Full wwPDB EM Validation Report

Oct 16, 2024 – 01:23 AM JST

PDB ID	:	8YZK
EMDB ID	:	EMD-39696
Title	:	Orphan receptor GPRC5D in complex with scFv150-18
Authors	:	Yan, P.; Lin, X.; Xu, F.
Deposited on	:	2024-04-07
Resolution	:	3.40 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:

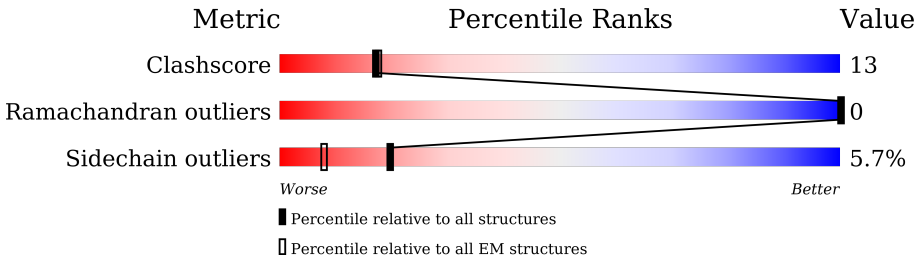
EMDB validation analysis	:	FAILED
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.40 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 <=5%

Mol	Chain	Length	Quality of chain
1	A	421	40% 21% • 37%
1	B	421	41% 21% • 37%
2	C	288	41% 17% • 41%
2	D	288	40% 17% • 41%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 6470 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 Soluble cytochrome b562,G-protein coupled receptor family C group 5 member D.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	264	Total	C	N	O	S	0	0
			2039	1359	322	342	16		
1	B	264	Total	C	N	O	S	0	0
			2039	1359	322	342	16		

There are 98 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-132	MET	-	initiating methionine	UNP P0ABE7
A	-131	LYS	-	expression tag	UNP P0ABE7
A	-130	THR	-	expression tag	UNP P0ABE7
A	-129	ILE	-	expression tag	UNP P0ABE7
A	-128	ILE	-	expression tag	UNP P0ABE7
A	-127	ALA	-	expression tag	UNP P0ABE7
A	-126	LEU	-	expression tag	UNP P0ABE7
A	-125	SER	-	expression tag	UNP P0ABE7
A	-124	TYR	-	expression tag	UNP P0ABE7
A	-123	ILE	-	expression tag	UNP P0ABE7
A	-122	PHE	-	expression tag	UNP P0ABE7
A	-121	CYS	-	expression tag	UNP P0ABE7
A	-120	LEU	-	expression tag	UNP P0ABE7
A	-119	VAL	-	expression tag	UNP P0ABE7
A	-118	PHE	-	expression tag	UNP P0ABE7
A	-117	ALA	-	expression tag	UNP P0ABE7
A	-116	ASP	-	expression tag	UNP P0ABE7
A	-115	TYR	-	expression tag	UNP P0ABE7
A	-114	LYS	-	expression tag	UNP P0ABE7
A	-113	ASP	-	expression tag	UNP P0ABE7
A	-112	ASP	-	expression tag	UNP P0ABE7
A	-111	ASP	-	expression tag	UNP P0ABE7
A	-110	ASP	-	expression tag	UNP P0ABE7
A	-109	ALA	-	expression tag	UNP P0ABE7
A	-108	GLY	-	expression tag	UNP P0ABE7

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	-107	ARG	-	expression tag	UNP P0ABE7
A	-99	TRP	MET	conflict	UNP P0ABE7
A	-4	ILE	HIS	conflict	UNP P0ABE7
A	0	LEU	ARG	conflict	UNP P0ABE7
A	269	GLU	-	expression tag	UNP Q9NZD1
A	270	PHE	-	expression tag	UNP Q9NZD1
A	271	LEU	-	expression tag	UNP Q9NZD1
A	272	GLU	-	expression tag	UNP Q9NZD1
A	273	VAL	-	expression tag	UNP Q9NZD1
A	274	LEU	-	expression tag	UNP Q9NZD1
A	275	PHE	-	expression tag	UNP Q9NZD1
A	276	GLN	-	expression tag	UNP Q9NZD1
A	277	GLY	-	expression tag	UNP Q9NZD1
A	278	PRO	-	expression tag	UNP Q9NZD1
A	279	HIS	-	expression tag	UNP Q9NZD1
A	280	HIS	-	expression tag	UNP Q9NZD1
A	281	HIS	-	expression tag	UNP Q9NZD1
A	282	HIS	-	expression tag	UNP Q9NZD1
A	283	HIS	-	expression tag	UNP Q9NZD1
A	284	HIS	-	expression tag	UNP Q9NZD1
A	285	HIS	-	expression tag	UNP Q9NZD1
A	286	HIS	-	expression tag	UNP Q9NZD1
A	287	HIS	-	expression tag	UNP Q9NZD1
A	288	HIS	-	expression tag	UNP Q9NZD1
B	-132	MET	-	initiating methionine	UNP P0ABE7
B	-131	LYS	-	expression tag	UNP P0ABE7
B	-130	THR	-	expression tag	UNP P0ABE7
B	-129	ILE	-	expression tag	UNP P0ABE7
B	-128	ILE	-	expression tag	UNP P0ABE7
B	-127	ALA	-	expression tag	UNP P0ABE7
B	-126	LEU	-	expression tag	UNP P0ABE7
B	-125	SER	-	expression tag	UNP P0ABE7
B	-124	TYR	-	expression tag	UNP P0ABE7
B	-123	ILE	-	expression tag	UNP P0ABE7
B	-122	PHE	-	expression tag	UNP P0ABE7
B	-121	CYS	-	expression tag	UNP P0ABE7
B	-120	LEU	-	expression tag	UNP P0ABE7
B	-119	VAL	-	expression tag	UNP P0ABE7
B	-118	PHE	-	expression tag	UNP P0ABE7
B	-117	ALA	-	expression tag	UNP P0ABE7
B	-116	ASP	-	expression tag	UNP P0ABE7
B	-115	TYR	-	expression tag	UNP P0ABE7

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
B	-114	LYS	-	expression tag	UNP P0ABE7
B	-113	ASP	-	expression tag	UNP P0ABE7
B	-112	ASP	-	expression tag	UNP P0ABE7
B	-111	ASP	-	expression tag	UNP P0ABE7
B	-110	ASP	-	expression tag	UNP P0ABE7
B	-109	ALA	-	expression tag	UNP P0ABE7
B	-108	GLY	-	expression tag	UNP P0ABE7
B	-107	ARG	-	expression tag	UNP P0ABE7
B	-99	TRP	MET	conflict	UNP P0ABE7
B	-4	ILE	HIS	conflict	UNP P0ABE7
B	0	LEU	ARG	conflict	UNP P0ABE7
B	269	GLU	-	expression tag	UNP Q9NZD1
B	270	PHE	-	expression tag	UNP Q9NZD1
B	271	LEU	-	expression tag	UNP Q9NZD1
B	272	GLU	-	expression tag	UNP Q9NZD1
B	273	VAL	-	expression tag	UNP Q9NZD1
B	274	LEU	-	expression tag	UNP Q9NZD1
B	275	PHE	-	expression tag	UNP Q9NZD1
B	276	GLN	-	expression tag	UNP Q9NZD1
B	277	GLY	-	expression tag	UNP Q9NZD1
B	278	PRO	-	expression tag	UNP Q9NZD1
B	279	HIS	-	expression tag	UNP Q9NZD1
B	280	HIS	-	expression tag	UNP Q9NZD1
B	281	HIS	-	expression tag	UNP Q9NZD1
B	282	HIS	-	expression tag	UNP Q9NZD1
B	283	HIS	-	expression tag	UNP Q9NZD1
B	284	HIS	-	expression tag	UNP Q9NZD1
B	285	HIS	-	expression tag	UNP Q9NZD1
B	286	HIS	-	expression tag	UNP Q9NZD1
B	287	HIS	-	expression tag	UNP Q9NZD1
B	288	HIS	-	expression tag	UNP Q9NZD1

- Molecule 2 is a protein called scFv.

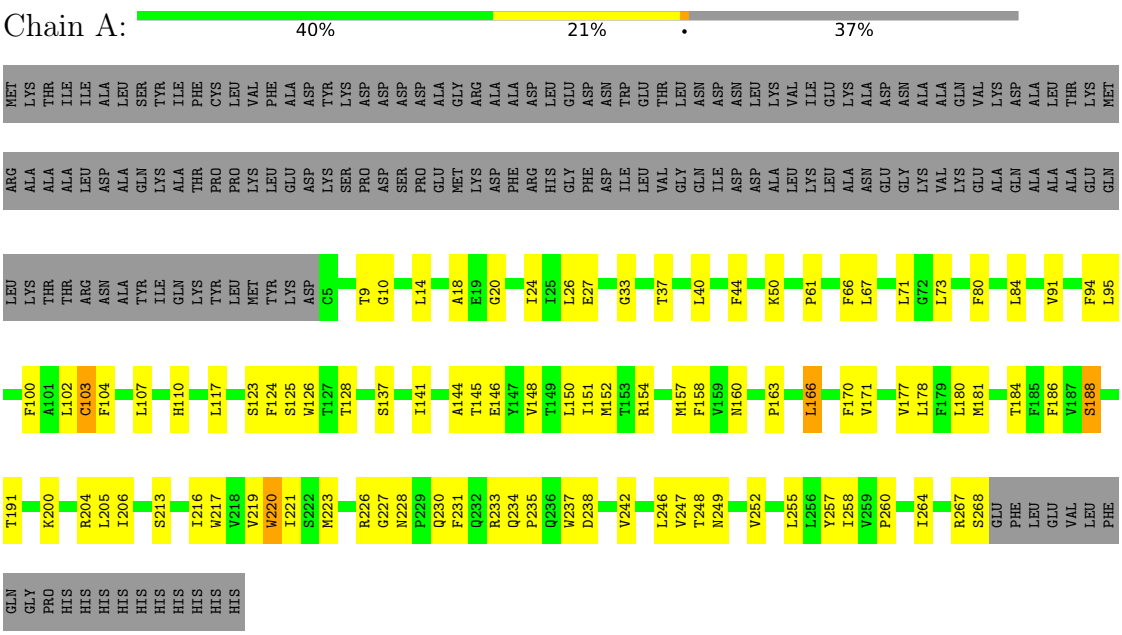
Mol	Chain	Residues	Atoms					AltConf	Trace
2	C	169	Total	C	N	O	S	0	0
			1190	741	207	237	5		
2	D	169	Total	C	N	O	S	0	0
			1202	745	213	239	5		

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. 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.

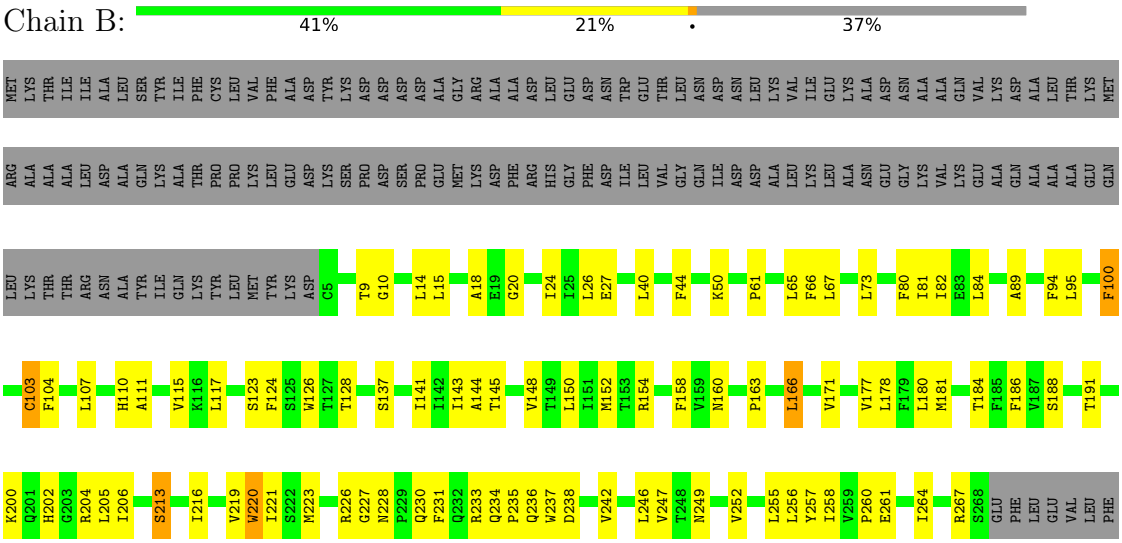
• Molecule 1: Soluble cytochrome b562,G-protein coupled receptor family C group 5 member D

Chain A:



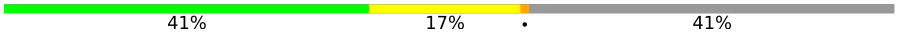
• Molecule 1: Soluble cytochrome b562,G-protein coupled receptor family C group 5 member D

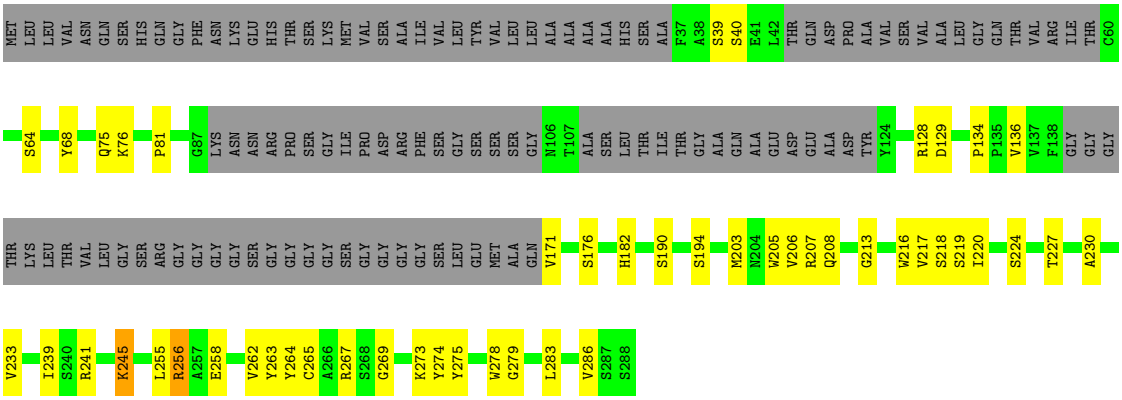
Chain B:



• Molecule 2: scFv

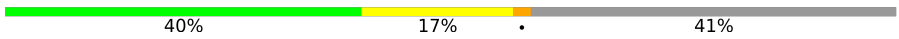
Chain C:

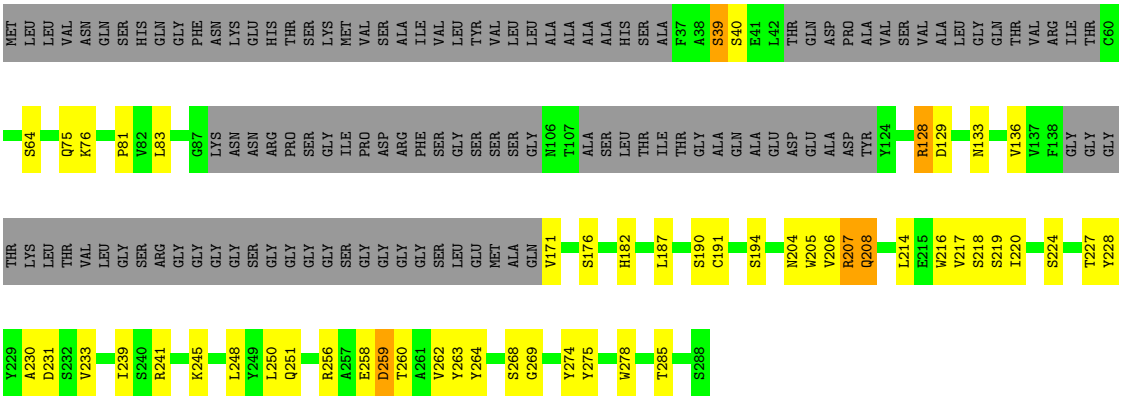




• Molecule 2: scFv

Chain D:





4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	78948	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	60	Depositor
Minimum defocus (nm)	700	Depositor
Maximum defocus (nm)	2200	Depositor
Magnification	Not provided	
Image detector	GATAN K3 (6k x 4k)	Depositor

5 Model quality

5.1 Standard geometry

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	0.27	0/2091	0.52	1/2861 (0.0%)
1	B	0.27	0/2091	0.55	2/2861 (0.1%)
2	C	0.26	0/1214	0.51	1/1652 (0.1%)
2	D	0.26	0/1227	0.50	0/1668
All	All	0.27	0/6623	0.52	4/9042 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	166	LEU	CA-CB-CG	8.59	135.06	115.30
1	A	166	LEU	CA-CB-CG	8.26	134.30	115.30
2	C	134	PRO	CA-N-CD	-5.28	104.10	111.50
1	B	256	LEU	CA-CB-CG	5.27	127.43	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	2039	0	2022	53	0
1	B	2039	0	2022	52	0
2	C	1190	0	1018	33	0
2	D	1202	0	1036	37	0
All	All	6470	0	6098	169	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 13.

All (169) 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)
2:D:39:SER:OG	2:D:40:SER:N	2.18	0.76
1:B:61:PRO:HG3	1:B:126:TRP:HD1	1.56	0.71
1:A:61:PRO:HG3	1:A:126:TRP:HD1	1.56	0.70
2:D:275:TYR:O	2:D:278:TRP:NE1	2.27	0.67
1:B:233:ARG:HB3	1:B:237:TRP:HB2	1.75	0.67
2:C:275:TYR:O	2:C:278:TRP:NE1	2.28	0.66
1:A:233:ARG:HB3	1:A:237:TRP:HB2	1.80	0.64
1:A:219:VAL:O	1:A:223:MET:N	2.30	0.63
1:B:219:VAL:O	1:B:223:MET:N	2.30	0.63
1:B:228:ASN:ND2	1:B:233:ARG:O	2.32	0.62
1:A:205:LEU:HD21	1:A:260:PRO:HB2	1.80	0.62
1:A:228:ASN:ND2	1:A:233:ARG:O	2.33	0.62
1:A:171:VAL:HG22	1:A:221:ILE:HD12	1.82	0.62
1:A:216:ILE:HD11	1:A:248:THR:HG23	1.82	0.61
1:A:124:PHE:HB3	1:A:128:THR:HB	1.82	0.61
2:C:75:GLN:NE2	2:C:76:LYS:O	2.34	0.60
2:D:227:THR:HG23	2:D:239:ILE:HG22	1.84	0.60
1:A:66:PHE:HE1	1:A:107:LEU:HG	1.66	0.59
1:A:216:ILE:HG23	1:A:217:TRP:HD1	1.67	0.59
2:C:39:SER:OG	2:C:40:SER:N	2.35	0.59
2:D:75:GLN:NE2	2:D:76:LYS:O	2.36	0.58
1:A:14:LEU:HD11	2:C:273:LYS:HD3	1.86	0.58
1:A:178:LEU:HA	1:A:181:MET:HE2	1.84	0.58
1:B:124:PHE:HB3	1:B:128:THR:HB	1.85	0.58
1:B:50:LYS:HE3	1:B:267:ARG:HA	1.86	0.58
1:A:267:ARG:NH1	1:A:268:SER:O	2.37	0.57
1:B:100:PHE:HB3	1:B:177:VAL:HG21	1.85	0.57
2:C:219:SER:OG	2:C:219:SER:O	2.23	0.56
1:B:163:PRO:HA	1:B:166:LEU:HB3	1.87	0.56
1:B:66:PHE:HE2	1:B:107:LEU:HG	1.70	0.56
1:A:100:PHE:HB3	1:A:177:VAL:HG21	1.89	0.55
1:A:235:PRO:HG2	2:C:224:SER:HB2	1.88	0.55
1:A:103:CYS:SG	1:A:104:PHE:N	2.79	0.55
2:D:224:SER:HB2	1:B:235:PRO:HG2	1.87	0.55
2:C:207:ARG:NH2	2:C:263:TYR:OH	2.40	0.54
1:B:205:LEU:HD21	1:B:260:PRO:HB2	1.88	0.54
1:A:110:HIS:ND1	1:A:257:TYR:OH	2.36	0.54

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:171:VAL:N	2:C:194:SER:O	2.41	0.54
1:B:103:CYS:SG	1:B:104:PHE:N	2.80	0.54
1:A:50:LYS:HE3	1:A:267:ARG:HA	1.90	0.54
1:A:249:ASN:HA	1:A:252:VAL:HG12	1.90	0.54
2:C:217:VAL:HG12	2:C:218:SER:H	1.72	0.54
1:A:107:LEU:HD22	1:A:206:ILE:HG23	1.91	0.53
1:B:81:ILE:HG13	1:B:82:ILE:HD12	1.90	0.53
2:D:217:VAL:HG12	2:D:218:SER:H	1.73	0.53
1:B:148:VAL:O	1:B:152:MET:HG2	2.08	0.53
1:B:191:THR:O	1:B:200:LYS:NZ	2.40	0.53
1:B:220:TRP:HE1	1:B:242:VAL:HG22	1.73	0.53
2:D:207:ARG:NH2	2:D:263:TYR:OH	2.40	0.53
1:A:226:ARG:NH1	1:A:230:GLN:OE1	2.33	0.53
1:A:40:LEU:HD23	1:A:67:LEU:HD11	1.91	0.53
2:D:269:GLY:N	2:D:274:TYR:O	2.39	0.53
1:A:220:TRP:HE1	1:A:242:VAL:HG22	1.74	0.52
2:C:206:VAL:O	2:C:264:TYR:N	2.40	0.52
1:B:249:ASN:HA	1:B:252:VAL:HG12	1.91	0.52
1:B:117:LEU:HD22	1:B:123:SER:HB3	1.92	0.52
1:B:260:PRO:O	1:B:264:ILE:HG12	2.08	0.52
2:C:64:SER:OG	2:C:68:TYR:OH	2.28	0.52
2:D:224:SER:OG	2:D:241:ARG:O	2.29	0.51
1:A:150:LEU:HD23	1:B:150:LEU:HD23	1.93	0.51
1:A:157:MET:SD	1:A:158:PHE:N	2.82	0.51
2:C:227:THR:HG23	2:C:239:ILE:HG22	1.92	0.51
2:D:230:ALA:HB3	2:D:233:VAL:HG12	1.90	0.51
1:A:73:LEU:HD22	1:A:246:LEU:HD11	1.90	0.51
1:A:148:VAL:O	1:A:152:MET:HG2	2.11	0.51
2:D:208:GLN:HB3	2:D:262:VAL:HB	1.92	0.51
1:B:107:LEU:HB3	1:B:184:THR:HG21	1.93	0.51
1:B:171:VAL:HG22	1:B:221:ILE:HD12	1.91	0.51
2:D:206:VAL:O	2:D:264:TYR:N	2.44	0.51
2:C:224:SER:OG	2:C:241:ARG:O	2.28	0.51
1:A:260:PRO:O	1:A:264:ILE:HG12	2.11	0.50
1:B:40:LEU:HD23	1:B:67:LEU:HD11	1.94	0.50
2:C:208:GLN:HE22	2:C:213:GLY:HA2	1.76	0.49
1:B:73:LEU:HD22	1:B:246:LEU:HD11	1.94	0.49
2:C:230:ALA:HB3	2:C:233:VAL:HG12	1.94	0.49
1:A:67:LEU:HD21	1:A:258:ILE:HG21	1.93	0.49
2:D:208:GLN:N	2:D:262:VAL:O	2.43	0.49
2:D:171:VAL:N	2:D:194:SER:O	2.46	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:219:SER:O	2:D:219:SER:OG	2.23	0.48
2:D:204:ASN:HD21	2:D:268:SER:HB3	1.77	0.48
2:C:256:ARG:HD2	2:C:258:GLU:H	1.78	0.48
2:C:269:GLY:N	2:C:274:TYR:O	2.45	0.48
1:A:117:LEU:HD22	1:A:123:SER:HB3	1.96	0.48
2:D:256:ARG:HD2	2:D:258:GLU:H	1.79	0.48
1:B:26:LEU:HD23	1:B:247:VAL:HG11	1.96	0.47
1:B:213:SER:HA	1:B:216:ILE:HG22	1.96	0.47
2:D:75:GLN:HB2	2:D:81:PRO:HB3	1.95	0.47
1:B:18:ALA:O	1:B:20:GLY:N	2.48	0.46
2:D:83:LEU:HD13	2:D:274:TYR:HB2	1.98	0.46
1:A:91:VAL:HG23	1:A:95:LEU:HD13	1.96	0.46
2:D:220:ILE:H	2:D:239:ILE:HD13	1.81	0.46
2:D:269:GLY:HA3	2:D:274:TYR:CE1	2.50	0.46
2:C:64:SER:HG	2:C:68:TYR:HH	1.56	0.46
2:D:136:VAL:HB	2:D:216:TRP:CE3	2.52	0.46
1:B:178:LEU:HA	1:B:181:MET:HE2	1.97	0.45
1:A:188:SER:O	1:A:191:THR:OG1	2.35	0.45
1:A:26:LEU:HD23	1:A:247:VAL:HG11	1.98	0.45
2:D:128:ARG:NH1	2:D:129:ASP:O	2.50	0.45
1:A:18:ALA:O	1:A:20:GLY:N	2.49	0.45
1:A:227:GLY:O	1:A:231:PHE:N	2.46	0.45
2:C:203:MET:HA	2:C:267:ARG:HA	1.98	0.45
1:B:154:ARG:HD3	1:B:154:ARG:HA	1.78	0.45
1:B:255:LEU:O	1:B:260:PRO:HD3	2.17	0.45
1:A:33:GLY:O	1:A:37:THR:OG1	2.26	0.44
2:C:262:VAL:HG22	2:C:283:LEU:HD13	1.99	0.44
2:C:128:ARG:NH1	2:C:129:ASP:O	2.50	0.44
2:C:220:ILE:H	2:C:239:ILE:HD13	1.81	0.44
2:C:208:GLN:N	2:C:262:VAL:O	2.46	0.44
1:B:67:LEU:HD21	1:B:258:ILE:HG21	1.99	0.44
1:B:227:GLY:O	1:B:231:PHE:N	2.44	0.44
2:D:187:LEU:O	2:D:251:GLN:NE2	2.51	0.43
2:C:255:LEU:HB3	2:C:286:VAL:HG21	2.00	0.43
1:B:94:PHE:HA	1:B:144:ALA:HB1	2.00	0.43
1:A:145:THR:HA	1:A:148:VAL:HG12	2.00	0.43
1:A:154:ARG:HA	1:A:154:ARG:HD3	1.81	0.43
2:D:206:VAL:HG23	2:D:264:TYR:HB2	2.00	0.43
2:C:265:CYS:O	2:C:279:GLY:N	2.51	0.43
1:B:14:LEU:HD12	1:B:14:LEU:HA	1.84	0.43
1:B:24:ILE:HA	1:B:27:GLU:HB3	2.01	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:180:LEU:HD23	1:B:180:LEU:HA	1.84	0.43
1:B:137:SER:O	1:B:141:ILE:HG22	2.19	0.43
2:C:206:VAL:HG23	2:C:264:TYR:HB2	2.00	0.43
2:D:191:CYS:N	2:D:248:LEU:O	2.52	0.43
1:A:180:LEU:HD23	1:A:180:LEU:HA	1.83	0.42
2:D:245:LYS:HE3	2:D:245:LYS:HB3	1.88	0.42
1:A:84:LEU:HD22	1:A:166:LEU:HD21	2.00	0.42
1:A:107:LEU:HB3	1:A:184:THR:HG21	2.00	0.42
2:D:204:ASN:ND2	2:D:268:SER:HB3	2.34	0.42
2:D:228:TYR:CD1	1:B:15:LEU:HD22	2.54	0.42
2:D:260:THR:HG23	2:D:285:THR:HA	2.00	0.42
1:A:94:PHE:HA	1:A:144:ALA:HB1	2.01	0.42
1:A:146:GLU:OE1	1:B:143:ILE:HG13	2.19	0.42
2:C:136:VAL:HB	2:C:216:TRP:CE3	2.54	0.42
2:D:176:SER:HB2	2:D:190:SER:HB3	2.01	0.42
1:A:9:THR:OG1	1:A:10:GLY:N	2.53	0.42
1:A:151:ILE:HG21	1:A:158:PHE:CE2	2.55	0.42
1:A:163:PRO:HA	1:A:166:LEU:HB3	2.01	0.42
2:C:205:TRP:HB3	2:C:217:VAL:HB	2.02	0.42
2:C:273:LYS:HD2	2:C:273:LYS:HA	1.87	0.42
1:B:111:ALA:O	1:B:115:VAL:HG23	2.19	0.42
1:B:89:ALA:HB1	1:B:158:PHE:HD1	1.84	0.42
1:B:110:HIS:ND1	1:B:257:TYR:OH	2.46	0.42
2:D:218:SER:HA	2:D:228:TYR:O	2.19	0.42
1:B:9:THR:OG1	1:B:10:GLY:N	2.52	0.42
1:A:255:LEU:O	1:A:260:PRO:HD3	2.20	0.41
2:C:75:GLN:HB2	2:C:81:PRO:HB3	2.02	0.41
2:C:208:GLN:HB3	2:C:262:VAL:HB	2.03	0.41
1:A:137:SER:O	1:A:141:ILE:HG22	2.20	0.41
1:A:200:LYS:HA	1:A:200:LYS:HD2	1.80	0.41
1:B:188:SER:O	1:B:191:THR:OG1	2.38	0.41
2:D:220:ILE:HD13	2:D:239:ILE:HG23	2.02	0.41
2:D:205:TRP:HB3	2:D:217:VAL:HB	2.02	0.41
1:B:84:LEU:HD12	1:B:84:LEU:HA	1.92	0.41
1:B:145:THR:HA	1:B:148:VAL:HG12	2.01	0.41
1:A:125:SER:OG	1:A:126:TRP:N	2.54	0.41
2:D:207:ARG:NH2	2:D:259:ASP:OD1	2.54	0.41
2:D:250:LEU:HD12	2:D:250:LEU:HA	1.90	0.41
1:B:95:LEU:HD23	1:B:95:LEU:HA	1.82	0.41
1:B:65:LEU:HD23	1:B:65:LEU:HA	1.91	0.41
1:B:202:HIS:ND1	1:B:261:GLU:OE2	2.53	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:245:LYS:HE3	2:C:245:LYS:HB3	1.80	0.40
1:B:202:HIS:O	1:B:206:ILE:HG13	2.20	0.40
2:C:176:SER:HB2	2:C:190:SER:HB3	2.03	0.40
2:D:206:VAL:HB	2:D:214:LEU:HG	2.03	0.40
1:B:226:ARG:NH1	1:B:230:GLN:OE1	2.35	0.40
1:A:24:ILE:HA	1:A:27:GLU:HB3	2.03	0.40
1:A:102:LEU:HD12	1:A:102:LEU:HA	1.95	0.40
1:A:205:LEU:HD12	1:A:205:LEU:HA	1.97	0.40
1:B:107:LEU:HD23	1:B:107:LEU:HA	1.94	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	A	262/421 (62%)	244 (93%)	18 (7%)	0	100	100
1	B	262/421 (62%)	244 (93%)	18 (7%)	0	100	100
2	C	159/288 (55%)	141 (89%)	18 (11%)	0	100	100
2	D	159/288 (55%)	138 (87%)	21 (13%)	0	100	100
All	All	842/1418 (59%)	767 (91%)	75 (9%)	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	A	214/367 (58%)	201 (94%)	13 (6%)	15	40
1	B	214/367 (58%)	202 (94%)	12 (6%)	17	43
2	C	111/225 (49%)	108 (97%)	3 (3%)	40	63
2	D	114/225 (51%)	105 (92%)	9 (8%)	10	32
All	All	653/1184 (55%)	616 (94%)	37 (6%)	20	43

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

Mol	Chain	Res	Type
1	A	44	PHE
1	A	71	LEU
1	A	80	PHE
1	A	103	CYS
1	A	160	ASN
1	A	170	PHE
1	A	186	PHE
1	A	188	SER
1	A	204	ARG
1	A	213	SER
1	A	220	TRP
1	A	234	GLN
1	A	238	ASP
2	C	182	HIS
2	C	245	LYS
2	C	256	ARG
2	D	39	SER
2	D	64	SER
2	D	128	ARG
2	D	133	ASN
2	D	182	HIS
2	D	207	ARG
2	D	208	GLN
2	D	231	ASP
2	D	259	ASP
1	B	44	PHE
1	B	80	PHE
1	B	100	PHE
1	B	103	CYS
1	B	160	ASN
1	B	186	PHE
1	B	204	ARG
1	B	213	SER

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	220	TRP
1	B	234	GLN
1	B	236	GLN
1	B	238	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
2	C	208	GLN

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 (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.