



Full wwPDB EM Validation Report ⓘ

Jul 15, 2025 – 07:24 PM JST

PDB ID : 8HQE / pdb_00008hqe
EMDB ID : EMD-34948
Title : Cryo-EM structure of the apo-GPR132-Gi
Authors : Wang, J.L.; Ding, J.H.; Sun, J.P.; Yu, X.
Deposited on : 2022-12-13
Resolution : 2.97 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp>

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:

EMDB validation analysis : **FAILED**
MolProbity : 4-5-2 with Phenix2.0rc1
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.44

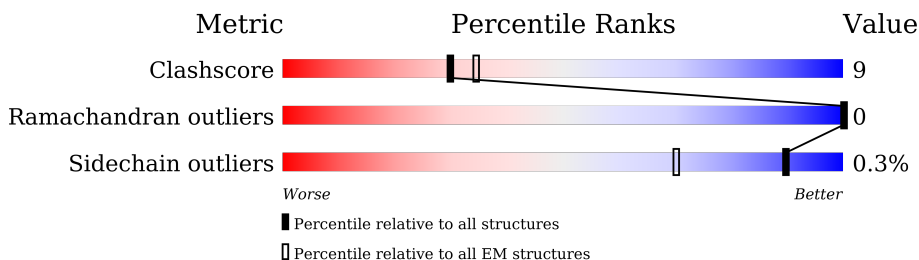
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.97 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)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	B	358	
2	C	58	
3	H	250	
4	R	510	
5	A	354	

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 8903 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	B	339	Total	C	N	O	S	0	0
			2588	1596	461	511	20		

There are 19 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-17	MET	-	initiating methionine	UNP P62873
B	-16	HIS	-	expression tag	UNP P62873
B	-15	HIS	-	expression tag	UNP P62873
B	-14	HIS	-	expression tag	UNP P62873
B	-13	HIS	-	expression tag	UNP P62873
B	-12	HIS	-	expression tag	UNP P62873
B	-11	HIS	-	expression tag	UNP P62873
B	-10	LEU	-	expression tag	UNP P62873
B	-9	GLU	-	expression tag	UNP P62873
B	-8	VAL	-	expression tag	UNP P62873
B	-7	LEU	-	expression tag	UNP P62873
B	-6	PHE	-	expression tag	UNP P62873
B	-5	GLN	-	expression tag	UNP P62873
B	-4	GLY	-	expression tag	UNP P62873
B	-3	PRO	-	expression tag	UNP P62873
B	-2	GLY	-	expression tag	UNP P62873
B	-1	SER	-	expression tag	UNP P62873
B	0	SER	-	expression tag	UNP P62873
B	1	GLN	-	expression tag	UNP P62873

- Molecule 2 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	55	Total	C	N	O	S	0	0
			414	259	74	79	2		

- Molecule 3 is a protein called scFv16.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	H	232	Total	C	N	O	S	0	0
			1774	1127	291	346	10		

- Molecule 4 is a protein called Soluble cytochrome b562, Probable G-protein coupled receptor 132.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	R	307	Total	C	N	O	S	0	0
			2440	1594	412	415	19		

There are 27 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
R	-129	MET	-	initiating methionine	UNP P0ABE7
R	-128	LYS	-	expression tag	UNP P0ABE7
R	-127	THR	-	expression tag	UNP P0ABE7
R	-126	ILE	-	expression tag	UNP P0ABE7
R	-125	ILE	-	expression tag	UNP P0ABE7
R	-124	ALA	-	expression tag	UNP P0ABE7
R	-123	LEU	-	expression tag	UNP P0ABE7
R	-122	SER	-	expression tag	UNP P0ABE7
R	-121	TYR	-	expression tag	UNP P0ABE7
R	-120	ILE	-	expression tag	UNP P0ABE7
R	-119	PHE	-	expression tag	UNP P0ABE7
R	-118	CYS	-	expression tag	UNP P0ABE7
R	-117	LEU	-	expression tag	UNP P0ABE7
R	-116	VAL	-	expression tag	UNP P0ABE7
R	-115	PHE	-	expression tag	UNP P0ABE7
R	-114	ALA	-	expression tag	UNP P0ABE7
R	-113	ASP	-	expression tag	UNP P0ABE7
R	-112	TYR	-	expression tag	UNP P0ABE7
R	-111	LYS	-	expression tag	UNP P0ABE7
R	-110	ASP	-	expression tag	UNP P0ABE7
R	-109	ASP	-	expression tag	UNP P0ABE7
R	-108	ASP	-	expression tag	UNP P0ABE7
R	-107	ASP	-	expression tag	UNP P0ABE7
R	-106	LYS	-	expression tag	UNP P0ABE7
R	-99	TRP	MET	conflict	UNP P0ABE7
R	-4	ILE	HIS	conflict	UNP P0ABE7
R	0	LEU	ARG	conflict	UNP P0ABE7

- Molecule 5 is a protein called Guanine nucleotide-binding protein G(i) subunit alpha-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	A	214	Total	C	N	O	S	0	0
			1687	1073	279	323	12		

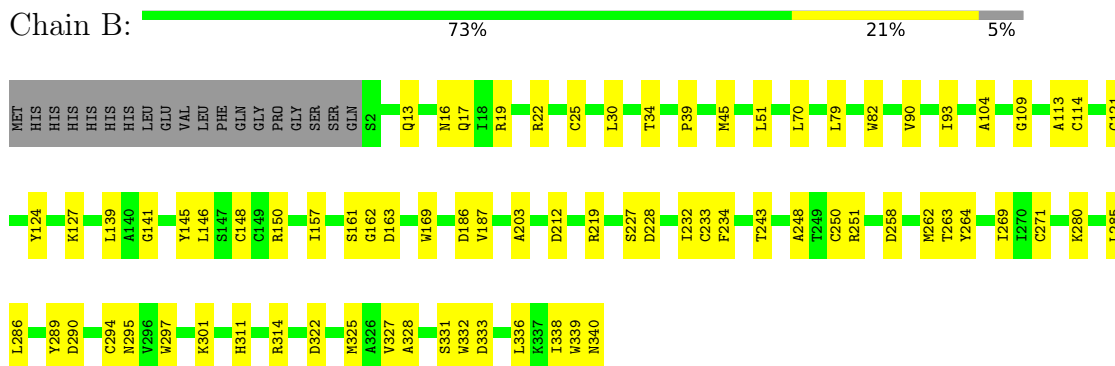
There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	203	ALA	GLY	conflict	UNP P63096
A	326	SER	ALA	conflict	UNP P63096

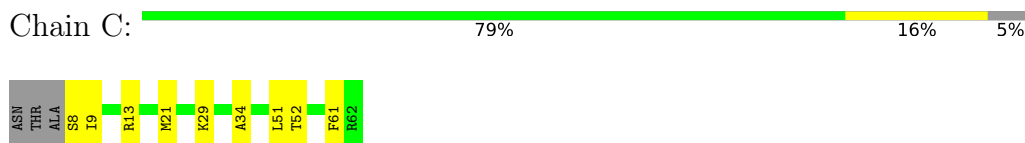
3 Residue-property plots

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.

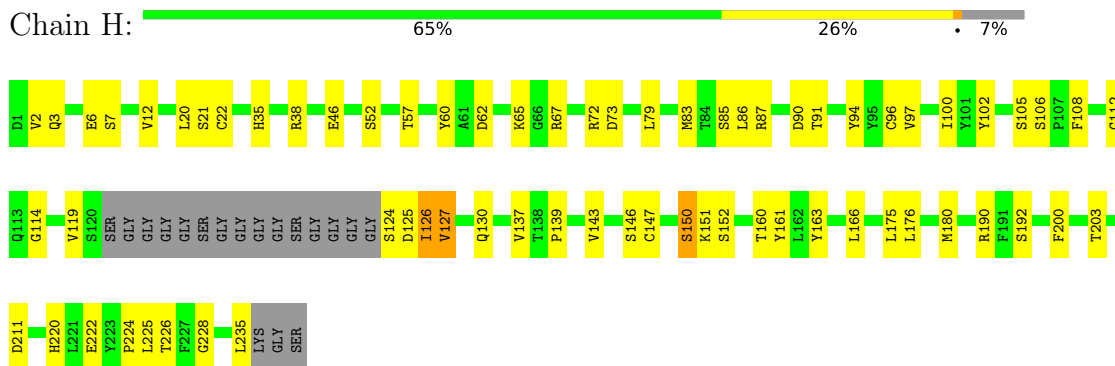
- Molecule 1: Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1



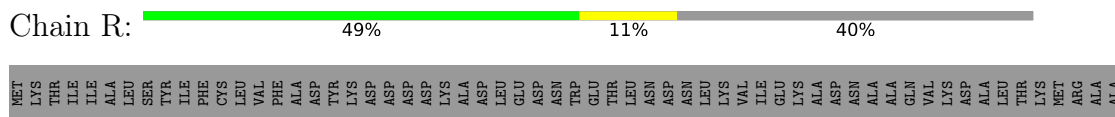
- Molecule 2: Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2



- Molecule 3: scFv16



- Molecule 4: Soluble cytochrome b562, Probable G-protein coupled receptor 132



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	363528	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	B	0.16	0/2635	0.43	0/3576
2	C	0.23	0/420	0.41	0/568
3	H	0.23	0/1818	0.55	3/2467 (0.1%)
4	R	0.26	0/2494	0.55	1/3389 (0.0%)
5	A	0.20	0/1712	0.46	0/2301
All	All	0.22	0/9079	0.49	4/12301 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	126	ILE	CB-CA-C	-8.29	102.28	111.23
3	H	126	ILE	N-CA-C	6.53	117.84	107.98
4	R	103	ARG	N-CA-C	-5.59	102.13	110.23
3	H	127	VAL	N-CA-C	5.36	116.00	109.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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	B	2588	0	2470	49	0
2	C	414	0	414	9	0
3	H	1774	0	1699	42	0
4	R	2440	0	2508	41	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	A	1687	0	1642	27	0
All	All	8903	0	8733	157	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 9.

All (157) 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)
4:R:239:LYS:HZ1	5:A:354:PHE:HB2	1.17	1.10
5:A:54:LYS:HA	5:A:54:LYS:HE2	1.36	1.08
4:R:239:LYS:NZ	5:A:354:PHE:HB2	1.69	1.06
3:H:146:SER:HB2	3:H:200:PHE:O	1.73	0.86
5:A:54:LYS:HE2	5:A:54:LYS:CA	2.00	0.85
4:R:232:LEU:HD11	4:R:236:GLN:HB2	1.65	0.77
3:H:126:ILE:O	3:H:226:THR:HG21	1.84	0.76
5:A:50:VAL:O	5:A:54:LYS:HG2	1.90	0.71
3:H:166:LEU:HB2	3:H:176:LEU:HD11	1.74	0.70
3:H:127:VAL:N	3:H:150:SER:OG	2.27	0.68
5:A:50:VAL:O	5:A:54:LYS:CG	2.43	0.66
4:R:232:LEU:HD11	4:R:236:GLN:CB	2.25	0.65
3:H:161:TYR:HB3	3:H:220:HIS:HB3	1.79	0.64
1:B:79:LEU:HB3	1:B:93:ILE:HB	1.80	0.63
1:B:294:CYS:SG	1:B:295:ASN:N	2.72	0.62
4:R:226:ILE:HD11	4:R:232:LEU:HD23	1.81	0.62
1:B:39:PRO:HG3	1:B:301:LYS:HE2	1.81	0.61
3:H:22:CYS:HB3	3:H:79:LEU:HB3	1.82	0.61
4:R:226:ILE:HD11	4:R:232:LEU:CD2	2.31	0.61
4:R:239:LYS:HE2	5:A:354:PHE:CD1	2.37	0.60
1:B:25:CYS:O	2:C:29:LYS:NZ	2.33	0.60
4:R:303:ALA:HA	4:R:306:ILE:HD12	1.85	0.59
3:H:7:SER:HG	3:H:21:SER:HG	1.49	0.59
1:B:148:CYS:SG	1:B:150:ARG:NH2	2.76	0.59
1:B:250:CYS:HB2	1:B:264:TYR:HB2	1.85	0.58
1:B:121:CYS:HB3	1:B:139:LEU:HB3	1.85	0.58
4:R:156:ARG:HH11	4:R:157:ARG:HH22	1.52	0.58
4:R:238:ALA:O	4:R:242:HIS:ND1	2.36	0.58
1:B:289:TYR:OH	1:B:297:TRP:NE1	2.37	0.56
4:R:37:SER:OG	4:R:38:PHE:N	2.36	0.56
4:R:96:PRO:HA	4:R:99:VAL:HG12	1.87	0.56
4:R:239:LYS:HE2	5:A:354:PHE:HD1	1.71	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:R:334:ASP:OD1	4:R:337:ARG:NH1	2.39	0.56
1:B:271:CYS:HB3	1:B:290:ASP:HB2	1.88	0.55
2:C:9:ILE:O	2:C:13:ARG:NH1	2.40	0.55
3:H:52:SER:O	3:H:72:ARG:NH1	2.39	0.55
3:H:127:VAL:O	3:H:150:SER:OG	2.20	0.54
1:B:328:ALA:HA	1:B:338:ILE:HG22	1.90	0.54
3:H:73:ASP:N	3:H:73:ASP:OD1	2.39	0.54
5:A:241:ASN:HB2	5:A:244:HIS:HD2	1.73	0.54
4:R:87:CYS:O	4:R:125:ASN:ND2	2.40	0.54
5:A:348:LEU:HD22	5:A:353:LEU:HD22	1.90	0.54
1:B:186:ASP:N	1:B:186:ASP:OD1	2.41	0.53
3:H:124:SER:OG	3:H:125:ASP:N	2.40	0.52
1:B:248:ALA:HB1	1:B:269:ILE:HG22	1.91	0.52
5:A:50:VAL:HA	5:A:53:MET:HE2	1.90	0.52
5:A:37:LEU:HB2	5:A:218:VAL:HG11	1.92	0.52
3:H:192:SER:OG	3:H:203:THR:OG1	2.28	0.52
3:H:2:VAL:O	3:H:3:GLN:NE2	2.42	0.51
3:H:151:LYS:NZ	3:H:152:SER:O	2.39	0.51
3:H:139:PRO:HG3	3:H:235:LEU:HD11	1.91	0.51
1:B:34:THR:O	1:B:301:LYS:NZ	2.42	0.51
2:C:51:LEU:HG	2:C:52:THR:HG23	1.91	0.51
5:A:227:LEU:HD11	5:A:268:LEU:HD13	1.93	0.51
5:A:347:ASN:O	5:A:351:CYS:N	2.44	0.51
4:R:224:ARG:HA	4:R:227:LYS:HG2	1.92	0.50
4:R:232:LEU:CD1	4:R:236:GLN:HB2	2.39	0.50
1:B:13:GLN:O	1:B:17:GLN:N	2.44	0.50
4:R:150:SER:HA	4:R:153:ARG:HD2	1.93	0.50
1:B:104:ALA:HB3	1:B:113:ALA:HB3	1.94	0.50
1:B:109:GLY:O	1:B:127:LYS:NZ	2.45	0.50
3:H:60:TYR:HB2	3:H:65:LYS:HE3	1.93	0.50
1:B:13:GLN:HA	1:B:16:ASN:HB2	1.94	0.49
1:B:290:ASP:HA	1:B:314:ARG:HG3	1.93	0.49
3:H:130:GLN:HG2	3:H:147:CYS:HB3	1.94	0.49
4:R:250:ILE:HD13	4:R:307:ILE:HD13	1.95	0.49
1:B:51:LEU:N	1:B:336:LEU:O	2.46	0.48
1:B:187:VAL:HA	1:B:203:ALA:HA	1.94	0.48
1:B:285:LEU:N	1:B:297:TRP:O	2.46	0.48
3:H:96:CYS:O	3:H:112:GLY:N	2.46	0.48
1:B:16:ASN:OD1	1:B:19:ARG:NH1	2.47	0.48
1:B:286:LEU:HG	1:B:327:VAL:HG21	1.95	0.48
4:R:128:VAL:HG23	4:R:166:ILE:HG22	1.96	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:A:268:LEU:HD12	5:A:323:PHE:HA	1.96	0.48
4:R:177:VAL:O	4:R:180:THR:OG1	2.26	0.48
1:B:16:ASN:HA	1:B:19:ARG:HG2	1.96	0.48
4:R:94:THR:HB	4:R:118:THR:HG22	1.95	0.48
4:R:239:LYS:HZ3	5:A:354:PHE:HB2	1.73	0.47
1:B:187:VAL:HG12	1:B:203:ALA:HB2	1.96	0.47
3:H:6:GLU:OE1	3:H:114:GLY:N	2.45	0.47
4:R:151:ARG:HH12	5:A:34:VAL:HG22	1.79	0.47
4:R:327:LYS:HE3	4:R:332:LYS:HD2	1.96	0.47
5:A:270:LYS:HD2	5:A:273:LEU:HD12	1.96	0.47
1:B:145:TYR:O	1:B:162:GLY:N	2.47	0.47
5:A:50:VAL:O	5:A:54:LYS:HG3	2.12	0.47
1:B:161:SER:OG	1:B:163:ASP:OD1	2.25	0.47
1:B:325:MET:HB3	2:C:61:PHE:HE2	1.80	0.47
3:H:35:HIS:HB2	3:H:97:VAL:HB	1.97	0.47
3:H:83:MET:HG2	3:H:86:LEU:HD21	1.97	0.46
4:R:102:ILE:HG13	4:R:103:ARG:O	2.14	0.46
4:R:70:GLN:NE2	4:R:318:GLU:OE1	2.41	0.46
1:B:227:SER:OG	1:B:228:ASP:N	2.48	0.46
1:B:262:MET:HE2	1:B:262:MET:HB3	1.75	0.46
1:B:331:SER:OG	1:B:332:TRP:N	2.49	0.46
4:R:108:TRP:HE1	4:R:185:THR:HA	1.80	0.46
4:R:239:LYS:CE	5:A:354:PHE:HB2	2.42	0.46
3:H:38:ARG:N	3:H:46:GLU:O	2.49	0.45
3:H:62:ASP:N	3:H:62:ASP:OD1	2.47	0.45
3:H:130:GLN:HE21	3:H:228:GLY:HA3	1.80	0.45
1:B:280:LYS:NZ	1:B:322:ASP:O	2.39	0.45
5:A:231:ASP:HA	5:A:285:ILE:HG21	1.98	0.45
1:B:22:ARG:NE	1:B:258:ASP:O	2.50	0.45
3:H:190:ARG:NH2	3:H:211:ASP:OD2	2.49	0.45
1:B:157:ILE:HG23	1:B:169:TRP:HB2	1.97	0.45
1:B:146:LEU:HD13	1:B:161:SER:HB3	1.98	0.45
3:H:52:SER:HB2	3:H:57:THR:H	1.83	0.45
4:R:40:GLU:HA	4:R:43:ILE:HG22	1.98	0.45
3:H:108:PHE:HZ	3:H:225:LEU:HD13	1.82	0.44
1:B:212:ASP:HB2	1:B:219:ARG:HD3	2.00	0.44
3:H:222:GLU:HB3	3:H:224:PRO:HD2	1.99	0.44
5:A:226:ALA:HA	5:A:269:ASN:HB3	1.99	0.44
3:H:91:THR:HG22	3:H:119:VAL:H	1.82	0.44
2:C:9:ILE:HG13	2:C:13:ARG:HH12	1.82	0.43
3:H:163:TYR:HD2	3:H:175:LEU:HD11	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:H:87:ARG:H	3:H:90:ASP:HB2	1.83	0.43
1:B:114:CYS:HB3	1:B:124:TYR:HE2	1.84	0.43
1:B:311:HIS:ND1	1:B:333:ASP:OD2	2.46	0.43
5:A:329:THR:OG1	5:A:330:LYS:N	2.51	0.43
1:B:232:ILE:HG13	1:B:243:THR:HG22	2.00	0.43
1:B:251:ARG:HG2	1:B:263:THR:HG22	2.01	0.43
3:H:127:VAL:C	3:H:150:SER:HG	2.19	0.43
4:R:63:THR:HG21	4:R:305:PRO:HB3	2.00	0.42
1:B:30:LEU:HD13	2:C:34:ALA:HB1	2.00	0.42
4:R:52:VAL:HG11	4:R:299:VAL:HG22	2.01	0.42
1:B:141:GLY:HA3	1:B:169:TRP:HH2	1.83	0.42
5:A:54:LYS:CA	5:A:54:LYS:CE	2.85	0.42
4:R:66:LEU:HD13	4:R:322:ILE:HG13	2.02	0.42
5:A:340:THR:O	5:A:344:ILE:HG12	2.20	0.42
1:B:139:LEU:HD21	1:B:169:TRP:CG	2.55	0.42
4:R:219:ASN:HD22	4:R:248:VAL:HB	1.84	0.42
3:H:160:THR:OG1	3:H:180:MET:SD	2.73	0.42
5:A:221:ILE:HB	5:A:264:ILE:HD13	2.01	0.42
2:C:21:MET:HE3	2:C:21:MET:HB3	1.89	0.42
3:H:20:LEU:HD12	3:H:20:LEU:HA	1.90	0.42
3:H:38:ARG:NH2	3:H:94:TYR:OH	2.46	0.42
4:R:332:LYS:HE2	4:R:332:LYS:HB3	1.81	0.42
5:A:5:LEU:N	5:A:9:ASP:OD2	2.53	0.42
3:H:12:VAL:HG11	3:H:86:LEU:HD12	2.01	0.41
3:H:137:VAL:HG12	3:H:143:VAL:HG11	2.01	0.41
3:H:100:ILE:HG23	3:H:105:SER:HB2	2.01	0.41
1:B:45:MET:HB3	1:B:339:TRP:HB3	2.01	0.41
1:B:90:VAL:HG23	3:H:102:TYR:HB2	2.03	0.41
2:C:52:THR:O	2:C:52:THR:OG1	2.37	0.41
4:R:75:ASN:HB2	4:R:78:ALA:HB2	2.02	0.41
4:R:245:ILE:HA	4:R:248:VAL:HG12	2.02	0.41
3:H:106:SER:O	3:H:106:SER:OG	2.35	0.41
1:B:70:LEU:HG	1:B:82:TRP:HB2	2.02	0.41
4:R:102:ILE:HG12	4:R:107:ARG:HH21	1.85	0.41
1:B:228:ASP:N	1:B:228:ASP:OD1	2.51	0.41
1:B:233:CYS:SG	1:B:234:PHE:N	2.94	0.41
1:B:325:MET:O	1:B:340:ASN:ND2	2.54	0.41
3:H:67:ARG:NH1	3:H:85:SER:O	2.53	0.41
3:H:235:LEU:HD12	3:H:235:LEU:HA	1.92	0.41
4:R:66:LEU:HD11	4:R:318:GLU:HG2	2.03	0.41
2:C:8:SER:O	2:C:8:SER:OG	2.36	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:R:116:LYS:HZ2	4:R:186:CYS:HB3	1.86	0.40
4:R:322:ILE:HD13	4:R:322:ILE:HA	1.95	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 PDB entries followed by that with respect to all EM entries.

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	B	337/358 (94%)	324 (96%)	13 (4%)	0	100	100
2	C	53/58 (91%)	49 (92%)	4 (8%)	0	100	100
3	H	228/250 (91%)	209 (92%)	19 (8%)	0	100	100
4	R	303/510 (59%)	290 (96%)	13 (4%)	0	100	100
5	A	206/354 (58%)	203 (98%)	3 (2%)	0	100	100
All	All	1127/1530 (74%)	1075 (95%)	52 (5%)	0	100	100

There are no Ramachandran outliers to report.

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 PDB entries followed by that with respect to all EM entries.

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	B	278/299 (93%)	278 (100%)	0	100	100
2	C	42/47 (89%)	42 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
3	H	194/202 (96%)	193 (100%)	1 (0%)	86	94
4	R	265/435 (61%)	264 (100%)	1 (0%)	89	95
5	A	181/306 (59%)	180 (99%)	1 (1%)	84	92
All	All	960/1289 (74%)	957 (100%)	3 (0%)	90	96

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	H	150	SER
4	R	178	PHE
5	A	54	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	293	ASN
3	H	39	GLN
3	H	159	ASN
5	A	256	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

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

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.