



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 19, 2016 – 10:01 PM GMT

PDB ID : 4Z92  
Title : crystal structure of parechovirus-1 virion  
Authors : Kalynych, S.; Palkova, L.; Plevka, P.  
Deposited on : 2015-04-09  
Resolution : 3.10 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](mailto:validation@mail.wwpdb.org)  
A user guide is available at  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : unknown  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026982  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : rb-20026982

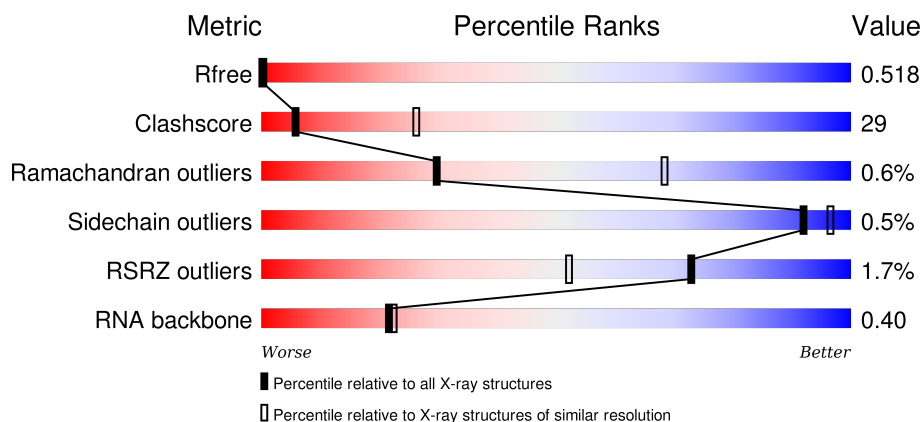
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 3.10 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))
$R_{free}$	91344	1114 (3.14-3.06)
Clashscore	102246	1222 (3.14-3.06)
Ramachandran outliers	100387	1174 (3.14-3.06)
Sidechain outliers	100360	1174 (3.14-3.06)
RSRZ outliers	91569	1119 (3.14-3.06)
RNA backbone	2183	1010 (3.52-2.68)

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 on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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	<div> <div> <div></div> <div>47%</div> <div>34%</div> <div>•</div> <div>18%</div> </div> </div>
2	B	253	<div> <div> <div></div> <div>51%</div> <div>42%</div> <div>•</div> <div>6%</div> </div> </div>
3	C	289	<div> <div> <div>3%</div> <div>52%</div> <div>36%</div> <div>•</div> <div>11%</div> </div> </div>
4	D	6	<div> <div> <div></div> <div>33%</div> <div>17%</div> <div>50%</div> </div> </div>

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 5404 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 capsid subunit VP1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	192	Total	C	N	O	S	0	0	0
			1471	946	248	270	7			

- Molecule 2 is a protein called Capsid subunit VP3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	239	Total	C	N	O	S	0	0	0
			1845	1167	318	350	10			

- Molecule 3 is a protein called capsid subunit VP0.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	257	Total	C	N	O	S	0	0	0
			1969	1252	326	385	6			

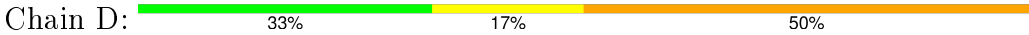
- Molecule 4 is a RNA chain called RNA (5'-R(\*AP\*UP\*UP\*UP\*U)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	6	Total	C	N	O	P	0	0	0
			119	55	15	44	5			





● Molecule 4: RNA (5'-R(\*AP\*UP\*UP\*UP\*UP\*U)-3')



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 63 2 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	399.50Å 399.50Å 332.86Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	65.00 – 3.10 63.93 – 3.09	Depositor EDS
% Data completeness (in resolution range)	78.2 (65.00-3.10) 82.8 (63.93-3.09)	Depositor EDS
$R_{merge}$	0.35	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.32 (at 3.07Å)	Xtriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.290 , (Not available) 0.517 , 0.518	Depositor DCC
$R_{free}$ test set	11219 reflections (4.82%)	DCC
Wilson B-factor (Å <sup>2</sup> )	46.2	Xtriage
Anisotropy	0.088	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 54.7	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.45$ , $\langle L^2 \rangle = 0.28$	Xtriage
Outliers	0 of 232970 reflections	Xtriage
$F_o, F_c$ correlation	0.20	EDS
Total number of atoms	5404	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	43.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.47% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

## 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	A	0.36	0/1513	0.65	4/2064 (0.2%)
2	B	0.35	1/1888 (0.1%)	0.54	0/2567
3	C	0.28	0/2021	0.55	0/2774
4	D	0.29	0/131	0.91	0/201
All	All	0.33	1/5553 (0.0%)	0.59	4/7606 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	54	GLU	CG-CD	-6.53	1.42	1.51

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	203	CYS	N-CA-C	-6.71	92.89	111.00
1	A	173	ARG	NE-CZ-NH1	-6.28	117.16	120.30
1	A	202	ARG	N-CA-C	5.89	126.91	111.00
1	A	171	THR	N-CA-C	-5.11	97.21	111.00

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	A	1471	0	1394	107	1

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	1845	0	1781	123	0
3	C	1969	0	1862	108	1
4	D	119	0	63	8	0
All	All	5404	0	5100	304	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 29.

All (304) 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:D:1:A:H4'	4:D:2:U:H5'	1.19	1.11
1:A:57:ASN:HB3	2:B:241:ARG:HH21	1.30	0.93
1:A:201:LEU:HD13	1:A:204:PRO:HB3	1.54	0.88
4:D:1:A:H4'	4:D:2:U:C5'	2.05	0.87
3:C:158:ARG:HD2	3:C:281:ALA:HB2	1.57	0.86
3:C:146:TRP:HZ3	3:C:236:ASP:H	1.26	0.83
3:C:90:PRO:HG2	3:C:93:PRO:HB3	1.59	0.82
2:B:148:SER:H	2:B:151:ASN:HD22	1.24	0.82
3:C:35:GLU:O	3:C:60:THR:HG21	1.78	0.82
2:B:112:VAL:HG12	2:B:212:ILE:O	1.81	0.81
1:A:211:PRO:HA	3:C:206:ASN:HD22	1.44	0.81
2:B:155:LEU:HD12	2:B:214:VAL:HA	1.62	0.81
1:A:103:LEU:HD23	2:B:127:VAL:HG12	1.62	0.78
1:A:210:LEU:HB2	1:A:211:PRO:HD2	1.63	0.78
3:C:74:THR:HG22	3:C:75:VAL:H	1.49	0.77
1:A:75:ALA:HA	1:A:200:SER:HB3	1.68	0.76
1:A:142:PHE:HD2	1:A:144:SER:HB3	1.50	0.76
1:A:106:LEU:HD13	2:B:75:ILE:HG21	1.68	0.76
2:B:171:LEU:HD11	2:B:211:GLN:NE2	2.01	0.75
1:A:157:MET:HE3	1:A:158:THR:H	1.53	0.74
2:B:114:ARG:HH11	2:B:168:THR:N	1.85	0.73
1:A:211:PRO:HG2	3:C:199:LEU:HD13	1.69	0.73
3:C:144:VAL:O	3:C:147:ASP:HB2	1.89	0.73
1:A:57:ASN:HB3	2:B:241:ARG:NH2	2.04	0.72
3:C:161:ALA:HB3	3:C:276:ASN:HD22	1.55	0.72
1:A:187:LEU:HD23	1:A:191:SER:O	1.90	0.71
1:A:107:PHE:O	1:A:172:VAL:HG11	1.90	0.71
4:D:1:A:O2'	4:D:2:U:OP2	2.07	0.71
1:A:142:PHE:CD2	1:A:144:SER:HB3	2.27	0.69
2:B:134:TYR:HB3	2:B:199:MET:HG2	1.74	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:202:ARG:NH1	2:B:44:THR:HB	2.08	0.69
1:A:113:GLU:HB2	1:A:202:ARG:HB3	1.75	0.69
1:A:108:ALA:O	1:A:172:VAL:HG12	1.93	0.68
3:C:255:THR:HG23	3:C:256:GLY:H	1.57	0.68
1:A:65:HIS:ND1	2:B:243:PHE:O	2.24	0.68
1:A:157:MET:CE	1:A:158:THR:H	2.06	0.68
2:B:82:MET:HB2	2:B:122:PHE:CE1	2.28	0.68
2:B:148:SER:H	2:B:151:ASN:ND2	1.92	0.68
3:C:36:ILE:HD12	3:C:40:LEU:HD11	1.73	0.68
1:A:71:LEU:HD21	1:A:103:LEU:HD12	1.75	0.68
2:B:114:ARG:HH11	2:B:168:THR:H	1.37	0.68
1:A:129:VAL:O	1:A:147:GLY:O	2.13	0.67
2:B:108:PRO:HD3	2:B:217:ARG:NH1	2.08	0.67
2:B:154:ARG:NH1	2:B:180:ASP:HB2	2.10	0.67
1:A:89:TRP:HB3	1:A:183:CYS:HB2	1.76	0.66
2:B:80:SER:HB3	2:B:124:ASN:ND2	2.11	0.65
1:A:159:LEU:HD12	1:A:159:LEU:O	1.96	0.65
2:B:111:ILE:HD11	2:B:113:HIS:O	1.95	0.65
1:A:111:THR:HG23	1:A:205:ASN:HB2	1.79	0.65
3:C:279:VAL:HG12	3:C:280:PHE:N	2.12	0.65
1:A:142:PHE:O	1:A:143:LEU:HB2	1.97	0.64
3:C:118:LEU:HD11	3:C:266:LEU:HB3	1.80	0.63
3:C:175:VAL:HG11	3:C:214:LEU:HB3	1.81	0.63
2:B:129:VAL:HA	2:B:202:THR:CG2	2.28	0.63
1:A:72:PHE:HB3	1:A:201:LEU:HD11	1.80	0.63
3:C:161:ALA:O	3:C:286:ILE:HD11	1.99	0.62
3:C:188:GLU:OE2	3:C:244:LYS:HD2	1.98	0.62
3:C:143:LYS:HA	3:C:146:TRP:CE3	2.33	0.62
2:B:62:THR:HG22	3:C:228:ALA:O	1.99	0.62
1:A:149:ILE:HD11	2:B:49:VAL:HG12	1.81	0.62
2:B:158:GLY:HA3	2:B:171:LEU:HD23	1.82	0.62
2:B:171:LEU:N	2:B:171:LEU:HD12	2.14	0.62
3:C:136:ILE:HD11	3:C:247:VAL:HG22	1.82	0.62
1:A:214:LYS:HE3	3:C:199:LEU:O	2.00	0.61
3:C:41:LEU:HB2	3:C:58:ALA:HB3	1.83	0.61
3:C:90:PRO:O	3:C:93:PRO:HD3	2.01	0.61
1:A:181:LEU:HD21	1:A:183:CYS:SG	2.40	0.61
2:B:223:SER:O	3:C:254:PRO:HG2	2.00	0.61
2:B:236:MET:HB3	2:B:240:ALA:HB2	1.83	0.61
1:A:108:ALA:C	1:A:172:VAL:HG12	2.21	0.60
2:B:229:TYR:CE2	3:C:250:PRO:HG2	2.35	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:74:ARG:HG3	2:B:38:ALA:HA	1.82	0.60
3:C:212:MET:HB2	3:C:217:THR:HG21	1.83	0.60
1:A:75:ALA:CA	1:A:200:SER:HB3	2.31	0.60
3:C:210:VAL:HG23	3:C:222:LEU:HD21	1.83	0.60
2:B:36:ASN:HB3	2:B:42:CYS:SG	2.42	0.60
3:C:139:VAL:HG12	3:C:243:LEU:O	2.01	0.59
1:A:187:LEU:N	1:A:187:LEU:HD12	2.18	0.59
1:A:67:LYS:HB2	1:A:70:ASN:HD22	1.67	0.59
2:B:236:MET:HB3	2:B:240:ALA:CB	2.33	0.59
2:B:160:PHE:CZ	2:B:174:ALA:HB2	2.37	0.59
2:B:114:ARG:NH1	2:B:168:THR:H	2.00	0.59
2:B:133:SER:N	2:B:244:CYS:O	2.29	0.59
3:C:255:THR:HG23	3:C:256:GLY:N	2.18	0.59
3:C:272:LEU:HD21	3:C:274:PHE:CE2	2.38	0.58
2:B:191:ILE:N	2:B:191:ILE:HD12	2.18	0.57
3:C:179:THR:HG22	3:C:180:ALA:N	2.19	0.57
1:A:72:PHE:CB	1:A:201:LEU:HD11	2.34	0.57
2:B:129:VAL:HA	2:B:202:THR:HG21	1.85	0.57
2:B:71:ASP:OD1	2:B:73:VAL:HG12	2.04	0.57
2:B:91:ASN:O	2:B:94:VAL:HG22	2.03	0.57
2:B:107:ALA:HB3	2:B:110:SER:OG	2.05	0.57
3:C:279:VAL:HG12	3:C:280:PHE:H	1.69	0.57
3:C:233:VAL:HG13	3:C:239:ASP:HB2	1.86	0.57
3:C:139:VAL:O	3:C:242:GLN:HB2	2.04	0.57
3:C:253:ILE:HD13	3:C:259:ASN:HA	1.88	0.56
3:C:226:TYR:OH	3:C:233:VAL:HG23	2.06	0.56
3:C:189:PRO:HB2	3:C:191:PRO:HD2	1.86	0.56
3:C:126:TRP:CE2	3:C:251:LEU:HD13	2.42	0.55
3:C:163:VAL:HG23	3:C:235:THR:OG1	2.07	0.55
2:B:199:MET:HG3	2:B:243:PHE:CD2	2.42	0.55
2:B:170:THR:HG22	2:B:172:ASP:H	1.71	0.55
1:A:71:LEU:HD22	2:B:72:LEU:CD1	2.36	0.55
2:B:118:TYR:CZ	2:B:206:PRO:HG3	2.42	0.54
2:B:107:ALA:HB1	2:B:108:PRO:HD2	1.89	0.54
2:B:147:ALA:CB	2:B:228:VAL:HG11	2.38	0.54
3:C:141:LEU:HB2	3:C:242:GLN:HA	1.90	0.53
3:C:234:LYS:HA	3:C:286:ILE:HD12	1.90	0.53
2:B:132:TYR:HA	2:B:245:PRO:HA	1.90	0.53
1:A:185:PRO:HB2	1:A:187:LEU:HD11	1.90	0.53
1:A:117:HIS:HD2	1:A:199:LEU:HA	1.74	0.53
2:B:157:MET:HG3	2:B:157:MET:O	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:211:PRO:CG	3:C:199:LEU:HD13	2.36	0.53
1:A:74:ARG:NH1	2:B:38:ALA:HB1	2.24	0.53
1:A:105:LEU:O	1:A:210:LEU:HD11	2.08	0.53
1:A:211:PRO:HB3	3:C:204:PHE:HA	1.91	0.52
1:A:74:ARG:HH12	2:B:38:ALA:HB1	1.73	0.52
4:D:1:A:C4'	4:D:2:U:H5'	2.14	0.52
1:A:202:ARG:HH11	2:B:44:THR:HB	1.72	0.52
3:C:213:ASN:O	3:C:216:GLU:HB2	2.11	0.52
2:B:158:GLY:CA	2:B:171:LEU:HD23	2.39	0.51
2:B:155:LEU:CD1	2:B:214:VAL:HA	2.37	0.51
3:C:126:TRP:HZ2	3:C:247:VAL:HG13	1.74	0.51
2:B:118:TYR:CE2	2:B:206:PRO:HG3	2.45	0.51
1:A:161:ALA:HA	2:B:49:VAL:HG22	1.93	0.51
2:B:52:VAL:HB	2:B:54:GLU:OE2	2.10	0.51
2:B:55:ARG:CD	4:D:1:A:H2	2.23	0.51
1:A:71:LEU:CD2	1:A:103:LEU:HD12	2.40	0.51
3:C:163:VAL:HG22	3:C:274:PHE:CD1	2.46	0.51
3:C:160:PHE:CG	3:C:274:PHE:HB3	2.46	0.51
1:A:180:TYR:N	1:A:180:TYR:CD1	2.79	0.51
1:A:211:PRO:HD3	3:C:207:LEU:HG	1.93	0.51
3:C:212:MET:HB2	3:C:217:THR:CG2	2.41	0.51
1:A:73:GLY:HA3	2:B:40:VAL:HG23	1.93	0.51
2:B:125:LEU:O	2:B:129:VAL:HG23	2.10	0.51
2:B:80:SER:HB2	2:B:123:PRO:HD2	1.93	0.51
1:A:34:THR:O	2:B:184:ASP:HB3	2.10	0.50
1:A:140:VAL:CG2	1:A:182:MET:HG3	2.41	0.50
3:C:160:PHE:HA	3:C:276:ASN:O	2.11	0.50
1:A:60:ILE:HG23	2:B:198:TRP:CZ3	2.46	0.50
1:A:42:LEU:HD11	3:C:208:PRO:HA	1.94	0.50
3:C:143:LYS:HA	3:C:146:TRP:CZ3	2.46	0.50
2:B:250:VAL:HG22	2:B:251:THR:N	2.26	0.50
2:B:93:GLY:O	2:B:113:HIS:HA	2.11	0.50
3:C:74:THR:HG22	3:C:75:VAL:N	2.22	0.50
2:B:158:GLY:N	2:B:171:LEU:HD23	2.27	0.50
3:C:142:PRO:HB3	3:C:167:PHE:HZ	1.77	0.50
2:B:111:ILE:HD12	2:B:212:ILE:O	2.12	0.49
1:A:87:GLY:O	1:A:185:PRO:HD2	2.13	0.49
1:A:60:ILE:HD12	2:B:199:MET:HE2	1.94	0.49
3:C:114:ASN:N	3:C:115:PRO:HD2	2.27	0.49
1:A:116:ILE:HG21	1:A:181:LEU:HD12	1.95	0.49
2:B:139:LEU:N	2:B:139:LEU:HD12	2.28	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:148:SER:N	2:B:151:ASN:HD22	2.00	0.49
1:A:161:ALA:HA	2:B:49:VAL:CG2	2.43	0.49
3:C:189:PRO:HA	3:C:241:GLY:HA3	1.93	0.49
1:A:75:ALA:HB3	2:B:37:MET:HB3	1.94	0.49
2:B:147:ALA:HB2	2:B:228:VAL:HG11	1.94	0.49
1:A:170:ARG:O	1:A:171:THR:C	2.51	0.49
3:C:242:GLN:NE2	3:C:244:LYS:HE2	2.28	0.49
1:A:110:PHE:CG	1:A:111:THR:N	2.81	0.49
3:C:175:VAL:CG2	3:C:179:THR:HB	2.43	0.49
2:B:50:ALA:HB3	2:B:53:GLY:HA2	1.94	0.49
2:B:190:THR:C	2:B:191:ILE:HD12	2.33	0.48
1:A:140:VAL:O	1:A:140:VAL:HG22	2.13	0.48
1:A:143:LEU:HA	1:A:146:ASN:HD22	1.77	0.48
3:C:139:VAL:HG23	3:C:144:VAL:HG21	1.95	0.48
1:A:143:LEU:HB3	1:A:148:VAL:CG1	2.43	0.48
1:A:149:ILE:CD1	2:B:49:VAL:HG12	2.44	0.48
2:B:157:MET:HB2	2:B:212:ILE:HG12	1.96	0.48
3:C:233:VAL:CG1	3:C:239:ASP:HB2	2.43	0.48
3:C:36:ILE:HB	3:C:40:LEU:CD1	2.43	0.48
1:A:72:PHE:HB3	1:A:201:LEU:CD1	2.43	0.48
1:A:140:VAL:HG21	1:A:182:MET:CE	2.43	0.48
2:B:52:VAL:O	2:B:52:VAL:HG12	2.14	0.47
3:C:102:HIS:C	3:C:104:MET:N	2.67	0.47
1:A:208:PHE:CE2	3:C:189:PRO:HG2	2.50	0.47
1:A:181:LEU:C	1:A:181:LEU:HD23	2.35	0.47
2:B:109:GLN:OE1	2:B:109:GLN:HA	2.14	0.47
3:C:139:VAL:O	3:C:139:VAL:HG13	2.14	0.47
3:C:42:THR:OG1	3:C:58:ALA:O	2.32	0.47
1:A:117:HIS:CD2	1:A:199:LEU:HA	2.49	0.47
1:A:180:TYR:H	1:A:180:TYR:HD1	1.58	0.47
2:B:158:GLY:HA2	2:B:176:TYR:HA	1.97	0.46
2:B:88:PRO:HG3	2:B:99:TYR:CZ	2.49	0.46
3:C:282:GLN:O	3:C:284:VAL:HG23	2.15	0.46
2:B:129:VAL:HA	2:B:202:THR:HG22	1.96	0.46
1:A:111:THR:CG2	1:A:205:ASN:HB2	2.45	0.46
2:B:119:LEU:HD11	2:B:135:PHE:CZ	2.50	0.46
3:C:140:GLU:O	3:C:144:VAL:HB	2.16	0.46
3:C:213:ASN:HD22	3:C:216:GLU:HG3	1.81	0.46
2:B:160:PHE:CE1	2:B:174:ALA:HB2	2.51	0.46
2:B:171:LEU:HD13	2:B:213:GLU:CD	2.36	0.46
2:B:116:ILE:CG2	2:B:206:PRO:HB3	2.46	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:125:GLY:H	1:A:153:ALA:HB2	1.81	0.46
3:C:102:HIS:C	3:C:104:MET:H	2.19	0.46
3:C:126:TRP:CZ2	3:C:251:LEU:HD13	2.51	0.45
2:B:52:VAL:O	2:B:54:GLU:HG3	2.17	0.45
1:A:125:GLY:N	1:A:153:ALA:HB2	2.30	0.45
2:B:118:TYR:H	2:B:121:LEU:HD12	1.80	0.45
2:B:83:ALA:HB3	2:B:96:ALA:O	2.17	0.45
1:A:71:LEU:HD22	2:B:72:LEU:HD11	1.98	0.45
2:B:108:PRO:HD3	2:B:217:ARG:HH12	1.79	0.45
2:B:77:GLN:NE2	2:B:238:GLN:HA	2.31	0.45
2:B:159:PHE:CD2	2:B:191:ILE:HG12	2.52	0.45
2:B:193:TYR:HE1	2:B:200:ARG:HG2	1.82	0.45
3:C:190:LYS:N	3:C:191:PRO:CD	2.79	0.45
3:C:35:GLU:C	3:C:37:GLY:H	2.20	0.45
1:A:157:MET:C	2:B:35:MET:HE2	2.38	0.45
1:A:129:VAL:CG1	1:A:159:LEU:HD21	2.47	0.45
2:B:154:ARG:HA	2:B:179:CYS:O	2.17	0.45
2:B:159:PHE:O	2:B:161:PRO:HD3	2.16	0.45
3:C:149:GLN:HA	3:C:154:TYR:CG	2.51	0.45
2:B:111:ILE:HD13	2:B:211:GLN:HG3	1.99	0.45
3:C:34:ASN:CG	3:C:34:ASN:O	2.54	0.45
2:B:139:LEU:HD22	2:B:207:ILE:HG21	2.00	0.44
2:B:73:VAL:O	2:B:77:GLN:HG3	2.16	0.44
3:C:108:ILE:HG23	3:C:109:THR:HG23	2.00	0.44
1:A:130:ALA:HB1	1:A:146:ASN:O	2.18	0.44
3:C:139:VAL:CG2	3:C:144:VAL:HG21	2.48	0.44
2:B:138:SER:C	2:B:139:LEU:HD12	2.38	0.44
3:C:161:ALA:HB2	3:C:278:ARG:HD3	1.99	0.44
1:A:201:LEU:HD12	1:A:201:LEU:O	2.18	0.44
3:C:149:GLN:HA	3:C:154:TYR:CD2	2.52	0.44
3:C:203:ALA:O	3:C:206:ASN:ND2	2.50	0.44
4:D:4:U:O4'	4:D:4:U:O2	2.34	0.44
2:B:80:SER:HB3	2:B:124:ASN:HD22	1.81	0.43
1:A:174:ASP:C	1:A:176:ASN:H	2.22	0.43
3:C:272:LEU:HD12	3:C:273:ASP:H	1.83	0.43
3:C:279:VAL:CG1	3:C:280:PHE:N	2.79	0.43
1:A:212:ALA:HA	1:A:213:PRO:HD3	1.84	0.43
2:B:218:LEU:HD23	2:B:218:LEU:C	2.39	0.43
2:B:145:VAL:HG13	2:B:145:VAL:O	2.18	0.43
2:B:215:LEU:O	2:B:216:ASN:ND2	2.52	0.43
3:C:130:TRP:CD2	3:C:134:TYR:CE2	3.07	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:170:GLN:HA	3:C:220:ALA:O	2.17	0.43
3:C:187:TYR:CE2	3:C:189:PRO:HG3	2.53	0.43
1:A:159:LEU:HB2	2:B:49:VAL:HG13	2.01	0.43
1:A:68:VAL:HG23	1:A:69:ASP:N	2.34	0.42
1:A:97:LYS:HA	1:A:105:LEU:HD11	2.02	0.42
3:C:182:SER:OG	3:C:248:TRP:HB3	2.18	0.42
2:B:151:ASN:HD21	2:B:225:PRO:HG2	1.84	0.42
1:A:71:LEU:HD13	2:B:132:TYR:OH	2.20	0.42
3:C:186:VAL:O	3:C:243:LEU:HD12	2.20	0.42
1:A:107:PHE:CG	1:A:206:PHE:HB3	2.54	0.42
1:A:26:MET:CE	1:A:49:TYR:HD2	2.33	0.42
3:C:141:LEU:O	3:C:239:ASP:O	2.37	0.42
1:A:140:VAL:HG23	1:A:182:MET:HG3	2.01	0.42
3:C:92:SER:N	3:C:93:PRO:CD	2.82	0.42
2:B:113:HIS:HE1	2:B:115:ASN:OD1	2.03	0.42
2:B:199:MET:HG3	2:B:243:PHE:HD2	1.84	0.42
1:A:201:LEU:HD13	1:A:204:PRO:CB	2.37	0.42
3:C:201:PHE:HA	3:C:204:PHE:CD1	2.55	0.42
2:B:106:THR:CG2	2:B:110:SER:HB2	2.50	0.42
2:B:55:ARG:HD3	4:D:1:A:H2	1.85	0.42
1:A:157:MET:HG3	1:A:158:THR:N	2.35	0.42
1:A:29:ASN:HA	1:A:33:LEU:O	2.20	0.42
2:B:135:PHE:HB2	2:B:241:ARG:O	2.20	0.41
3:C:179:THR:HG21	3:C:253:ILE:HG12	2.01	0.41
1:A:174:ASP:C	1:A:176:ASN:N	2.73	0.41
3:C:35:GLU:O	3:C:37:GLY:N	2.53	0.41
3:C:279:VAL:CG1	3:C:280:PHE:H	2.31	0.41
3:C:179:THR:HG22	3:C:180:ALA:H	1.84	0.41
1:A:27:SER:HB2	1:A:28:PRO:HD2	2.02	0.41
2:B:111:ILE:HD13	2:B:211:GLN:CG	2.50	0.41
2:B:189:ILE:O	2:B:189:ILE:HG23	2.20	0.41
3:C:160:PHE:CD2	3:C:274:PHE:HB3	2.56	0.41
1:A:113:GLU:CB	1:A:202:ARG:HB3	2.47	0.41
3:C:154:TYR:HE2	3:C:158:ARG:HH21	1.68	0.41
1:A:67:LYS:HB2	1:A:70:ASN:ND2	2.34	0.41
3:C:139:VAL:CG1	3:C:243:LEU:HB3	2.51	0.41
1:A:81:HIS:HB2	1:A:89:TRP:NE1	2.36	0.41
1:A:79:MET:HG2	1:A:80:GLU:N	2.36	0.41
1:A:185:PRO:HB2	1:A:187:LEU:CD1	2.51	0.41
2:B:102:TRP:CH2	2:B:214:VAL:HG13	2.56	0.41
3:C:75:VAL:O	3:C:77:THR:HG23	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:234:LYS:HA	3:C:286:ILE:CD1	2.51	0.41
1:A:61:PHE:CE2	2:B:199:MET:HE1	2.56	0.41
3:C:41:LEU:HB2	3:C:58:ALA:CB	2.49	0.41
3:C:136:ILE:HD11	3:C:247:VAL:CG2	2.50	0.41
1:A:68:VAL:HG22	2:B:70:ASP:O	2.20	0.41
2:B:55:ARG:HD2	4:D:1:A:H2	1.85	0.41
2:B:171:LEU:CD1	2:B:171:LEU:N	2.82	0.41
3:C:33:GLY:O	3:C:34:ASN:HB3	2.21	0.41
1:A:210:LEU:HB2	1:A:211:PRO:CD	2.43	0.40
1:A:140:VAL:HG21	1:A:182:MET:HG3	2.03	0.40
3:C:179:THR:CG2	3:C:180:ALA:N	2.85	0.40
3:C:121:LEU:HD11	3:C:267:GLY:HA3	2.03	0.40
3:C:133:GLY:HA2	3:C:201:PHE:CE2	2.56	0.40
3:C:40:LEU:O	3:C:41:LEU:HD23	2.20	0.40
2:B:106:THR:HG22	2:B:110:SER:HB2	2.03	0.40
2:B:146:TYR:CD2	3:C:249:THR:HG21	2.56	0.40
1:A:58:VAL:O	1:A:58:VAL:HG23	2.22	0.40
2:B:135:PHE:CE1	2:B:200:ARG:HG3	2.57	0.40
3:C:160:PHE:C	3:C:278:ARG:HE	2.25	0.40
1:A:116:ILE:HB	1:A:159:LEU:CD1	2.52	0.40
1:A:26:MET:HE2	1:A:49:TYR:HD2	1.86	0.40
1:A:169:LEU:HB2	3:C:229:ASP:HA	2.02	0.40
2:B:241:ARG:HG2	2:B:241:ARG:HH11	1.86	0.40
2:B:132:TYR:CD2	2:B:242:PHE:HB3	2.57	0.40
2:B:69:PHE:HE2	2:B:75:ILE:HG12	1.87	0.40
1:A:187:LEU:N	1:A:187:LEU:CD1	2.83	0.40
1:A:149:ILE:HD12	1:A:159:LEU:HB3	2.03	0.40
3:C:81:THR:HG22	3:C:83:HIS:H	1.86	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:A:52:ASN:ND2	3:C:110:THR:OG1[2_655]	2.02	0.18

## 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	190/234 (81%)	172 (90%)	16 (8%)	2 (1%)	17	55
2	B	237/253 (94%)	217 (92%)	20 (8%)	0	100	100
3	C	255/289 (88%)	224 (88%)	29 (11%)	2 (1%)	24	63
All	All	682/776 (88%)	613 (90%)	65 (10%)	4 (1%)	30	68

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	C	36	ILE
1	A	148	VAL
3	C	210	VAL
1	A	204	PRO

### 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	158/209 (76%)	158 (100%)	0	100	100
2	B	201/220 (91%)	199 (99%)	2 (1%)	82	93
3	C	215/252 (85%)	214 (100%)	1 (0%)	92	96
All	All	574/681 (84%)	571 (100%)	3 (0%)	92	96

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



Mol	Chain	Res	Type
2	B	102	TRP
2	B	198	TRP
3	C	126	TRP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	70	ASN
1	A	98	GLN
1	A	115	ASN
1	A	131	HIS
1	A	137	ASN
2	B	113	HIS
2	B	124	ASN
2	B	151	ASN
2	B	216	ASN
3	C	82	GLN
3	C	172	GLN
3	C	177	GLN
3	C	206	ASN
3	C	213	ASN
3	C	242	GLN
3	C	276	ASN

### 5.3.3 RNA [i](#)

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
4	D	6/6 (100%)	3 (50%)	3 (50%)

All (3) RNA backbone outliers are listed below:

Mol	Chain	Res	Type
4	D	2	U
4	D	3	U
4	D	4	U

All (3) RNA pucker outliers are listed below:

Mol	Chain	Res	Type
4	D	1	A
4	D	2	U

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Mol	Chain	Res	Type
4	D	3	U

## 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 carbohydrates 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 ⓘ

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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	192/234 (82%)	0.18	2 (1%) 84 69	30, 45, 71, 87	0
2	B	239/253 (94%)	0.00	2 (0%) 87 75	26, 37, 55, 70	0
3	C	257/289 (88%)	0.21	8 (3%) 52 28	25, 39, 65, 80	0
4	D	6/6 (100%)	0.85	0 100 100	64, 69, 79, 83	0
All	All	694/782 (88%)	0.13	12 (1%) 73 52	25, 40, 66, 87	0

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	25	THR	3.6
3	C	49	SER	3.0
3	C	37	GLY	2.8
2	B	15	MET	2.6
2	B	24	THR	2.6
3	C	79	ASN	2.6
1	A	43	GLY	2.3
3	C	238	SER	2.2
3	C	56	CYS	2.2
3	C	69	VAL	2.1
3	C	78	THR	2.0
3	C	48	ALA	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 carbohydrates in this entry.

## 6.4 Ligands

There are no ligands in this entry.

## 6.5 Other polymers

There are no such residues in this entry.