.02	0.42
1:G:26:ALA:O	1:G:30:VAL:HG23	2.20	0.41
1:C:3:ASP:OD1	1:C:3:ASP:N	2.51	0.41
1:G:177:LEU:O	1:G:181:VAL:HG23	2.21	0.41
1:A:67:GLU:OE1	1:A:86:ARG:HD3	2.20	0.41
1:C:163:GLU:HG2	1:C:164:HIS:ND1	2.36	0.41
1:E:5:GLU:O	1:E:9:GLN:HG3	2.20	0.41
1:H:96:VAL:O	1:H:100:VAL:HG23	2.21	0.41
1:D:32:GLU:HA	1:D:107:TYR:CE1	2.57	0.40
1:H:118:GLU:HA	1:H:165:MET:HE1	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	217/234 (93%)	212 (98%)	5 (2%)	0	100	100
1	B	223/234 (95%)	219 (98%)	4 (2%)	0	100	100
1	C	222/234 (95%)	219 (99%)	3 (1%)	0	100	100
1	D	221/234 (94%)	217 (98%)	4 (2%)	0	100	100
1	E	231/234 (99%)	228 (99%)	3 (1%)	0	100	100
1	F	203/234 (87%)	201 (99%)	2 (1%)	0	100	100
1	G	211/234 (90%)	211 (100%)	0	0	100	100
1	H	214/234 (92%)	213 (100%)	1 (0%)	0	100	100
2	I	5/8 (62%)	4 (80%)	1 (20%)	0	100	100
2	J	4/8 (50%)	4 (100%)	0	0	100	100
2	K	5/8 (62%)	5 (100%)	0	0	100	100
2	L	3/8 (38%)	3 (100%)	0	0	100	100
2	M	5/8 (62%)	5 (100%)	0	0	100	100
2	N	3/8 (38%)	3 (100%)	0	0	100	100
2	O	5/8 (62%)	5 (100%)	0	0	100	100
2	P	5/8 (62%)	5 (100%)	0	0	100	100
All	All	1777/1936 (92%)	1754 (99%)	23 (1%)	0	100	100

There are no Ramachandran outliers to report.

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	178/206 (86%)	177 (99%)	1 (1%)	78	91
1	B	165/206 (80%)	165 (100%)	0	100	100
1	C	184/206 (89%)	184 (100%)	0	100	100
1	D	151/206 (73%)	151 (100%)	0	100	100
1	E	188/206 (91%)	188 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	F	131/206 (64%)	131 (100%)	0	100	100
1	G	146/206 (71%)	146 (100%)	0	100	100
1	H	157/206 (76%)	157 (100%)	0	100	100
2	I	5/7 (71%)	5 (100%)	0	100	100
2	J	5/7 (71%)	5 (100%)	0	100	100
2	K	6/7 (86%)	6 (100%)	0	100	100
2	L	4/7 (57%)	4 (100%)	0	100	100
2	M	6/7 (86%)	6 (100%)	0	100	100
2	N	4/7 (57%)	4 (100%)	0	100	100
2	O	5/7 (71%)	5 (100%)	0	100	100
2	P	6/7 (86%)	6 (100%)	0	100	100
All	All	1341/1704 (79%)	1340 (100%)	1 (0%)	88	96

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	110	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (10) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	16	GLN
1	A	188	ASN
1	A	224	GLN
1	C	16	GLN
1	E	16	GLN
1	E	43	ASN
1	G	51	ASN
1	G	169	HIS
1	B	164	HIS
1	H	224	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	SEP	M	139	2	8,9,10	1.61	1 (12%)	7,12,14	1.08	1 (14%)
2	SEP	P	139	2	8,9,10	1.60	1 (12%)	7,12,14	1.03	0
2	SEP	N	139	2	8,9,10	1.60	1 (12%)	7,12,14	1.16	1 (14%)
2	SEP	O	139	2	8,9,10	1.60	1 (12%)	7,12,14	0.93	0
2	SEP	L	139	2	8,9,10	1.61	1 (12%)	7,12,14	1.10	1 (14%)
2	SEP	K	139	2	8,9,10	1.61	1 (12%)	7,12,14	0.95	0
2	SEP	I	139	2	8,9,10	1.60	1 (12%)	7,12,14	1.02	1 (14%)
2	SEP	J	139	2	8,9,10	1.61	1 (12%)	7,12,14	0.86	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
2	SEP	M	139	2	-	0/6/8/10	-
2	SEP	P	139	2	-	1/6/8/10	-
2	SEP	N	139	2	-	0/6/8/10	-
2	SEP	O	139	2	-	0/6/8/10	-
2	SEP	L	139	2	-	0/6/8/10	-
2	SEP	K	139	2	-	0/6/8/10	-
2	SEP	I	139	2	-	0/6/8/10	-
2	SEP	J	139	2	-	0/6/8/10	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	L	139	SEP	P-O1P	3.54	1.61	1.50
2	M	139	SEP	P-O1P	3.53	1.61	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	J	139	SEP	P-O1P	3.52	1.61	1.50
2	N	139	SEP	P-O1P	3.50	1.61	1.50
2	O	139	SEP	P-O1P	3.50	1.61	1.50
2	P	139	SEP	P-O1P	3.49	1.61	1.50
2	K	139	SEP	P-O1P	3.49	1.61	1.50
2	I	139	SEP	P-O1P	3.48	1.61	1.50

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	N	139	SEP	OG-CB-CA	2.31	110.39	108.14
2	L	139	SEP	OG-CB-CA	2.22	110.31	108.14
2	M	139	SEP	OG-CB-CA	2.22	110.30	108.14
2	I	139	SEP	OG-CB-CA	2.00	110.09	108.14

There are no chirality outliers.

All (1) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	P	139	SEP	CB-OG-P-O3P

There are no ring outliers.

No monomer is involved in short contacts.

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 ⓘ

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	223/234 (95%)	0.21	6 (2%) 56 50	39, 57, 77, 89	0
1	B	227/234 (97%)	0.52	11 (4%) 35 30	43, 65, 90, 105	0
1	C	228/234 (97%)	0.21	2 (0%) 81 78	41, 55, 87, 112	0
1	D	227/234 (97%)	0.79	20 (8%) 15 12	47, 70, 93, 108	0
1	E	233/234 (99%)	0.35	8 (3%) 48 42	44, 58, 83, 97	0
1	F	213/234 (91%)	0.80	24 (11%) 10 8	50, 73, 96, 105	0
1	G	217/234 (92%)	0.56	8 (3%) 45 39	50, 68, 94, 101	0
1	H	220/234 (94%)	0.44	8 (3%) 46 40	49, 66, 85, 100	0
2	I	7/8 (87%)	1.31	3 (42%) 0 0	53, 61, 72, 74	0
2	J	6/8 (75%)	1.12	3 (50%) 0 0	56, 67, 75, 77	0
2	K	7/8 (87%)	0.76	0 100 100	50, 56, 66, 71	0
2	L	5/8 (62%)	1.23	1 (20%) 3 2	55, 62, 68, 80	0
2	M	7/8 (87%)	1.11	1 (14%) 6 5	55, 61, 71, 76	0
2	N	5/8 (62%)	1.34	1 (20%) 3 2	74, 79, 82, 89	0
2	O	7/8 (87%)	0.77	0 100 100	73, 76, 85, 88	0
2	P	7/8 (87%)	0.82	1 (14%) 6 5	60, 71, 79, 80	0
All	All	1839/1936 (94%)	0.50	97 (5%) 32 26	39, 64, 91, 112	0

All (97) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	2	VAL	6.1
1	H	70	THR	5.6
1	F	204	ALA	5.1
1	H	216	TYR	4.9
1	D	211	LEU	3.9

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Mol	Chain	Res	Type	RSRZ
1	F	229	ASN	3.9
1	G	220	THR	3.8
2	L	142	PHE	3.6
1	D	216	TYR	3.6
1	E	2	VAL	3.5
1	G	194	CYS	3.5
1	G	2	VAL	3.5
1	B	109	ILE	3.4
1	A	116	GLN	3.3
1	F	188	ASN	3.3
1	D	2	VAL	3.3
1	H	2	VAL	3.3
1	B	209	ASP	3.1
1	D	209	ASP	3.1
2	M	136	TYR	3.0
1	F	81	MET	3.0
1	B	213	GLU	3.0
2	I	143	PRO	3.0
2	N	142	PHE	3.0
1	F	167	PRO	2.9
1	F	71	SER	2.9
1	G	3	ASP	2.8
1	C	2	VAL	2.8
1	G	115	THR	2.8
1	D	141	GLU	2.7
1	H	168	THR	2.7
1	B	73	ASP	2.6
1	B	161	SER	2.6
1	F	154	TYR	2.6
1	F	186	ILE	2.6
1	A	158	HIS	2.6
1	F	183	TYR	2.6
1	D	140	GLY	2.6
1	F	228	ASP	2.6
1	F	13	LEU	2.6
1	H	112	CYS	2.6
2	I	136	TYR	2.6
1	D	71	SER	2.5
1	F	159	GLU	2.5
1	G	196	LEU	2.5
1	F	2	VAL	2.5
1	D	176	ALA	2.5

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Mol	Chain	Res	Type	RSRZ
1	G	207	GLU	2.5
1	D	184	TYR	2.5
2	P	136	TYR	2.5
1	F	201	PHE	2.5
1	D	149	SER	2.5
1	D	168	THR	2.5
1	D	117	TYR	2.4
1	H	148	GLU	2.4
2	J	142	PHE	2.4
1	E	72	ALA	2.4
1	F	76	GLU	2.4
1	C	73	ASP	2.4
2	J	138	LEU	2.4
1	A	234	THR	2.3
1	A	3	ASP	2.3
1	D	113	SER	2.3
1	H	230	LEU	2.3
1	A	162	LYS	2.3
1	E	82	VAL	2.3
1	F	139	THR	2.3
1	D	37	LEU	2.3
1	B	153	ALA	2.2
1	D	205	ILE	2.2
1	H	80	GLU	2.2
2	I	142	PHE	2.2
1	E	30	VAL	2.2
1	F	110	LYS	2.2
1	D	177	LEU	2.2
1	B	212	ASN	2.2
1	B	116	GLN	2.2
1	D	165	MET	2.2
1	F	205	ILE	2.2
1	D	110	LYS	2.2
1	F	79	ILE	2.2
1	F	196	LEU	2.1
1	E	117	TYR	2.1
1	D	131	TYR	2.1
1	B	166	GLN	2.1
1	B	232	LEU	2.1
1	G	203	ASP	2.1
2	J	136	TYR	2.1
1	F	146	VAL	2.0

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Mol	Chain	Res	Type	RSRZ
1	F	173	LEU	2.0
1	E	215	SER	2.0
1	E	98	GLN	2.0
1	D	72	ALA	2.0
1	A	76	GLU	2.0
1	F	230	LEU	2.0
1	E	66	ILE	2.0
1	F	215	SER	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
2	SEP	P	139	10/11	0.89	0.09	58,62,64,71	0
2	SEP	N	139	10/11	0.90	0.10	65,72,75,77	0
2	SEP	L	139	10/11	0.93	0.08	52,58,69,69	0
2	SEP	O	139	10/11	0.95	0.08	56,72,73,73	0
2	SEP	M	139	10/11	0.95	0.09	48,50,57,58	0
2	SEP	K	139	10/11	0.96	0.06	43,47,52,53	0
2	SEP	I	139	10/11	0.96	0.06	49,53,57,59	0
2	SEP	J	139	10/11	0.96	0.07	50,55,59,62	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.