



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 09:10 PM UTC

PDB ID : 1QJB / pdb_00001qjb
Title : 14-3-3 ZETA/PHOSPHOPEPTIDE COMPLEX (MODE 1)
Authors : Rittinger, K.; Budman, J.; Xu, J.; Volinia, S.; Cantley, L.C.; Smerdon, S.J.;
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Deposited on : 1999-06-23
Resolution : 2.00 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

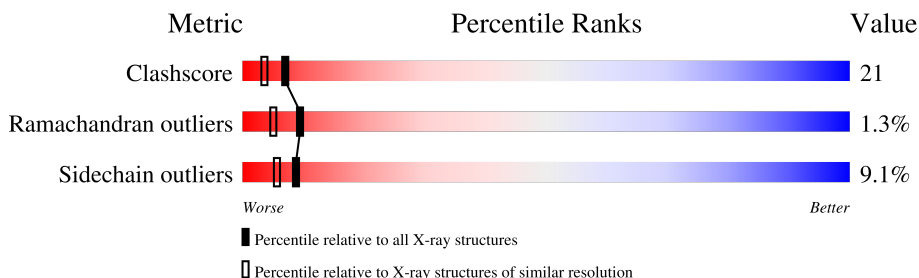
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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	190562	11152 (2.00-2.00)
Ramachandran outliers	187476	11031 (2.00-2.00)
Sidechain outliers	187428	11029 (2.00-2.00)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	245	
1	B	245	
2	Q	8	
2	S	8	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 4193 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 ZETA/DELTA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	228	Total	C	N	O	S	0	0	0
			1826	1146	307	363	10			
1	B	232	Total	C	N	O	S	0	0	0
			1847	1158	310	369	10			

- Molecule 2 is a protein called PHOSPHOPEPTIDE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	Q	8	Total	C	N	O	P	0	0	0
			66	38	13	14	1			
2	S	7	Total	C	N	O	P	0	0	0
			61	35	12	13	1			

- Molecule 3 is water.

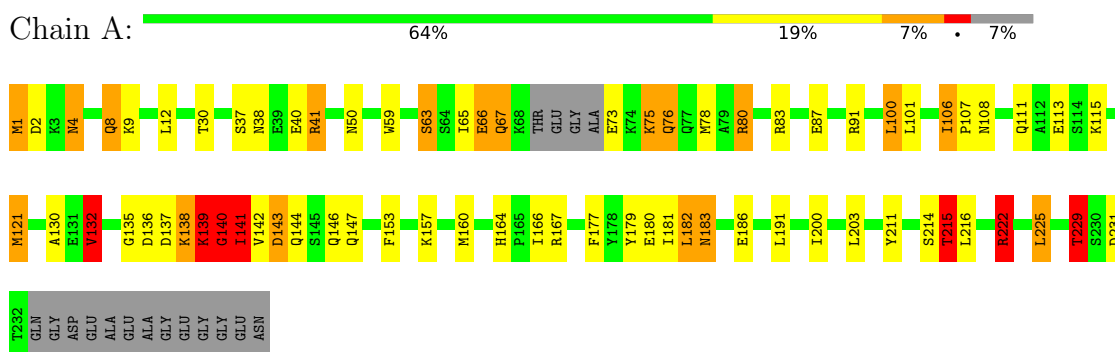
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	190	Total	O	0	0
			190	190		
3	B	184	Total	O	0	0
			184	184		
3	Q	9	Total	O	0	0
			9	9		
3	S	10	Total	O	0	0
			10	10		

3 Residue-property plots

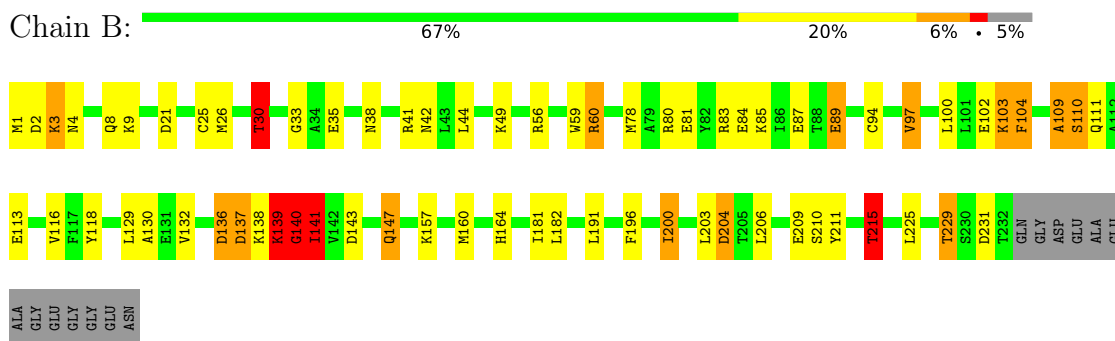
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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.

Note EDS was not executed.

• Molecule 1: 14-3-3 PROTEIN ZETA/DELTA



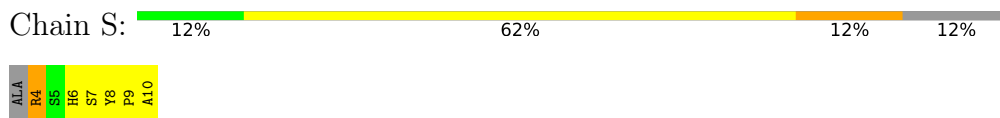
• Molecule 1: 14-3-3 PROTEIN ZETA/DELTA



• Molecule 2: PHOSHOPEPTIDE



• Molecule 2: PHOSHOPEPTIDE



4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	68.35Å 71.98Å 131.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	15.00 – 2.00	Depositor
% Data completeness (in resolution range)	83.5 (15.00-2.00)	Depositor
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	REFMAC	Depositor
R, R_{free}	0.210 , 0.288	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	4193	wwPDB-VP
Average B, all atoms (Å ²)	23.0	wwPDB-VP

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	0.75	0/1850	1.88	46/2486 (1.9%)
1	B	0.78	0/1872	1.72	28/2518 (1.1%)
2	Q	0.67	0/57	1.75	2/75 (2.7%)
2	S	0.75	0/52	2.13	3/68 (4.4%)
All	All	0.77	0/3831	1.80	79/5147 (1.5%)

There are no bond length outliers.

All (79) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	140	GLY	CA-C-N	16.87	141.95	121.71
1	A	140	GLY	C-N-CA	16.87	141.95	121.71
1	A	141	ILE	CA-C-O	13.25	132.63	118.98
1	A	132	VAL	N-CA-CB	-11.71	98.40	112.33
1	B	104	PHE	CA-CB-CG	-10.50	103.30	113.80
1	A	141	ILE	N-CA-CB	10.43	126.19	112.12
1	B	147	GLN	OE1-CD-NE2	-9.79	112.81	122.60
1	A	147	GLN	OE1-CD-NE2	-9.76	112.84	122.60
1	A	67	GLN	OE1-CD-NE2	-9.75	112.85	122.60
1	A	141	ILE	CB-CA-C	-9.02	101.81	110.65
1	A	65	ILE	CA-C-N	8.94	133.44	120.38
1	A	65	ILE	C-N-CA	8.94	133.44	120.38
1	B	140	GLY	O-C-N	-8.75	111.32	122.70
2	S	8	TYR	CA-C-O	-8.63	106.13	120.80
1	A	214	SER	CA-C-O	8.63	129.70	120.55
1	A	222	ARG	CD-NE-CZ	8.51	136.32	124.40
1	B	203	LEU	CA-C-N	8.43	133.47	120.82
1	B	203	LEU	C-N-CA	8.43	133.47	120.82
1	B	83	ARG	CD-NE-CZ	8.17	135.84	124.40
1	A	50	ASN	CA-CB-CG	-8.15	104.45	112.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	83	ARG	CD-NE-CZ	8.14	135.79	124.40
1	B	104	PHE	CB-CA-C	-8.07	97.86	111.26
1	A	215	THR	N-CA-CB	-7.85	98.11	110.28
1	B	60	ARG	CD-NE-CZ	7.76	135.26	124.40
1	A	183	ASN	OD1-CG-ND2	7.66	130.26	122.60
2	S	9	PRO	N-CA-CB	7.32	110.65	102.60
1	A	203	LEU	CA-C-N	6.89	134.70	121.54
1	A	203	LEU	C-N-CA	6.89	134.70	121.54
1	A	80	ARG	CD-NE-CZ	6.84	133.97	124.40
1	B	21	ASP	CA-CB-CG	6.79	119.39	112.60
1	A	147	GLN	CG-CD-NE2	6.66	126.39	116.40
1	B	147	GLN	CG-CD-NE2	6.64	126.36	116.40
1	A	67	GLN	CG-CD-NE2	6.63	126.34	116.40
1	A	183	ASN	CA-CB-CG	-6.55	106.05	112.60
1	A	141	ILE	N-CA-C	-6.55	107.11	113.53
1	B	44	LEU	CA-C-N	6.51	128.91	120.44
1	B	44	LEU	C-N-CA	6.51	128.91	120.44
1	B	104	PHE	N-CA-C	6.34	120.62	112.12
1	B	215	THR	N-CA-CB	-6.20	101.00	110.12
2	Q	8	TYR	CA-C-O	-6.18	110.29	120.80
2	Q	9	PRO	N-CA-CB	6.08	109.29	102.60
1	B	139	LYS	CA-C-O	-5.99	114.41	121.06
1	A	143	ASP	CA-CB-CG	-5.96	106.64	112.60
1	A	139	LYS	O-C-N	-5.90	115.99	122.84
1	B	97	VAL	CA-C-O	-5.88	114.62	120.85
2	S	8	TYR	O-C-N	5.65	132.04	123.00
1	A	203	LEU	CA-C-O	5.64	126.52	120.20
1	B	204	ASP	CB-CA-C	-5.58	101.47	110.74
1	A	137	ASP	CA-C-O	-5.57	112.55	120.51
1	A	4	ASN	CA-C-N	5.54	128.16	120.29
1	A	4	ASN	C-N-CA	5.54	128.16	120.29
1	A	83	ARG	NE-CZ-NH1	5.54	127.04	121.50
1	A	137	ASP	CA-CB-CG	5.47	118.07	112.60
1	B	141	ILE	N-CA-C	-5.44	105.62	113.07
1	A	141	ILE	CA-CB-CG2	5.43	119.73	110.50
1	B	140	GLY	N-CA-C	5.43	126.05	113.18
1	B	140	GLY	CA-C-N	5.39	129.86	121.35
1	B	140	GLY	C-N-CA	5.39	129.86	121.35
1	B	35	GLU	CA-C-O	-5.38	115.23	121.15
1	A	186	GLU	CB-CG-CD	-5.38	103.45	112.60
1	B	60	ARG	NE-CZ-NH1	5.37	126.87	121.50
1	B	30	THR	CA-CB-OG1	5.35	117.63	109.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	2	ASP	CA-C-N	5.23	127.56	120.65
1	A	2	ASP	C-N-CA	5.23	127.56	120.65
1	B	30	THR	N-CA-CB	5.23	118.38	110.28
1	A	106	ILE	CA-C-N	5.22	124.67	119.24
1	A	106	ILE	C-N-CA	5.22	124.67	119.24
1	B	81	GLU	CA-CB-CG	-5.19	103.72	114.10
1	A	66	GLU	N-CA-C	5.19	118.39	111.75
1	B	118	TYR	CA-C-O	-5.19	114.00	119.97
1	B	89	GLU	CB-CA-C	-5.16	102.22	110.79
1	A	229	THR	CA-CB-CG2	5.15	119.25	110.50
1	A	146	GLN	CA-C-N	5.15	127.13	120.44
1	A	146	GLN	C-N-CA	5.15	127.13	120.44
1	A	75	LYS	CA-C-N	5.08	131.25	121.54
1	A	75	LYS	C-N-CA	5.08	131.25	121.54
1	A	179	TYR	N-CA-C	5.05	116.59	111.14
1	A	83	ARG	CG-CD-NE	5.04	123.08	112.00
1	A	41	ARG	CD-NE-CZ	5.01	131.41	124.40

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	1826	0	1812	89	0
1	B	1847	0	1828	66	1
2	Q	66	0	53	3	0
2	S	61	0	48	3	0
3	A	190	0	0	56	0
3	B	184	0	0	35	1
3	Q	9	0	0	3	0
3	S	10	0	0	3	0
All	All	4193	0	3741	158	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 21.

All (158) 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:140:GLY:HA2	3:B:2126:HOH:O	1.09	1.23
1:A:140:GLY:HA2	3:A:2128:HOH:O	1.06	1.21
1:B:42:ASN:HB3	3:B:2042:HOH:O	1.38	1.19
1:A:144:GLN:HG3	3:A:2135:HOH:O	1.41	1.16
1:A:38:ASN:HB2	3:A:2047:HOH:O	1.44	1.12
1:B:139:LYS:CE	3:B:2122:HOH:O	1.98	1.09
1:B:209:GLU:HG3	3:B:2171:HOH:O	1.53	1.08
1:B:80:ARG:HD2	3:B:2081:HOH:O	1.51	1.06
1:A:91:ARG:NH1	3:A:2096:HOH:O	1.92	1.00
1:B:130:ALA:HA	1:B:141:ILE:HD11	1.44	0.98
1:A:139:LYS:HE3	3:A:2127:HOH:O	1.61	0.98
1:A:191:LEU:HD13	3:A:2033:HOH:O	1.67	0.94
1:B:139:LYS:CG	3:B:2122:HOH:O	2.15	0.93
1:A:141:ILE:HA	3:A:2129:HOH:O	1.69	0.92
1:A:140:GLY:CA	3:A:2128:HOH:O	1.76	0.92
1:B:4:ASN:O	3:B:2004:HOH:O	1.88	0.92
1:A:101:LEU:HD21	1:A:121:MET:HE2	1.52	0.91
1:A:140:GLY:C	3:A:2128:HOH:O	2.05	0.91
1:A:139:LYS:CE	3:A:2127:HOH:O	2.18	0.91
1:A:78:MET:HB3	3:A:2086:HOH:O	1.68	0.90
1:B:139:LYS:HE3	3:B:2122:HOH:O	1.67	0.87
1:A:38:ASN:CB	3:A:2047:HOH:O	2.08	0.86
1:A:41:ARG:NE	3:A:2053:HOH:O	2.09	0.86
1:A:8:GLN:HG2	3:A:2005:HOH:O	1.76	0.84
1:B:113:GLU:HA	1:B:160:MET:HE2	1.59	0.84
1:A:41:ARG:CD	3:A:2053:HOH:O	2.24	0.84
1:A:73:GLU:OE2	3:A:2081:HOH:O	1.93	0.84
1:A:139:LYS:HD3	3:A:2131:HOH:O	1.79	0.83
1:B:164:HIS:NE2	3:B:2142:HOH:O	2.12	0.82
1:A:8:GLN:HB2	3:A:2007:HOH:O	1.79	0.82
1:A:141:ILE:CA	3:A:2129:HOH:O	2.25	0.81
1:B:85:LYS:NZ	3:B:2084:HOH:O	2.13	0.81
1:A:63:SER:O	1:A:67:GLN:HG3	1.82	0.79
1:A:4:ASN:HB3	3:A:2003:HOH:O	1.84	0.78
1:B:139:LYS:HG3	3:B:2122:HOH:O	1.75	0.77
1:B:139:LYS:NZ	3:B:2122:HOH:O	1.99	0.77
1:A:216:LEU:HD12	3:A:2181:HOH:O	1.86	0.76
1:A:78:MET:N	3:A:2086:HOH:O	2.20	0.75
1:A:180:GLU:HG3	3:A:2158:HOH:O	1.86	0.75
1:A:38:ASN:ND2	3:A:2047:HOH:O	2.18	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:38:ASN:CB	3:B:2039:HOH:O	2.36	0.74
1:B:191:LEU:HD12	3:B:2159:HOH:O	1.87	0.74
1:B:138:LYS:HE3	3:B:2121:HOH:O	1.87	0.74
1:A:191:LEU:HD12	3:A:2167:HOH:O	1.89	0.72
1:A:38:ASN:HD22	1:A:41:ARG:HH22	1.36	0.72
1:A:130:ALA:HA	1:A:141:ILE:HD11	1.73	0.71
1:A:38:ASN:HD22	1:A:41:ARG:NH2	1.89	0.71
1:B:38:ASN:HB2	3:B:2039:HOH:O	1.90	0.70
1:B:38:ASN:ND2	3:B:2039:HOH:O	1.94	0.70
1:B:130:ALA:CA	1:B:141:ILE:HD11	2.20	0.70
1:B:60:ARG:NE	3:B:2063:HOH:O	2.24	0.69
1:A:139:LYS:HB2	3:A:2123:HOH:O	1.94	0.67
1:B:136:ASP:O	1:B:137:ASP:HB2	1.94	0.67
1:A:8:GLN:CB	3:A:2007:HOH:O	2.37	0.67
1:A:211:TYR:O	1:A:215:THR:HB	1.94	0.67
1:B:2:ASP:OD1	1:B:3:LYS:N	2.28	0.67
1:B:140:GLY:CA	3:B:2126:HOH:O	1.91	0.66
1:B:137:ASP:O	3:B:2121:HOH:O	2.15	0.65
1:B:164:HIS:CD2	3:B:2142:HOH:O	2.49	0.65
1:B:225:LEU:O	1:B:229:THR:HB	1.97	0.64
1:A:139:LYS:CB	3:A:2123:HOH:O	2.44	0.64
1:A:138:LYS:HE2	1:A:181:ILE:HA	1.79	0.64
1:A:1:MET:HE1	1:A:9:LYS:HD2	1.80	0.63
1:B:113:GLU:HA	1:B:160:MET:CE	2.29	0.62
1:A:139:LYS:HG3	1:A:140:GLY:N	2.13	0.62
1:A:135:GLY:O	1:A:136:ASP:HB2	2.00	0.62
1:B:191:LEU:HD13	3:B:2026:HOH:O	1.99	0.62
1:A:157:LYS:CE	3:A:2147:HOH:O	2.47	0.62
1:A:41:ARG:NH2	3:A:2052:HOH:O	2.30	0.61
1:B:102:GLU:HG2	3:B:2097:HOH:O	2.00	0.61
1:A:113:GLU:HA	1:A:160:MET:CE	2.31	0.61
1:B:164:HIS:CE1	3:B:2142:HOH:O	2.52	0.61
2:Q:4:ARG:HG2	3:Q:2003:HOH:O	2.02	0.60
1:B:4:ASN:O	1:B:8:GLN:HG3	2.02	0.59
1:B:60:ARG:CZ	3:B:2063:HOH:O	2.49	0.59
1:A:135:GLY:HA2	3:A:2124:HOH:O	2.02	0.59
2:Q:4:ARG:CG	3:Q:2003:HOH:O	2.50	0.59
2:S:6:HIS:CE1	3:S:2003:HOH:O	2.55	0.58
1:B:196:PHE:CZ	1:B:200:ILE:HD12	2.39	0.57
1:A:106:ILE:N	1:A:107:PRO:HD2	2.20	0.57
1:A:8:GLN:HG3	3:A:2007:HOH:O	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:139:LYS:HD3	1:B:140:GLY:N	2.20	0.56
1:A:41:ARG:NE	3:A:2052:HOH:O	2.06	0.56
1:B:59:TRP:CE2	1:B:132:VAL:HG12	2.41	0.56
1:B:9:LYS:HD3	1:B:25:CYS:SG	2.46	0.56
1:B:138:LYS:HE2	1:B:181:ILE:O	2.05	0.55
1:A:231:ASP:C	3:A:2190:HOH:O	2.50	0.55
1:B:33:GLY:HA2	1:B:104:PHE:CE1	2.42	0.55
1:A:180:GLU:CG	3:A:2158:HOH:O	2.51	0.54
1:A:153:PHE:CZ	1:A:191:LEU:HD11	2.43	0.54
1:A:157:LYS:HE2	3:A:2147:HOH:O	2.05	0.54
1:A:41:ARG:NH2	3:A:2047:HOH:O	2.40	0.54
1:A:139:LYS:HE3	3:A:2123:HOH:O	2.07	0.54
1:B:4:ASN:HB2	3:B:2001:HOH:O	2.07	0.54
1:A:111:GLN:HB2	3:A:2104:HOH:O	2.07	0.53
1:B:139:LYS:O	1:B:141:ILE:N	2.41	0.53
1:A:59:TRP:CE2	1:A:132:VAL:HG22	2.43	0.53
1:A:78:MET:CA	3:A:2086:HOH:O	2.57	0.53
1:B:139:LYS:HD2	1:B:141:ILE:HG23	1.91	0.53
1:A:87:GLU:OE2	1:A:91:ARG:NH2	2.42	0.52
1:A:41:ARG:HD3	3:A:2053:HOH:O	1.99	0.52
1:B:89:GLU:OE2	3:B:2087:HOH:O	2.19	0.52
1:A:143:ASP:HB3	3:A:2133:HOH:O	2.10	0.52
1:A:78:MET:CB	3:A:2086:HOH:O	2.39	0.52
1:A:225:LEU:O	1:A:229:THR:HB	2.09	0.51
1:A:130:ALA:CA	1:A:141:ILE:HD11	2.40	0.51
1:A:231:ASP:CA	3:A:2190:HOH:O	2.59	0.50
1:B:109:ALA:O	1:B:110:SER:CB	2.60	0.50
1:A:153:PHE:CZ	1:A:157:LYS:HE3	2.47	0.49
2:S:4:ARG:N	3:S:2002:HOH:O	2.45	0.49
1:A:8:GLN:HB3	1:B:78:MET:SD	2.53	0.49
1:B:94:CYS:HB2	1:B:129:LEU:HD21	1.95	0.49
1:A:139:LYS:HB3	3:A:2123:HOH:O	2.11	0.48
1:A:139:LYS:O	1:A:141:ILE:HD13	2.14	0.48
1:A:12:LEU:HD12	1:B:78:MET:HG2	1.96	0.47
1:A:216:LEU:CD1	3:A:2181:HOH:O	2.52	0.47
1:A:80:ARG:HD3	3:A:2087:HOH:O	2.14	0.47
1:B:206:LEU:HD13	1:B:211:TYR:CE1	2.48	0.47
1:B:80:ARG:O	1:B:84:GLU:HG3	2.15	0.47
1:B:113:GLU:HG2	3:B:2142:HOH:O	2.13	0.46
1:A:76:GLN:C	3:A:2086:HOH:O	2.59	0.46
1:A:8:GLN:NE2	3:A:2006:HOH:O	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:121:MET:HG2	3:A:2058:HOH:O	2.15	0.46
2:S:10:ALA:C	3:S:2010:HOH:O	2.59	0.46
1:B:110:SER:OG	1:B:111:GLN:NE2	2.48	0.46
1:A:139:LYS:HD2	3:A:2132:HOH:O	2.16	0.46
1:B:49:LYS:HD3	3:B:2112:HOH:O	2.16	0.45
1:B:160:MET:HG2	3:B:2142:HOH:O	2.15	0.45
1:A:8:GLN:CG	3:A:2007:HOH:O	2.60	0.45
1:A:38:ASN:ND2	1:A:41:ARG:HH22	2.11	0.45
1:B:2:ASP:CG	3:B:2001:HOH:O	2.59	0.45
1:B:143:ASP:O	1:B:147:GLN:HG3	2.16	0.44
1:A:141:ILE:HD13	1:A:142:VAL:N	2.33	0.44
1:A:139:LYS:HG2	1:A:141:ILE:HG23	2.00	0.44
1:A:222:ARG:HG3	1:A:222:ARG:HH11	1.83	0.44
1:B:8:GLN:HG3	3:B:2004:HOH:O	2.17	0.44
1:A:30:THR:HG21	1:A:100:LEU:HG	2.00	0.43
1:A:113:GLU:HA	1:A:160:MET:HE2	2.00	0.43
1:A:177:PHE:CE2	1:A:182:LEU:HD22	2.53	0.43
2:Q:4:ARG:HG3	3:Q:2003:HOH:O	2.16	0.43
1:B:211:TYR:O	1:B:215:THR:HB	2.18	0.43
1:B:138:LYS:O	1:B:139:LYS:HB2	2.18	0.42
1:A:75:LYS:C	3:A:2086:HOH:O	2.62	0.42
1:B:139:LYS:O	1:B:141:ILE:HD13	2.19	0.42
1:A:164:HIS:HE1	1:A:166:ILE:HD12	1.83	0.42
1:A:167:ARG:NH2	3:A:2153:HOH:O	2.46	0.42
1:B:26:MET:O	1:B:30:THR:HG23	2.20	0.42
1:A:135:GLY:CA	3:A:2124:HOH:O	2.65	0.42
1:B:140:GLY:C	3:B:2126:HOH:O	2.44	0.42
1:A:141:ILE:HD13	1:A:142:VAL:H	1.85	0.41
1:A:37:SER:OG	1:A:40:GLU:HG3	2.20	0.41
1:A:1:MET:CE	1:A:9:LYS:HD2	2.48	0.41
1:B:56:ARG:HH11	1:B:56:ARG:HD3	1.68	0.41
1:B:116:VAL:HB	1:B:160:MET:HE1	2.02	0.41
1:B:139:LYS:HG2	3:B:2122:HOH:O	2.03	0.41
1:A:183:ASN:ND2	3:A:2159:HOH:O	2.53	0.41
1:A:12:LEU:CD1	1:B:78:MET:HG2	2.52	0.40
1:B:210:SER:HA	3:B:2176:HOH:O	2.21	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:B:103:LYS:CG	3:B:2170:HOH:O[4_456]	2.18	0.02

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	224/245 (91%)	215 (96%)	7 (3%)	2 (1%)	14	9
1	B	230/245 (94%)	217 (94%)	9 (4%)	4 (2%)	7	3
2	Q	5/8 (62%)	5 (100%)	0	0	100	100
2	S	4/8 (50%)	4 (100%)	0	0	100	100
All	All	463/506 (92%)	441 (95%)	16 (4%)	6 (1%)	9	5

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	76	GLN
1	B	137	ASP
1	B	140	GLY
1	A	140	GLY
1	B	231	ASP
1	B	109	ALA

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	197/209 (94%)	179 (91%)	18 (9%)	9	6
1	B	198/209 (95%)	180 (91%)	18 (9%)	9	6
2	Q	5/5 (100%)	5 (100%)	0	100	100
2	S	5/5 (100%)	4 (80%)	1 (20%)	1	0
All	All	405/428 (95%)	368 (91%)	37 (9%)	9	6

All (37) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1	MET
1	A	8	GLN
1	A	63	SER
1	A	66	GLU
1	A	100	LEU
1	A	108	ASN
1	A	115	LYS
1	A	121	MET
1	A	132	VAL
1	A	138	LYS
1	A	139	LYS
1	A	141	ILE
1	A	182	LEU
1	A	200	ILE
1	A	215	THR
1	A	222	ARG
1	A	225	LEU
1	A	229	THR
1	B	1	MET
1	B	3	LYS
1	B	30	THR
1	B	41	ARG
1	B	87	GLU
1	B	97	VAL
1	B	100	LEU
1	B	103	LYS
1	B	110	SER
1	B	136	ASP
1	B	139	LYS
1	B	141	ILE
1	B	157	LYS
1	B	182	LEU
1	B	200	ILE

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Mol	Chain	Res	Type
1	B	204	ASP
1	B	215	THR
1	B	229	THR
2	S	4	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	38	ASN
1	A	76	GLN
1	B	76	GLN
1	B	108	ASN
1	B	111	GLN
1	B	183	ASN
1	B	219	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	$\# Z > 2$
2	SEP	Q	7	2	8,9,10	3.72	1 (12%)	7,12,14	5.79	2 (28%)
2	SEP	S	7	2	8,9,10	3.86	1 (12%)	7,12,14	3.63	3 (42%)

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	Q	7	2	-	0/6/8/10	-
2	SEP	S	7	2	-	0/6/8/10	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	S	7	SEP	P-OG	10.73	1.94	1.60
2	Q	7	SEP	P-OG	10.29	1.92	1.60

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	Q	7	SEP	OG-CB-CA	-14.30	94.23	108.14
2	S	7	SEP	OG-CB-CA	-8.30	100.07	108.14
2	Q	7	SEP	O3P-P-OG	4.57	118.58	106.67
2	S	7	SEP	O3P-P-OG	3.87	116.76	106.67
2	S	7	SEP	O2P-P-OG	-2.17	101.01	106.67

There are no chirality outliers.

There are no torsion outliers.

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 [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.