WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report (i)

Aug 2, 2023 – 05:19 AM EDT

PDB ID	:	1B9Y
Title	:	STRUCTURAL ANALYSIS OF PHOSDUCIN AND ITS PHOSPHORYLATION-REGULATED INTERACTION WITH TRANSDUCIN BETA-GAMMA
Authors	:	Gaudet, R.; Sigler, P.B.
Deposited on	:	1999-02-16
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 (i) 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 (i)) were used in the production of this report:

|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.34
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)	:	2.34
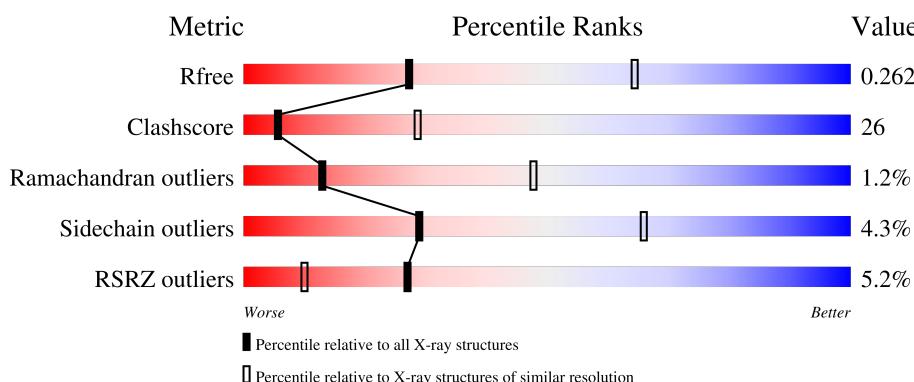
1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION
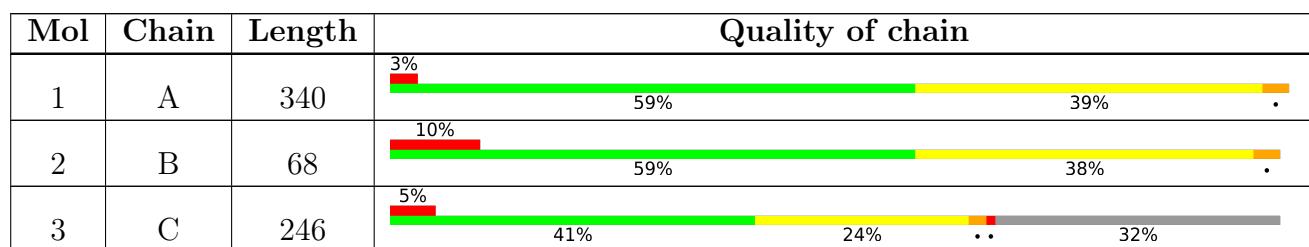
The reported resolution of this entry is 3.00 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.

Metric	Percentile Ranks	Value
Rfree		0.262
Clashscore		26
Ramachandran outliers		1.2%
Sidechain outliers		4.3%
RSRZ outliers		5.2%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

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

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	340	3% 59% 39% •
2	B	68	10% 59% 38% •
3	C	246	5% 41% 24% •• 32%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 4526 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 PROTEIN (TRANSDUCIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	340	Total	C	N	O	S	0	0	0
			2616	1613	469	512	22			

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	71	LEU	VAL	conflict	UNP P62871

- Molecule 2 is a protein called PROTEIN (TRANSDUCIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	68	Total	C	N	O	S	0	0	0
			559	351	90	113	5			

- Molecule 3 is a protein called PROTEIN (PHOSDUCIN).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	167	Total	C	N	O	S	0	0	0
			1325	840	222	255	8			

- Molecule 4 is GADOLINIUM ATOM (three-letter code: GD) (formula: Gd).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	Gd	0	0
			2	2		
4	B	2	Total	Gd	0	0
			2	2		
4	C	2	Total	Gd	0	0
			2	2		
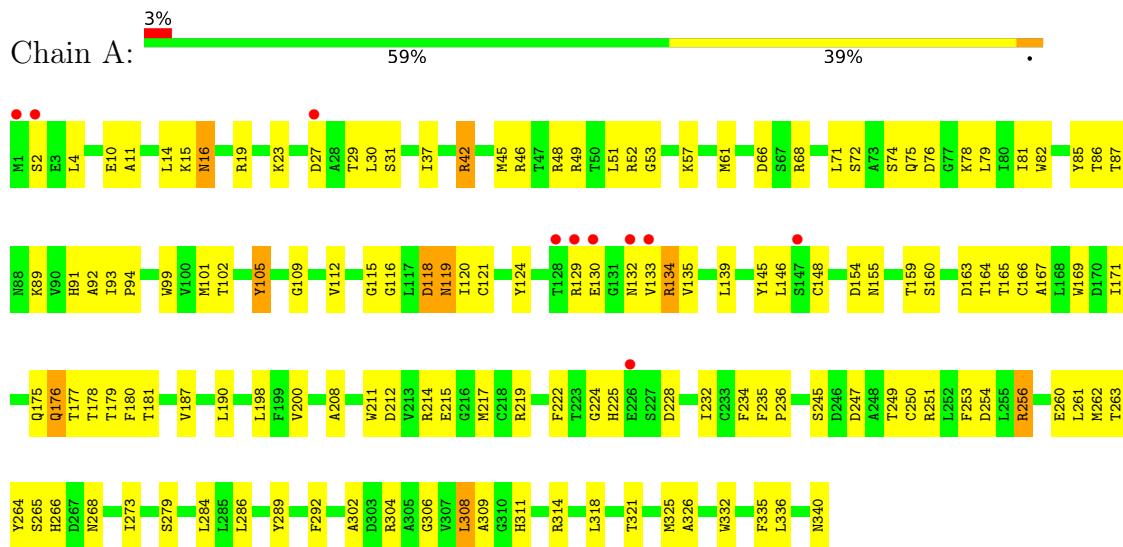
- Molecule 5 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	6	Total 6	O 6	0	0
5	B	6	Total 6	O 6	0	0
5	C	8	Total 8	O 8	0	0
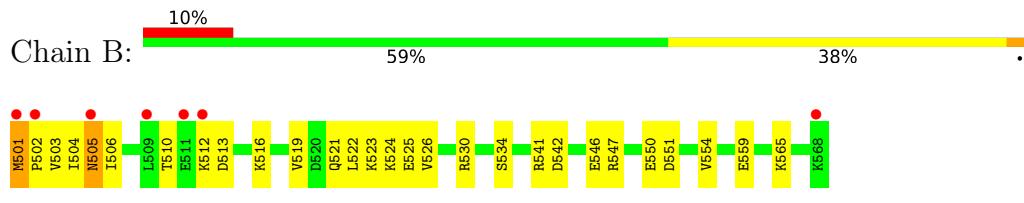
3 Residue-property plots ⓘ

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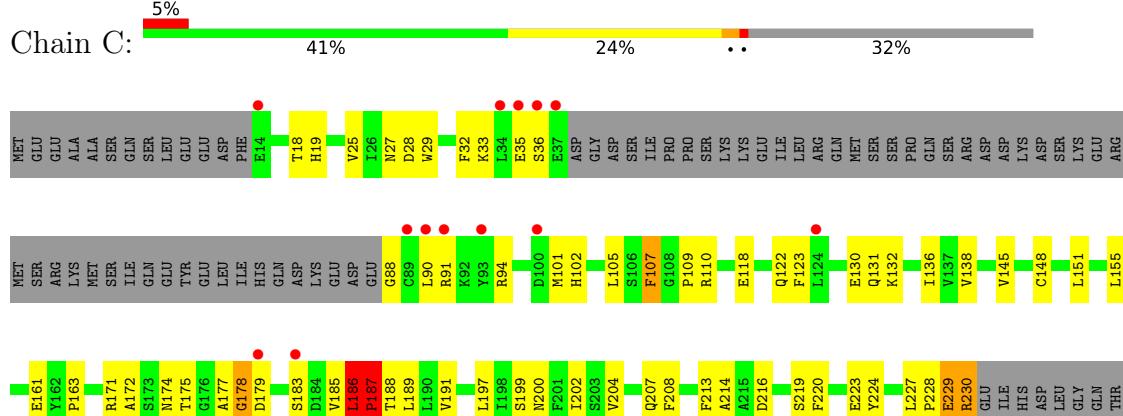
- Molecule 1: PROTEIN (TRANSDUCIN)

- Molecule 2: PROTEIN (TRANSDUCIN)

- Molecule 3: PROTEIN (PHOSDUCIN)

ASN
THR
GLU
ASP
GLU
ASP
ILE
GLU

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	76.47Å 89.92Å 102.34Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 3.00 35.82 – 3.01	Depositor EDS
% Data completeness (in resolution range)	88.3 (50.00-3.00) 94.2 (35.82-3.01)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.09	Depositor
$< I/\sigma(I) >$ [1]	3.66 (at 3.00Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.213 , 0.266 0.218 , 0.262	Depositor DCC
R_{free} test set	1311 reflections (9.60%)	wwPDB-VP
Wilson B-factor (Å^2)	61.4	Xtriage
Anisotropy	1.022	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 66.5	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.92	EDS
Total number of atoms	4526	wwPDB-VP
Average B, all atoms (Å^2)	67.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.21% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: GD

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	0.36	0/2663	0.65	0/3608
2	B	0.38	0/565	0.63	0/753
3	C	0.42	0/1350	0.68	1/1816 (0.1%)
All	All	0.38	0/4578	0.66	1/6177 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	186	LEU	CA-CB-CG	-12.07	87.54	115.30

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	2616	0	2524	155	0
2	B	559	0	570	32	0
3	C	1325	0	1285	55	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
4	C	2	0	0	0	0
5	A	6	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	B	6	0	0	0	0
5	C	8	0	0	0	0
All	All	4526	0	4379	227	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 26.

All (227) 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:4:LEU:HD21	2:B:512:LYS:HE2	1.14	1.13
1:A:42:ARG:HH11	1:A:42:ARG:HG3	1.15	1.06
1:A:4:LEU:HD21	2:B:512:LYS:CE	1.89	1.01
3:C:187:PRO:O	3:C:204:VAL:HG23	1.59	1.01
1:A:101:MET:HE1	1:A:145:TYR:HB2	1.43	0.98
3:C:132:LYS:HE2	3:C:132:LYS:HA	1.51	0.92
3:C:186:LEU:O	3:C:188:THR:N	2.05	0.90
3:C:186:LEU:HB3	3:C:187:PRO:CD	2.03	0.87
1:A:42:ARG:HH11	1:A:42:ARG:CG	1.87	0.87
1:A:304:ARG:HH11	1:A:304:ARG:HB3	1.40	0.85
1:A:48:ARG:HE	1:A:340:ASN:HB2	1.41	0.85
1:A:4:LEU:CD2	2:B:512:LYS:HE2	2.03	0.85
3:C:185:VAL:HB	3:C:202:ILE:HG23	1.60	0.83
3:C:18:THR:HB	3:C:27:ASN:HD22	1.41	0.83
1:A:37:ILE:HD11	2:B:541:ARG:HE	1.45	0.81
1:A:214:ARG:HH11	1:A:215:GLU:HG2	1.46	0.81
2:B:522:LEU:O	2:B:526:VAL:HG23	1.82	0.79
1:A:71:LEU:HD11	1:A:112:VAL:HG22	1.64	0.78
3:C:186:LEU:O	3:C:187:PRO:C	2.23	0.77
1:A:119:ASN:N	1:A:119:ASN:HD22	1.84	0.76
1:A:214:ARG:HD3	1:A:214:ARG:C	2.06	0.76
2:B:505:ASN:HD22	2:B:506:ILE:N	1.85	0.75
1:A:27:ASP:OD2	2:B:534:SER:HB3	1.88	0.73
1:A:42:ARG:HG3	1:A:42:ARG:NH1	1.96	0.73
1:A:130:GLU:HB3	1:A:134:ARG:HB2	1.71	0.72
1:A:45:MET:CE	1:A:308:LEU:HG	2.19	0.72
1:A:254:ASP:HB2	1:A:261:LEU:HD11	1.72	0.72
2:B:503:VAL:HG23	2:B:504:ILE:H	1.54	0.71
1:A:165:THR:HG22	1:A:166:CYS:N	2.05	0.71
3:C:186:LEU:HB3	3:C:187:PRO:HD3	1.72	0.70
3:C:186:LEU:CB	3:C:187:PRO:CD	2.69	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:230:ARG:HD3	3:C:230:ARG:C	2.13	0.69
1:A:146:LEU:HD11	1:A:159:THR:HB	1.75	0.68
3:C:33:LYS:HA	3:C:36:SER:HB3	1.74	0.68
1:A:121:CYS:O	1:A:139:LEU:HD23	1.93	0.67
1:A:262:MET:SD	1:A:302:ALA:HB2	2.35	0.67
3:C:130:GLU:HG2	3:C:136:ILE:HD11	1.77	0.67
3:C:189:LEU:HB2	3:C:204:VAL:HG21	1.76	0.67
1:A:163:ASP:O	1:A:164:THR:HB	1.94	0.67
3:C:29:TRP:O	3:C:32:PHE:HB3	1.96	0.66
1:A:134:ARG:H	1:A:134:ARG:HD2	1.60	0.66
1:A:37:ILE:HD11	2:B:541:ARG:NE	2.11	0.66
1:A:23:LYS:O	1:A:23:LYS:HD3	1.96	0.65
1:A:198:LEU:HD23	1:A:212:ASP:HA	1.77	0.65
3:C:219:SER:O	3:C:223:GLU:HG3	1.97	0.65
1:A:42:ARG:HH12	1:A:306:GLY:HA2	1.63	0.64
3:C:185:VAL:HB	3:C:202:ILE:CG2	2.26	0.64
1:A:105:TYR:HE1	1:A:109:GLY:HA2	1.62	0.64
1:A:266:HIS:CE1	1:A:268:ASN:HD22	2.16	0.64
1:A:228:ASP:O	1:A:245:SER:HB2	1.98	0.64
1:A:208:ALA:HB3	1:A:222:PHE:HB2	1.80	0.63
1:A:45:MET:HE1	1:A:308:LEU:HG	1.79	0.63
2:B:505:ASN:HD22	2:B:506:ILE:H	1.46	0.63
1:A:115:GLY:HA3	1:A:146:LEU:HD23	1.81	0.63
1:A:212:ASP:OD2	1:A:215:GLU:HG3	1.99	0.62
2:B:512:LYS:O	2:B:516:LYS:HG3	1.98	0.62
1:A:30:LEU:HB3	1:A:262:MET:HE3	1.81	0.62
1:A:212:ASP:HB2	1:A:219:ARG:HD3	1.81	0.62
1:A:66:ASP:OD2	1:A:68:ARG:HB3	1.99	0.62
1:A:154:ASP:O	1:A:171:ILE:HD12	2.00	0.62
1:A:4:LEU:HD21	2:B:512:LYS:CD	2.30	0.61
1:A:180:PHE:HB3	1:A:211:TRP:CE3	2.35	0.61
1:A:130:GLU:CB	1:A:134:ARG:HB2	2.29	0.61
1:A:249:THR:HG22	1:A:265:SER:HB3	1.83	0.61
1:A:286:LEU:HD12	1:A:286:LEU:N	2.14	0.61
1:A:139:LEU:HD12	1:A:169:TRP:CE3	2.36	0.61
1:A:81:ILE:HG13	1:A:91:HIS:HB2	1.83	0.60
1:A:11:ALA:O	1:A:15:LYS:HG3	2.01	0.60
1:A:132:ASN:ND2	1:A:133:VAL:HG23	2.17	0.59
1:A:250:CYS:SG	1:A:273:ILE:HD13	2.41	0.59
1:A:119:ASN:N	1:A:119:ASN:ND2	2.51	0.59
1:A:15:LYS:O	1:A:19:ARG:HG3	2.02	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:164:THR:HG22	1:A:164:THR:O	2.02	0.59
1:A:214:ARG:HH11	1:A:215:GLU:CG	2.15	0.59
2:B:501:MET:HA	2:B:501:MET:CE	2.33	0.59
1:A:71:LEU:HG	1:A:105:TYR:CD2	2.38	0.58
3:C:207:GLN:HG3	3:C:220:PHE:CE2	2.38	0.58
1:A:165:THR:HG22	1:A:166:CYS:H	1.67	0.58
1:A:72:SER:HB3	1:A:336:LEU:HD21	1.86	0.57
1:A:326:ALA:HB2	1:A:340:ASN:HD21	1.69	0.57
1:A:179:THR:HG22	1:A:181:THR:HG23	1.86	0.57
3:C:132:LYS:HE2	3:C:132:LYS:CA	2.28	0.56
1:A:304:ARG:HB3	1:A:304:ARG:NH1	2.17	0.56
3:C:186:LEU:CB	3:C:187:PRO:HD2	2.35	0.55
1:A:139:LEU:HD22	1:A:139:LEU:N	2.21	0.55
3:C:185:VAL:O	3:C:186:LEU:O	2.25	0.55
1:A:105:TYR:CE1	1:A:109:GLY:HA2	2.39	0.55
1:A:29:THR:HG22	1:A:31:SER:H	1.71	0.55
2:B:505:ASN:ND2	2:B:506:ILE:N	2.54	0.55
2:B:559:GLU:HG3	2:B:565:LYS:HE3	1.88	0.55
1:A:52:ARG:HG2	1:A:335:PHE:CE1	2.41	0.54
1:A:124:TYR:CE2	1:A:135:VAL:HG22	2.42	0.54
1:A:71:LEU:HD11	1:A:112:VAL:CG2	2.37	0.54
1:A:78:LYS:CE	1:A:92:ALA:HB1	2.37	0.54
3:C:123:PHE:CE2	3:C:138:VAL:HG11	2.43	0.54
1:A:118:ASP:O	1:A:120:ILE:HG13	2.07	0.54
1:A:71:LEU:HG	1:A:105:TYR:HD2	1.72	0.53
1:A:74:SER:HB3	1:A:76:ASP:OD1	2.08	0.53
2:B:542:ASP:O	2:B:546:GLU:HG2	2.07	0.53
3:C:230:ARG:C	3:C:230:ARG:CD	2.75	0.53
1:A:86:THR:O	1:A:87:THR:OG1	2.15	0.53
1:A:160:SER:HB3	1:A:190:LEU:HD23	1.88	0.53
1:A:29:THR:HG22	1:A:30:LEU:N	2.24	0.53
1:A:256:ARG:HD3	1:A:256:ARG:H	1.74	0.53
3:C:88:GLY:O	3:C:91:ARG:HG2	2.09	0.53
3:C:161:GLU:C	3:C:163:PRO:HD3	2.29	0.53
1:A:304:ARG:HH11	1:A:304:ARG:CB	2.15	0.53
1:A:45:MET:HE3	1:A:308:LEU:HG	1.91	0.52
1:A:165:THR:CG2	1:A:166:CYS:N	2.72	0.52
3:C:33:LYS:C	3:C:35:GLU:H	2.12	0.52
1:A:48:ARG:NE	1:A:340:ASN:HB2	2.19	0.52
1:A:101:MET:CE	1:A:145:TYR:HB2	2.29	0.52
3:C:130:GLU:OE2	3:C:131:GLN:NE2	2.42	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:503:VAL:HG23	2:B:504:ILE:N	2.22	0.52
1:A:30:LEU:HB3	1:A:262:MET:CE	2.39	0.52
1:A:101:MET:HG2	3:C:25:VAL:HG21	1.92	0.52
1:A:214:ARG:CD	1:A:215:GLU:HG2	2.39	0.51
2:B:547:ARG:HG3	2:B:547:ARG:HH11	1.75	0.51
3:C:32:PHE:CZ	3:C:90:LEU:HD23	2.45	0.51
1:A:79:LEU:HB3	1:A:93:ILE:HB	1.91	0.51
1:A:262:MET:HG2	1:A:263:THR:N	2.25	0.51
3:C:183:SER:HA	3:C:186:LEU:HD12	1.91	0.51
1:A:29:THR:CG2	1:A:30:LEU:N	2.74	0.51
1:A:160:SER:HB2	1:A:187:VAL:CG1	2.40	0.51
1:A:180:PHE:HB3	1:A:211:TRP:CZ3	2.46	0.51
1:A:42:ARG:CG	1:A:42:ARG:NH1	2.56	0.51
1:A:53:GLY:HA3	1:A:89:LYS:NZ	2.26	0.50
1:A:71:LEU:HD22	1:A:81:ILE:HG12	1.94	0.50
1:A:190:LEU:HD12	1:A:190:LEU:C	2.31	0.50
3:C:145:VAL:HB	3:C:148:CYS:SG	2.52	0.50
1:A:286:LEU:N	1:A:286:LEU:CD1	2.75	0.50
1:A:75:GLN:HG2	1:A:75:GLN:O	2.12	0.50
3:C:123:PHE:HE2	3:C:138:VAL:HG11	1.77	0.49
1:A:119:ASN:HD22	1:A:119:ASN:H	1.60	0.49
1:A:279:SER:HB3	1:A:284:LEU:HB2	1.93	0.49
1:A:247:ASP:OD1	1:A:249:THR:OG1	2.26	0.49
1:A:308:LEU:HD23	1:A:309:ALA:H	1.78	0.49
1:A:51:LEU:HD13	1:A:82:TRP:CD2	2.47	0.49
1:A:214:ARG:HD2	1:A:215:GLU:HG2	1.93	0.49
3:C:172:ALA:HA	3:C:175:THR:HG23	1.94	0.49
1:A:292:PHE:CZ	3:C:19:HIS:HB3	2.48	0.49
3:C:91:ARG:HA	3:C:94:ARG:HD2	1.94	0.49
1:A:27:ASP:CG	2:B:534:SER:HB3	2.32	0.49
3:C:118:GLU:O	3:C:174:ASN:HB3	2.13	0.48
2:B:521:GLN:O	2:B:525:GLU:HG3	2.14	0.48
3:C:151:LEU:O	3:C:155:LEU:HG	2.13	0.48
1:A:51:LEU:HD13	1:A:82:TRP:CG	2.49	0.48
1:A:262:MET:CG	1:A:263:THR:N	2.76	0.48
1:A:74:SER:C	1:A:76:ASP:H	2.16	0.48
1:A:132:ASN:HD22	1:A:133:VAL:HG23	1.76	0.48
3:C:105:LEU:O	3:C:107:PHE:CE1	2.67	0.48
1:A:46:ARG:HD2	3:C:224:TYR:CE1	2.49	0.48
1:A:102:THR:HG21	1:A:148:CYS:HA	1.96	0.47
1:A:304:ARG:NH1	1:A:304:ARG:CB	2.77	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:214:ARG:HD3	1:A:215:GLU:N	2.29	0.47
1:A:249:THR:OG1	1:A:251:ARG:NH1	2.46	0.47
2:B:519:VAL:O	2:B:523:LYS:HG3	2.15	0.47
3:C:171:ARG:HG3	3:C:171:ARG:HH11	1.80	0.47
1:A:318:LEU:HD12	1:A:318:LEU:C	2.35	0.47
1:A:165:THR:CG2	1:A:166:CYS:H	2.26	0.46
1:A:235:PHE:CD1	1:A:236:PRO:HD2	2.50	0.46
3:C:177:ALA:O	3:C:178:GLY:O	2.33	0.46
1:A:134:ARG:HD2	1:A:134:ARG:N	2.28	0.46
3:C:197:LEU:HD11	3:C:199:SER:O	2.15	0.46
1:A:314:ARG:HG3	1:A:314:ARG:HH11	1.79	0.46
3:C:118:GLU:HB2	3:C:122:GLN:HE22	1.79	0.46
2:B:501:MET:HA	2:B:501:MET:HE3	1.98	0.46
3:C:109:PRO:CB	3:C:163:PRO:HB2	2.45	0.46
2:B:546:GLU:HG3	2:B:547:ARG:NH1	2.31	0.46
3:C:110:ARG:HG3	3:C:110:ARG:HH11	1.81	0.46
1:A:16:ASN:HA	1:A:19:ARG:HD2	1.98	0.45
1:A:71:LEU:HD13	1:A:112:VAL:HG13	1.99	0.45
3:C:213:PHE:N	3:C:216:ASP:OD2	2.26	0.45
1:A:68:ARG:HG3	1:A:85:TYR:CD1	2.51	0.45
2:B:530:ARG:HG3	2:B:530:ARG:HH11	1.81	0.45
1:A:57:LYS:HG3	1:A:332:TRP:HA	1.98	0.45
3:C:109:PRO:HB2	3:C:163:PRO:HB2	1.98	0.45
1:A:10:GLU:O	1:A:14:LEU:HG	2.16	0.45
1:A:93:ILE:HA	1:A:94:PRO:HD3	1.78	0.45
1:A:332:TRP:CH2	3:C:101:MET:HB3	2.51	0.45
3:C:102:HIS:HE1	3:C:229:GLU:HA	1.83	0.44
1:A:61:MET:HA	1:A:71:LEU:O	2.17	0.44
1:A:164:THR:O	1:A:164:THR:CG2	2.64	0.44
1:A:130:GLU:CG	1:A:134:ARG:HB2	2.47	0.44
1:A:308:LEU:HD23	1:A:309:ALA:N	2.33	0.44
1:A:49:ARG:NH2	2:B:565:LYS:O	2.50	0.44
3:C:227:LEU:HA	3:C:228:PRO:HD3	1.73	0.44
3:C:191:VAL:O	3:C:197:LEU:HD12	2.17	0.44
1:A:273:ILE:HG12	1:A:289:TYR:CE2	2.53	0.44
1:A:165:THR:HG21	1:A:179:THR:HG23	2.00	0.43
1:A:175:GLN:O	1:A:177:THR:N	2.50	0.43
1:A:121:CYS:HB3	1:A:139:LEU:HB2	2.00	0.43
2:B:551:ASP:HB3	2:B:554:VAL:HB	2.00	0.43
3:C:33:LYS:C	3:C:35:GLU:N	2.72	0.43
3:C:213:PHE:O	3:C:214:ALA:C	2.57	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:253:PHE:HA	1:A:260:GLU:HA	2.01	0.43
1:A:99:TRP:O	1:A:116:GLY:HA3	2.19	0.43
1:A:256:ARG:HD3	1:A:256:ARG:N	2.32	0.43
3:C:229:GLU:O	3:C:230:ARG:HB3	2.19	0.42
1:A:217:MET:CE	2:B:524:LYS:NZ	2.83	0.42
1:A:225:HIS:CE1	1:A:251:ARG:HH11	2.37	0.42
2:B:516:LYS:O	2:B:519:VAL:HG22	2.19	0.42
1:A:51:LEU:HB2	1:A:336:LEU:HB2	2.01	0.42
1:A:250:CYS:SG	1:A:273:ILE:CD1	3.08	0.42
1:A:250:CYS:HB2	1:A:264:TYR:HB2	2.01	0.42
2:B:505:ASN:ND2	2:B:506:ILE:O	2.53	0.42
1:A:134:ARG:H	1:A:134:ARG:CD	2.30	0.42
1:A:71:LEU:CD1	1:A:112:VAL:HG22	2.44	0.42
1:A:167:ALA:HB1	1:A:176:GLN:HG3	2.02	0.42
1:A:53:GLY:HA3	1:A:89:LYS:HZ3	1.85	0.41
1:A:212:ASP:CG	1:A:215:GLU:HG3	2.40	0.41
3:C:186:LEU:HD23	3:C:186:LEU:HA	1.26	0.41
1:A:101:MET:HE2	1:A:146:LEU:O	2.20	0.41
1:A:155:ASN:HA	1:A:171:ILE:HB	2.02	0.41
1:A:308:LEU:CD2	1:A:309:ALA:N	2.83	0.41
1:A:178:THR:HG22	1:A:179:THR:N	2.35	0.41
1:A:130:GLU:HB3	1:A:134:ARG:O	2.20	0.41
1:A:200:VAL:HG13	1:A:232:ILE:HD13	2.02	0.41
1:A:129:ARG:NH1	1:A:129:ARG:HG2	2.36	0.41
1:A:74:SER:C	1:A:76:ASP:N	2.74	0.41
3:C:110:ARG:HG3	3:C:110:ARG:NH1	2.36	0.41
1:A:4:LEU:CD2	2:B:512:LYS:HG2	2.51	0.40
1:A:308:LEU:O	1:A:309:ALA:HB3	2.21	0.40
2:B:510:THR:OG1	2:B:513:ASP:OD2	2.37	0.40
2:B:547:ARG:HG3	2:B:547:ARG:NH1	2.36	0.40
1:A:71:LEU:HD13	1:A:112:VAL:CG1	2.51	0.40
1:A:321:THR:HG1	1:A:325:MET:H	1.69	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	338/340 (99%)	314 (93%)	21 (6%)	3 (1%)	17	55
2	B	66/68 (97%)	60 (91%)	6 (9%)	0	100	100
3	C	163/246 (66%)	141 (86%)	18 (11%)	4 (2%)	5	28
All	All	567/654 (87%)	515 (91%)	45 (8%)	7 (1%)	13	48

All (7) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	178	GLY
3	C	186	LEU
3	C	187	PRO
1	A	176	GLN
1	A	311	HIS
3	C	229	GLU
1	A	224	GLY

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	283/283 (100%)	273 (96%)	10 (4%)	36	71
2	B	66/66 (100%)	62 (94%)	4 (6%)	18	53
3	C	142/218 (65%)	135 (95%)	7 (5%)	25	61
All	All	491/567 (87%)	470 (96%)	21 (4%)	29	66

All (21) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	SER
1	A	16	ASN

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Mol	Chain	Res	Type
1	A	42	ARG
1	A	105	TYR
1	A	118	ASP
1	A	119	ASN
1	A	134	ARG
1	A	234	PHE
1	A	256	ARG
1	A	308	LEU
2	B	501	MET
2	B	502	PRO
2	B	505	ASN
2	B	550	GLU
3	C	28	ASP
3	C	107	PHE
3	C	179	ASP
3	C	187	PRO
3	C	200	ASN
3	C	208	PHE
3	C	230	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	17	GLN
1	A	88	ASN
1	A	91	HIS
1	A	119	ASN
1	A	220	GLN
1	A	268	ASN
2	B	505	ASN
3	C	16	GLN
3	C	27	ASN
3	C	102	HIS
3	C	139	ASN
3	C	152	ASN
3	C	174	ASN
3	C	200	ASN

5.3.3 RNA (i)

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 6 ligands modelled in this entry, 6 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, 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	340/340 (100%)	-0.03	10 (2%)	51	23	28, 62, 94, 102	0
2	B	68/68 (100%)	0.47	7 (10%)	6	2	41, 84, 102, 102	0
3	C	167/246 (67%)	0.13	13 (7%)	13	4	31, 69, 100, 102	0
All	All	575/654 (87%)	0.08	30 (5%)	27	10	28, 65, 99, 102	0

All (30) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	502	PRO	7.2
2	B	568	LYS	5.3
3	C	14	GLU	5.2
1	A	132	ASN	5.0
1	A	2	SER	4.9
1	A	1	MET	4.9
1	A	129	ARG	4.9
3	C	179	ASP	4.3
1	A	128	THR	4.2
1	A	133	VAL	4.1
2	B	511	GLU	3.3
2	B	509	LEU	3.2
3	C	89	CYS	3.2
3	C	35	GLU	3.1
3	C	34	LEU	2.9
1	A	130	GLU	2.6
3	C	91	ARG	2.5
3	C	36	SER	2.4
2	B	501	MET	2.4
3	C	183	SER	2.3
3	C	90	LEU	2.3
3	C	93	TYR	2.3
3	C	37	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
2	B	505	ASN	2.3
1	A	226	GLU	2.2
1	A	27	ASP	2.1
3	C	100	ASP	2.1
2	B	512	LYS	2.1
1	A	147	SER	2.0
3	C	124	LEU	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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
4	GD	A	342	1/1	0.96	0.17	101,101,101,101	0
4	GD	C	248	1/1	0.98	0.04	101,101,101,101	0
4	GD	B	104	1/1	0.99	0.14	66,66,66,66	0
4	GD	C	247	1/1	0.99	0.13	64,64,64,64	0
4	GD	B	101	1/1	0.99	0.15	63,63,63,63	0
4	GD	A	341	1/1	1.00	0.15	64,64,64,64	0

6.5 Other polymers ⓘ

There are no such residues in this entry.