



# Full wwPDB X-ray Structure Validation Report

Feb 28, 2014 – 06:50 AM GMT

PDB ID : 1F5Q  
Title : CRYSTAL STRUCTURE OF MURINE GAMMA HERPESVIRUS CYCLIN  
COMPLEXED TO HUMAN CYCLIN DEPENDENT KINASE 2  
Authors : Card, G.L.; Knowles, P.; Laman, H.; Jones, N.; McDonald, N.Q.  
Deposited on : 2000-06-15  
Resolution : 2.50 Å(reported)

This is a full wwPDB 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/ValidationPDFNotes.html>

---

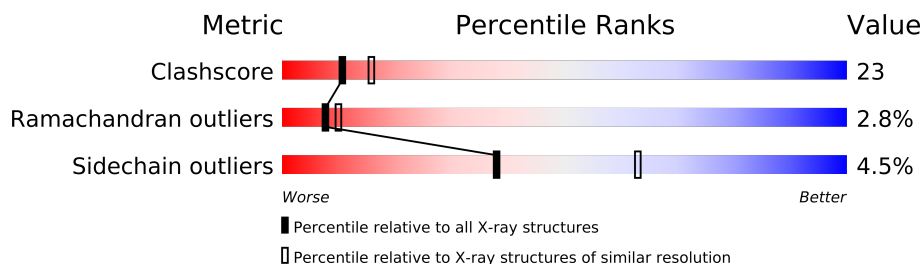
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.15 2013  
Xtriage (Phenix) : **NOT EXECUTED**  
EDS : **NOT EXECUTED**  
Percentile statistics : 21963  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)  
Validation Pipeline (wwPDB-VP) : stable22683

# 1 Overall quality at a glance

The reported resolution of this entry is 2.50 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	79885	3562 (2.50-2.50)
Ramachandran outliers	78287	3480 (2.50-2.50)
Sidechain outliers	78261	3482 (2.50-2.50)

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. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	298	
1	C	298	
2	B	252	
2	D	252	

## 2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 8723 atoms, of which 0 are hydrogen and 0 are deuterium.

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 CYCLIN DEPENDENT KINASE 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	296	Total	C	N	O	S	0	0	0
			2346	1528	397	413	8			
1	C	288	Total	C	N	O	S	0	0	0
			2248	1462	378	400	8			

- Molecule 2 is a protein called GAMMA HERPESVIRUS CYCLIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	247	Total	C	N	O	S	0	1	0
			1986	1256	340	368	22			
2	D	248	Total	C	N	O	S	0	1	0
			1976	1247	340	368	21			

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Cl	0	0
			1	1		

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	54	Total	O	0	0
			54	54		
4	B	57	Total	O	0	0
			57	57		
4	C	23	Total	O	0	0
			23	23		
4	D	32	Total	O	0	0
			32	32		

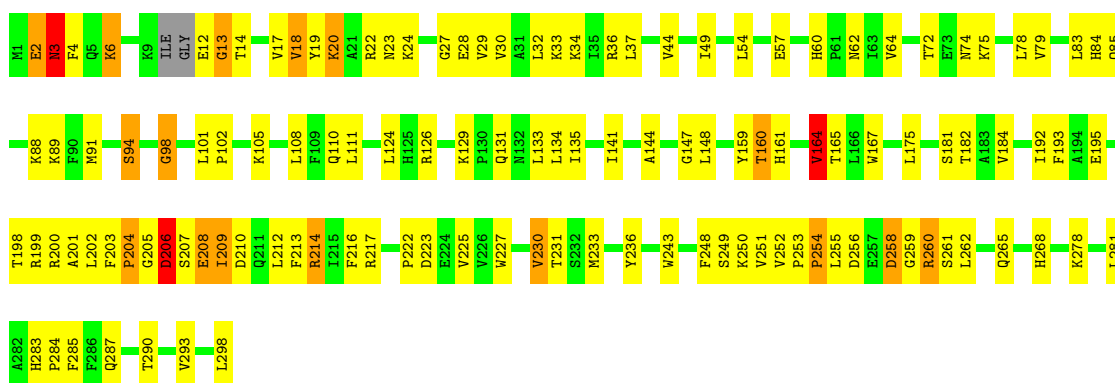
### 3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

Note EDS was not executed.

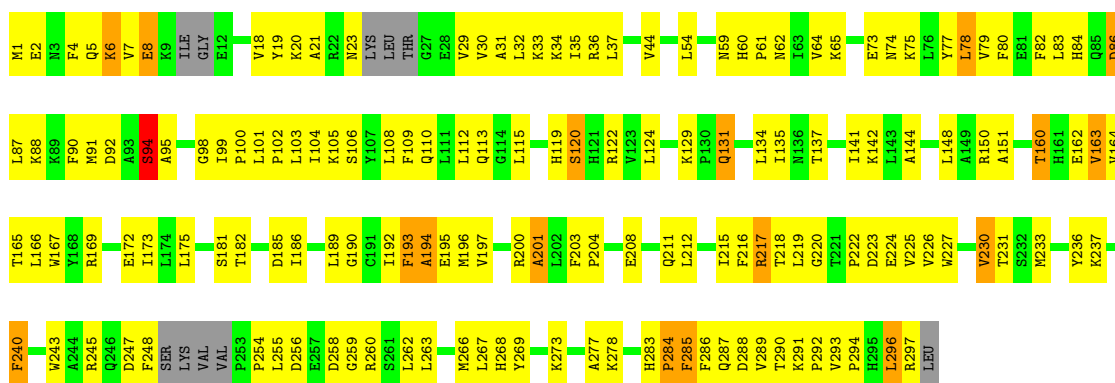
#### • Molecule 1: CYCLIN DEPENDENT KINASE 2

Chain A:



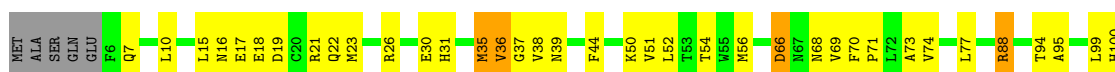
#### • Molecule 1: CYCLIN DEPENDENT KINASE 2

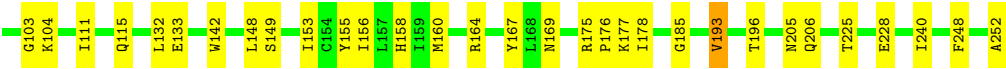
Chain C:



#### • Molecule 2: GAMMA HERPESVIRUS CYCLIN

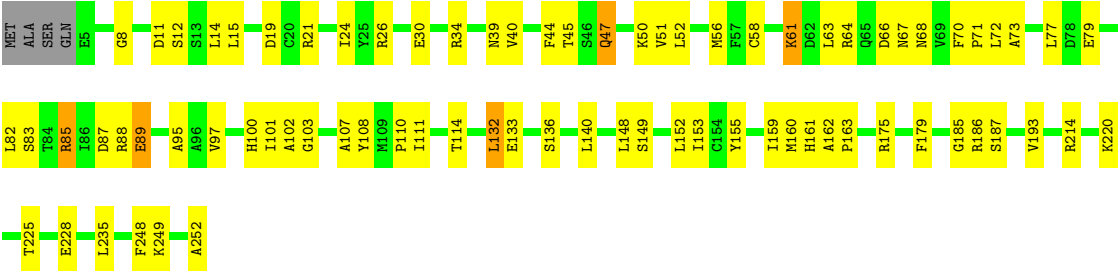
Chain B:





● Molecule 2: GAMMA HERPESVIRUS CYCLIN

Chain D:



## 4 Data and refinement statistics

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

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	87.59Å 73.45Å 107.67Å 90.00° 102.18° 90.00°	Depositor
Resolution (Å)	30.00 – 2.50	Depositor
% Data completeness (in resolution range)	(Not available) (30.00-2.50)	Depositor
$R_{merge}$	0.10	Depositor
$R_{sym}$	(Not available)	Depositor
Refinement program	CNS	Depositor
R, $R_{free}$	0.234 , 0.278	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	8723	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	36.0	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: CL

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	0.42	0/2407	0.70	2/3273 (0.1%)
1	C	0.47	0/2304	0.70	0/3131
2	B	0.44	0/2022	0.61	0/2737
2	D	0.44	0/2011	0.62	0/2723
All	All	0.44	0/8744	0.66	2/11864 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	3	ASN	N-CA-C	-5.74	95.51	111.00
1	A	20	LYS	N-CA-C	-5.28	96.75	111.00

There are no chirality outliers.

There are no planarity outliers.

### 5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2346	0	2364	113	0
1	C	2248	0	2231	152	0
2	B	1986	0	1970	58	0

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	D	1976	0	1951	79	0
3	A	1	0	0	0	0
4	A	54	0	0	0	0
4	B	57	0	0	5	0
4	C	23	0	0	2	0
4	D	32	0	0	2	0
All	All	8723	0	8516	392	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 23.

All (392) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:101:LEU:HD21	1:C:105:LYS:HE3	1.39	1.02
1:A:4:PHE:HA	1:A:22:ARG:O	1.59	1.02
1:A:44:VAL:HG23	4:B:253:HOH:O	1.68	0.92
1:A:214:ARG:HH11	1:A:214:ARG:HG2	1.36	0.91
1:A:3:ASN:HA	1:A:24:LYS:CB	2.02	0.89
1:A:60:HIS:CD2	1:A:62:ASN:H	1.90	0.89
2:D:24:ILE:HG23	2:D:193:VAL:HG11	1.54	0.88
1:C:108:LEU:O	1:C:112:LEU:HD13	1.77	0.85
1:A:227:TRP:O	1:A:230:VAL:HG22	1.80	0.82
1:A:23:ASN:O	1:A:27:GLY:HA2	1.80	0.81
1:A:60:HIS:HD2	1:A:62:ASN:H	1.28	0.81
2:D:220:LYS:HB2	2:D:220:LYS:NZ	1.97	0.80
1:A:14:THR:HB	1:A:33:LYS:HE3	1.65	0.79
1:C:119:HIS:HB3	2:D:14:LEU:HD12	1.66	0.78
1:A:37:LEU:HD22	1:A:44:VAL:HG22	1.66	0.78
1:C:286:PHE:O	1:C:289:VAL:HG23	1.84	0.78
1:C:231:THR:HG22	1:C:236:TYR:CE2	2.18	0.77
2:D:111:ILE:HD12	2:D:111:ILE:H	1.48	0.77
1:C:290:THR:OG1	1:C:292:PRO:HD3	1.86	0.76
1:C:60:HIS:HD2	1:C:62:ASN:H	1.29	0.75
2:D:56:MET:HE2	2:D:73:ALA:HB1	1.68	0.75
1:C:30:VAL:HG23	1:C:80:PHE:O	1.87	0.75
1:A:3:ASN:O	1:A:23:ASN:HA	1.88	0.74
2:D:40:VAL:HG12	2:D:82:LEU:HD22	1.68	0.74
1:A:13:GLY:HA3	1:A:18:VAL:HG23	1.68	0.74
1:A:131:GLN:NE2	1:A:131:GLN:H	1.86	0.74
2:D:152:LEU:HD13	2:D:193:VAL:HG12	1.70	0.73
2:D:71:PRO:HB2	2:D:148:LEU:HD13	1.68	0.73
2:B:193:VAL:HG22	4:B:261:HOH:O	1.89	0.73

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:34:LYS:HE3	1:A:75:LYS:HD3	1.70	0.73
1:C:103:LEU:HD12	1:C:292:PRO:HG2	1.69	0.72
1:A:217:ARG:HG2	1:A:243:TRP:CD1	2.24	0.72
2:D:220:LYS:HB2	2:D:220:LYS:HZ2	1.55	0.71
2:B:153:ILE:HD11	2:B:178:ILE:HD11	1.71	0.71
2:D:97:VAL:HG21	2:D:132:LEU:HB3	1.72	0.70
2:D:85:ARG:HH11	2:D:85:ARG:HG2	1.56	0.70
1:C:255:LEU:HB3	1:C:260:ARG:HG3	1.72	0.70
1:A:23:ASN:HB3	1:A:27:GLY:N	2.06	0.70
1:C:223:ASP:H	1:C:226:VAL:HG22	1.57	0.69
1:C:165:THR:HG23	1:C:165:THR:O	1.90	0.69
1:C:131:GLN:HE21	1:C:131:GLN:H	1.37	0.69
1:C:60:HIS:CD2	1:C:62:ASN:H	2.10	0.69
2:B:35:MET:CE	2:B:35:MET:HA	2.23	0.69
1:C:33:LYS:HB3	1:C:78:LEU:HB2	1.73	0.69
1:A:251:VAL:HG12	1:A:252:VAL:HG13	1.73	0.68
1:C:122:ARG:HD3	2:D:12:SER:HB2	1.76	0.68
1:C:122:ARG:CD	2:D:12:SER:HB2	2.24	0.68
2:D:64:ARG:HG2	2:D:64:ARG:HH11	1.59	0.68
1:A:135:ILE:HG22	1:A:141:ILE:HG13	1.76	0.68
2:D:58:CYS:HG	2:D:248:PHE:HE2	1.43	0.68
1:A:124:LEU:CD2	1:A:182:THR:HA	2.24	0.67
1:C:109:PHE:O	1:C:113:GLN:HG3	1.94	0.67
1:A:207:SER:O	1:A:209:ILE:N	2.28	0.67
2:B:36:VAL:HG12	2:B:36:VAL:O	1.96	0.66
1:A:36:ARG:HH11	1:A:74:ASN:ND2	1.93	0.66
2:B:225:THR:OG1	2:B:228:GLU:HG3	1.95	0.66
1:C:131:GLN:H	1:C:131:GLN:NE2	1.93	0.65
1:C:101:LEU:HB3	1:C:102:PRO:HD3	1.78	0.65
1:A:252:VAL:HG23	1:A:252:VAL:O	1.96	0.65
1:A:223:ASP:OD2	1:A:225:VAL:HB	1.96	0.65
1:C:6:LYS:HB2	1:C:21:ALA:HA	1.76	0.65
1:A:34:LYS:HE3	1:A:75:LYS:CD	2.27	0.65
1:C:223:ASP:H	1:C:226:VAL:CG2	2.10	0.65
2:B:26:ARG:O	2:B:30:GLU:HG3	1.96	0.65
2:D:79:GLU:O	2:D:83:SER:HB3	1.96	0.64
1:A:14:THR:CB	1:A:33:LYS:HE3	2.26	0.64
2:B:158:HIS:ND1	4:B:287:HOH:O	2.30	0.64
2:D:85:ARG:NH1	2:D:85:ARG:HG2	2.11	0.64
2:B:164:ARG:HH11	2:B:164:ARG:HG3	1.63	0.64
1:C:135:ILE:HG22	1:C:141:ILE:HG13	1.78	0.64
1:C:37:LEU:HD22	1:C:44:VAL:HG22	1.79	0.64

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:122:ARG:NH1	2:D:8:GLY:C	2.51	0.64
2:B:56:MET:HE2	2:B:73:ALA:HB1	1.80	0.63
2:D:61:LYS:HB3	2:D:61:LYS:NZ	2.14	0.63
1:A:214:ARG:HG2	1:A:214:ARG:NH1	2.08	0.62
1:A:227:TRP:CD2	1:A:230:VAL:HG13	2.34	0.62
2:D:45:THR:HG22	2:D:186:ARG:NH1	2.15	0.62
2:B:164:ARG:HG2	4:B:288:HOH:O	1.99	0.62
2:B:44:PHE:O	2:B:185:GLY:HA3	1.99	0.62
1:C:200:ARG:HH11	1:C:200:ARG:HG3	1.63	0.62
1:C:61:PRO:O	1:C:142:LYS:HE2	2.00	0.62
2:D:152:LEU:HD13	2:D:193:VAL:CG1	2.30	0.62
1:A:111:LEU:HD11	1:A:141:ILE:HD13	1.81	0.62
1:A:6:LYS:HD3	1:A:19:TYR:CD1	2.35	0.62
1:C:36:ARG:NH1	1:C:74:ASN:ND2	2.48	0.61
1:C:283:HIS:ND1	1:C:284:PRO:HD2	2.16	0.61
2:B:7:GLN:CB	2:B:10:LEU:HD21	2.30	0.61
1:C:224:GLU:OE2	1:C:230:VAL:HG23	2.01	0.61
2:B:164:ARG:NH1	2:B:164:ARG:HG3	2.15	0.61
2:B:103:GLY:HA3	2:B:111:ILE:HD12	1.83	0.60
1:A:23:ASN:HB3	1:A:28:GLU:H	1.66	0.60
2:D:15:LEU:HD22	2:D:19:ASP:HB3	1.82	0.60
2:B:35:MET:C	2:B:37:GLY:H	2.05	0.60
1:C:200:ARG:HB2	1:C:200:ARG:CZ	2.31	0.60
1:C:190:GLY:HA2	1:C:266:MET:CE	2.31	0.60
1:A:44:VAL:HG11	1:A:49:ILE:HD11	1.82	0.60
2:B:71:PRO:HB2	2:B:148:LEU:HD13	1.83	0.60
2:D:64:ARG:NH1	2:D:64:ARG:HG2	2.17	0.60
2:D:44:PHE:O	2:D:185:GLY:HA3	2.02	0.59
1:A:88:LYS:HA	1:A:91:MET:HE2	1.84	0.59
1:C:258:ASP:HB2	1:C:285:PHE:HD1	1.67	0.59
2:B:66:ASP:OD1	2:B:68:ASN:N	2.26	0.59
2:B:88:ARG:NH1	2:B:88:ARG:HB3	2.16	0.59
4:C:303:HOH:O	2:D:114:THR:HG23	2.02	0.59
1:C:105:LYS:HG2	1:C:285:PHE:CE2	2.37	0.59
1:C:99:ILE:CG2	1:C:104:ILE:HG13	2.32	0.59
2:D:26:ARG:O	2:D:30:GLU:HG3	2.02	0.59
1:A:124:LEU:HD22	1:A:182:THR:HA	1.83	0.59
1:C:162:GLU:O	1:C:164:VAL:N	2.36	0.58
2:B:153:ILE:HD11	2:B:178:ILE:CD1	2.33	0.58
1:C:87:LEU:HG	1:C:87:LEU:O	2.02	0.58
1:C:164:VAL:HG12	1:C:169:ARG:HH12	1.69	0.58
1:C:247:ASP:OD1	1:C:248:PHE:N	2.37	0.58

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:231:THR:HG22	1:C:236:TYR:CZ	2.39	0.58
2:B:50:LYS:O	2:B:54:THR:HG23	2.04	0.57
1:C:290:THR:HG1	1:C:292:PRO:HD3	1.69	0.57
1:A:202:LEU:C	1:A:204:PRO:HD3	2.25	0.57
1:A:208:GLU:HA	1:A:208:GLU:OE1	2.04	0.57
2:D:67:ASN:CG	2:D:175:ARG:CZ	2.72	0.57
1:C:65:LYS:NZ	1:C:65:LYS:HB2	2.19	0.57
1:C:284:PRO:C	1:C:286:PHE:H	2.08	0.57
2:B:35:MET:HE2	2:B:35:MET:HA	1.86	0.57
2:D:72:LEU:HD23	2:D:102:ALA:HA	1.85	0.57
2:D:88:ARG:HB3	2:D:88:ARG:HH11	1.70	0.57
1:C:212:LEU:HD22	1:C:216:PHE:CZ	2.40	0.57
1:C:124:LEU:HD22	1:C:182:THR:HA	1.86	0.57
1:C:112:LEU:HD12	1:C:189:LEU:HD13	1.87	0.56
1:A:33:LYS:HB3	1:A:78:LEU:HB2	1.87	0.56
2:D:15:LEU:HD22	2:D:19:ASP:CB	2.34	0.56
2:B:149:SER:O	2:B:153:ILE:HG13	2.06	0.56
2:D:51:VAL:HG13	2:D:248:PHE:CB	2.35	0.56
1:C:101:LEU:CD2	1:C:105:LYS:HE3	2.26	0.56
1:A:227:TRP:CE3	1:A:230:VAL:HG13	2.40	0.56
1:C:217:ARG:HG3	1:C:243:TRP:CZ3	2.41	0.56
1:A:284:PRO:O	1:A:287:GLN:HG3	2.06	0.55
1:C:237:LYS:HB2	1:C:240:PHE:CD1	2.41	0.55
1:A:284:PRO:HA	1:A:287:GLN:HG3	1.87	0.55
1:C:90:PHE:O	1:C:94:SER:HB3	2.06	0.55
1:A:255:LEU:HG	1:A:259:GLY:HA3	1.86	0.55
1:A:204:PRO:HD2	1:A:214:ARG:HE	1.70	0.55
1:C:164:VAL:CG1	1:C:169:ARG:HH12	2.20	0.55
1:A:94:SER:O	1:A:98:GLY:N	2.39	0.55
1:C:129:LYS:HA	1:C:192:ILE:HD11	1.89	0.55
1:C:110:GLN:O	1:C:113:GLN:HB2	2.07	0.54
1:C:83:LEU:HD22	1:C:134:LEU:HB2	1.89	0.54
1:C:34:LYS:HD2	1:C:75:LYS:HD2	1.89	0.54
1:C:190:GLY:HA2	1:C:266:MET:HE2	1.89	0.54
2:B:38:VAL:HG12	2:B:39:ASN:OD1	2.07	0.54
1:C:129:LYS:HD3	1:C:165:THR:HG21	1.89	0.54
1:A:175:LEU:HB3	1:A:233:MET:HG2	1.89	0.54
1:C:255:LEU:HB3	1:C:260:ARG:CG	2.38	0.53
2:D:77:LEU:HD13	2:D:95:ALA:HA	1.90	0.53
1:A:181:SER:O	1:A:184:VAL:HG22	2.08	0.53
2:B:248:PHE:O	2:B:252:ALA:HB3	2.08	0.53
1:C:226:VAL:HG23	1:C:227:TRP:N	2.22	0.53

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:209:ILE:O	1:A:213:PHE:HD1	1.91	0.53
2:D:58:CYS:SG	2:D:248:PHE:HE2	2.31	0.53
1:C:84:HIS:CE1	1:C:137:THR:HG23	2.44	0.53
2:B:56:MET:HE2	2:B:99:LEU:HD13	1.91	0.53
1:C:86:ASP:HA	1:C:134:LEU:HA	1.89	0.52
1:A:20:LYS:HE3	1:A:29:VAL:CG1	2.39	0.52
1:A:84:HIS:HB3	1:A:298:LEU:HD21	1.91	0.52
1:C:122:ARG:HH12	2:D:8:GLY:C	2.11	0.52
2:B:70:PHE:HB3	2:B:71:PRO:HD3	1.90	0.52
1:A:2:GLU:O	1:A:3:ASN:ND2	2.42	0.52
1:C:30:VAL:HG22	1:C:31:ALA:N	2.24	0.52
1:C:167:TRP:CD1	1:C:167:TRP:N	2.76	0.52
1:C:36:ARG:NH1	1:C:74:ASN:HD21	2.08	0.52
2:D:70:PHE:HB3	2:D:71:PRO:HD3	1.91	0.51
1:C:217:ARG:HG3	1:C:243:TRP:CE3	2.44	0.51
1:A:129:LYS:NZ	1:A:164:VAL:CG1	2.73	0.51
1:C:122:ARG:NH1	2:D:8:GLY:O	2.44	0.51
1:C:218:THR:HG22	1:C:219:LEU:HD23	1.91	0.51
2:D:12:SER:OG	2:D:15:LEU:HD12	2.11	0.51
1:C:186:ILE:HD11	1:C:277:ALA:HB2	1.91	0.51
1:A:159:TYR:O	1:A:161:HIS:N	2.43	0.51
2:B:100:HIS:ND1	2:B:133:GLU:OE2	2.38	0.51
1:C:226:VAL:HG23	1:C:227:TRP:H	1.76	0.51
2:B:56:MET:CE	2:B:73:ALA:HB1	2.40	0.51
1:C:99:ILE:O	1:C:100:PRO:C	2.49	0.51
1:A:258:ASP:O	1:A:261:SER:HB3	2.11	0.51
2:D:52:LEU:O	2:D:56:MET:HG3	2.11	0.50
2:B:177:LYS:HG2	2:B:240:ILE:HD11	1.93	0.50
1:A:129:LYS:NZ	1:A:164:VAL:HG12	2.26	0.50
2:D:160:MET:O	2:D:161:HIS:C	2.50	0.50
1:A:36:ARG:NH1	1:A:74:ASN:ND2	2.59	0.50
1:C:35:ILE:HD12	1:C:78:LEU:HD21	1.94	0.50
1:C:256:ASP:OD1	1:C:256:ASP:N	2.44	0.50
1:A:253:PRO:HG2	1:A:254:PRO:CD	2.42	0.50
2:D:214:ARG:HD3	4:D:270:HOH:O	2.12	0.50
1:A:23:ASN:CB	1:A:28:GLU:H	2.25	0.50
1:A:129:LYS:HA	1:A:192:ILE:HD11	1.94	0.50
1:C:215:ILE:HG22	1:C:269:TYR:OH	2.12	0.50
1:A:202:LEU:O	1:A:204:PRO:HD3	2.11	0.49
1:C:60:HIS:CD2	1:C:62:ASN:HB2	2.47	0.49
1:A:129:LYS:HZ3	1:A:164:VAL:CG1	2.25	0.49
1:C:172:GLU:HG2	1:C:173:ILE:N	2.27	0.49

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:209:ILE:O	1:A:210:ASP:C	2.51	0.49
1:C:268:HIS:CD2	1:C:273:LYS:HB3	2.47	0.49
1:C:104:ILE:HD13	1:C:197:VAL:HG23	1.94	0.49
1:C:263:LEU:HG	1:C:267:LEU:HD12	1.95	0.49
1:A:201:ALA:O	1:A:204:PRO:HG3	2.13	0.49
1:A:60:HIS:HD2	1:A:62:ASN:N	2.04	0.49
2:D:51:VAL:HG13	2:D:248:PHE:HB2	1.93	0.49
1:A:108:LEU:HD22	1:A:193:PHE:CD1	2.48	0.49
1:A:210:ASP:O	1:A:213:PHE:N	2.45	0.49
1:C:222:PRO:HA	1:C:226:VAL:HG21	1.93	0.49
2:B:156:ILE:O	2:B:160:MET:HG3	2.13	0.49
2:D:136:SER:O	2:D:140:LEU:HG	2.13	0.49
1:A:214:ARG:CG	1:A:214:ARG:NH1	2.73	0.48
1:C:262:LEU:HD13	1:C:283:HIS:CD2	2.48	0.48
2:D:67:ASN:HA	2:D:175:ARG:NH2	2.27	0.48
1:A:83:LEU:HD22	1:A:134:LEU:HB2	1.95	0.48
1:C:5:GLN:O	1:C:6:LYS:CB	2.61	0.48
2:D:47:GLN:HE21	2:D:47:GLN:C	2.17	0.48
1:C:36:ARG:HH11	1:C:74:ASN:ND2	2.10	0.48
1:C:216:PHE:O	1:C:220:GLY:N	2.46	0.48
2:D:12:SER:C	2:D:14:LEU:H	2.17	0.48
1:C:30:VAL:HA	1:C:82:PHE:HB2	1.95	0.48
1:A:129:LYS:O	1:A:133:LEU:HG	2.14	0.48
1:C:101:LEU:O	1:C:103:LEU:N	2.47	0.48
1:A:62:ASN:OD1	1:A:110:GLN:HB3	2.13	0.48
2:D:47:GLN:HA	2:D:50:LYS:HE2	1.96	0.48
1:C:103:LEU:HD12	1:C:292:PRO:CG	2.41	0.48
1:A:32:LEU:CD2	1:A:79:VAL:HG22	2.44	0.48
1:A:262:LEU:HD13	1:A:283:HIS:CG	2.49	0.48
1:A:12:GLU:O	1:A:13:GLY:O	2.32	0.47
2:D:111:ILE:HD12	2:D:111:ILE:N	2.22	0.47
2:D:63:LEU:O	2:D:64:ARG:C	2.53	0.47
1:C:99:ILE:HD12	1:C:196:MET:HB3	1.97	0.47
1:A:64:VAL:HG21	1:A:144:ALA:HB2	1.95	0.47
2:B:77:LEU:HD13	2:B:95:ALA:HA	1.96	0.47
1:C:193:PHE:O	1:C:194:ALA:C	2.52	0.47
1:C:129:LYS:CA	1:C:192:ILE:HD11	2.44	0.47
2:B:31:HIS:O	2:B:35:MET:HB2	2.15	0.47
1:C:19:TYR:HB2	1:C:32:LEU:HB2	1.95	0.47
1:A:213:PHE:O	1:A:217:ARG:HG3	2.15	0.47
1:C:223:ASP:OD2	1:C:225:VAL:HB	2.15	0.47
1:C:212:LEU:HD22	1:C:216:PHE:CE2	2.49	0.47

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Distance(Å)	Clash(Å)
2:D:249:LYS:O	2:D:252:ALA:HB2	2.15	0.47
1:C:4:PHE:HA	1:C:23:ASN:HA	1.96	0.47
1:C:95:ALA:O	1:C:98:GLY:N	2.48	0.47
2:D:85:ARG:CG	2:D:85:ARG:HH11	2.27	0.47
2:D:103:GLY:O	2:D:107:ALA:HB3	2.15	0.47
2:B:68:ASN:C	2:B:71:PRO:HD2	2.36	0.47
1:C:141:ILE:O	1:C:141:ILE:HG23	2.15	0.46
1:A:164:VAL:HB	1:A:165:THR:H	1.46	0.46
1:C:237:LYS:HB2	1:C:240:PHE:CE1	2.50	0.46
1:A:217:ARG:HG2	1:A:243:TRP:NE1	2.30	0.46
1:C:200:ARG:CG	1:C:200:ARG:HH11	2.24	0.46
1:C:109:PHE:HB2	1:C:286:PHE:CE1	2.51	0.46
1:A:135:ILE:CG2	1:A:141:ILE:HG13	2.44	0.46
1:A:20:LYS:HE3	1:A:29:VAL:HG11	1.97	0.46
1:C:284:PRO:C	1:C:286:PHE:N	2.69	0.46
1:C:64:VAL:HG21	1:C:144:ALA:HB2	1.97	0.46
1:A:44:VAL:HG21	2:B:142:TRP:HZ3	1.78	0.46
1:A:253:PRO:O	1:A:255:LEU:N	2.48	0.46
1:C:88:LYS:HE3	1:C:92:ASP:OD1	2.16	0.46
2:D:67:ASN:O	2:D:179:PHE:HZ	1.99	0.46
1:A:265:GLN:HA	1:A:268:HIS:HD2	1.80	0.46
2:B:23:MET:HG2	2:B:155:TYR:CZ	2.51	0.46
1:C:175:LEU:HB3	1:C:233:MET:HG2	1.97	0.46
2:B:51:VAL:HG13	2:B:248:PHE:HB2	1.97	0.45
1:A:85:GLN:HB2	1:A:89:LYS:HD2	1.98	0.45
1:C:203:PHE:N	1:C:204:PRO:HD3	2.30	0.45
1:C:115:LEU:HD11	1:C:185:ASP:HB3	1.98	0.45
1:A:206:ASP:OD2	1:A:206:ASP:N	2.49	0.45
1:A:74:ASN:OD1	1:A:75:LYS:HG3	2.16	0.45
2:B:35:MET:C	2:B:37:GLY:N	2.70	0.45
1:C:200:ARG:CG	1:C:200:ARG:NH1	2.80	0.45
2:D:100:HIS:ND1	2:D:133:GLU:OE2	2.50	0.45
1:C:91:MET:HE3	1:C:196:MET:HA	1.99	0.45
2:D:225:THR:HG23	2:D:228:GLU:OE2	2.17	0.45
1:C:5:GLN:O	1:C:6:LYS:HB2	2.16	0.45
1:C:124:LEU:HD11	2:D:11:ASP:OD1	2.17	0.45
1:A:126:ARG:HD3	1:A:148:LEU:O	2.16	0.45
1:A:250:LYS:HG2	1:A:250:LYS:O	2.16	0.45
1:A:253:PRO:HG2	1:A:254:PRO:HD3	1.98	0.45
1:A:54:LEU:HD23	1:A:54:LEU:C	2.37	0.45
2:B:18:GLU:OE2	2:B:22:GLN:NE2	2.50	0.45
1:A:260:ARG:HG3	1:A:260:ARG:NH1	2.32	0.44

*Continued on next page...*

*Continued from previous page...*

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:59:ASN:ND2	1:C:65:LYS:HE3	2.32	0.44
1:A:13:GLY:HA3	1:A:18:VAL:CG2	2.43	0.44
1:C:227:TRP:O	1:C:230:VAL:HG22	2.17	0.44
2:D:67:ASN:CG	2:D:175:ARG:NH1	2.70	0.44
2:D:66:ASP:OD1	2:D:107:ALA:HA	2.17	0.44
2:D:155:TYR:O	2:D:159:ILE:HG13	2.17	0.44
1:A:203:PHE:O	1:A:205:GLY:N	2.43	0.44
2:D:220:LYS:NZ	2:D:220:LYS:CB	2.76	0.44
1:C:268:HIS:NE2	1:C:273:LYS:HB3	2.33	0.44
2:B:156:ILE:HD12	2:B:196:THR:HG21	2.00	0.44
2:B:77:LEU:HD12	2:B:94:THR:HG22	1.98	0.44
1:C:291:LYS:N	1:C:292:PRO:CD	2.80	0.44
1:A:17:VAL:O	1:A:18:VAL:HG23	2.18	0.44
1:A:223:ASP:OD2	1:A:225:VAL:N	2.43	0.44
1:C:99:ILE:HG22	1:C:104:ILE:HG13	1.98	0.44
1:C:268:HIS:CD2	1:C:273:LYS:CB	3.00	0.44
2:B:167:TYR:H	2:B:167:TYR:HD1	1.64	0.44
1:A:231:THR:HA	1:A:236:TYR:CD2	2.53	0.44
2:B:77:LEU:CD1	2:B:94:THR:HG22	2.48	0.44
1:C:30:VAL:CG2	1:C:31:ALA:N	2.80	0.43
1:C:99:ILE:HG21	1:C:104:ILE:HG13	2.00	0.43
1:A:260:ARG:H	1:A:260:ARG:HG2	1.60	0.43
2:D:187:SER:HB3	2:D:235:LEU:HB3	2.00	0.43
2:B:16:ASN:O	2:B:17:GLU:C	2.56	0.43
1:C:112:LEU:CD1	1:C:189:LEU:HD13	2.47	0.43
2:D:186:ARG:HG3	2:D:186:ARG:HH11	1.82	0.43
1:C:217:ARG:NE	1:C:243:TRP:CH2	2.87	0.43
1:C:115:LEU:HG	1:C:119:HIS:CE1	2.54	0.43
1:C:6:LYS:HE3	1:C:20:LYS:HG2	2.00	0.43
2:D:149:SER:O	2:D:153:ILE:HG13	2.18	0.43
1:A:101:LEU:HB3	1:A:102:PRO:HD3	2.01	0.43
1:C:189:LEU:O	1:C:190:GLY:C	2.56	0.43
2:D:56:MET:CE	2:D:73:ALA:HB1	2.43	0.43
1:A:124:LEU:HD21	1:A:182:THR:HA	1.98	0.43
2:D:61:LYS:HZ3	2:D:61:LYS:HB3	1.82	0.43
1:C:1:MET:HG3	1:C:77:TYR:CE1	2.53	0.43
1:C:29:VAL:HG12	1:C:30:VAL:N	2.34	0.43
1:C:148:LEU:CD2	1:C:162:GLU:HG3	2.48	0.43
1:C:162:GLU:O	1:C:163:VAL:C	2.56	0.43
2:D:47:GLN:O	2:D:50:LYS:HB2	2.18	0.43
1:C:30:VAL:HG21	1:C:79:VAL:CG1	2.49	0.42
1:C:166:LEU:HD11	1:C:208:GLU:HG2	2.01	0.42

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:112:LEU:HD12	1:C:189:LEU:CD1	2.49	0.42
1:C:120:SER:O	2:D:15:LEU:CD2	2.67	0.42
2:B:56:MET:CE	2:B:99:LEU:HD13	2.48	0.42
1:A:227:TRP:CE3	1:A:230:VAL:CG1	3.02	0.42
2:B:35:MET:HE3	2:B:35:MET:HA	2.01	0.42
1:A:133:LEU:HD11	1:A:192:ILE:HD13	2.00	0.42
1:C:193:PHE:O	1:C:195:GLU:N	2.53	0.42
2:B:15:LEU:HD22	2:B:19:ASP:CB	2.49	0.42
1:C:190:GLY:HA2	1:C:266:MET:HE3	2.02	0.42
2:D:40:VAL:HA	2:D:82:LEU:CD2	2.49	0.42
1:C:181:SER:HB3	4:C:315:HOH:O	2.20	0.42
1:A:278:LYS:O	1:A:281:LEU:HB2	2.20	0.42
2:D:34:ARG:NH1	4:D:255:HOH:O	2.49	0.42
1:C:278:LYS:HB2	1:C:278:LYS:HE3	1.90	0.42
1:C:284:PRO:O	1:C:286:PHE:N	2.53	0.42
2:D:97:VAL:O	2:D:101:ILE:HG13	2.20	0.42
2:B:51:VAL:HG13	2:B:248:PHE:HA	2.00	0.42
1:A:84:HIS:ND1	1:A:84:HIS:N	2.67	0.42
2:D:108:TYR:O	2:D:110:PRO:HD3	2.19	0.42
2:B:36:VAL:O	2:B:36:VAL:CG1	2.67	0.42
1:C:124:LEU:HD11	1:C:150:ARG:NH2	2.35	0.42
1:C:18:VAL:O	1:C:19:TYR:CG	2.73	0.42
1:A:44:VAL:O	2:B:104:LYS:NZ	2.43	0.42
1:C:255:LEU:HD21	1:C:259:GLY:C	2.39	0.42
1:C:165:THR:CG2	1:C:165:THR:O	2.62	0.42
2:B:66:ASP:HB3	2:B:69:VAL:HG23	2.02	0.42
2:B:205:ASN:ND2	2:B:206:GLN:HG3	2.34	0.42
2:B:70:PHE:O	2:B:74:VAL:HG23	2.20	0.42
2:B:115:GLN:HB2	2:B:115:GLN:HE21	1.63	0.42
2:B:164:ARG:HH11	2:B:164:ARG:CG	2.29	0.41
2:D:45:THR:HG22	2:D:186:ARG:HH12	1.85	0.41
1:C:197:VAL:CG1	1:C:197:VAL:O	2.68	0.41
2:B:51:VAL:HG13	2:B:248:PHE:CB	2.50	0.41
1:A:147:GLY:C	1:A:148:LEU:HD12	2.40	0.41
1:A:167:TRP:HE1	1:A:205:GLY:N	2.18	0.41
1:A:198:THR:O	1:A:199:ARG:CB	2.68	0.41
2:D:68:ASN:C	2:D:71:PRO:HD2	2.41	0.41
1:C:203:PHE:HB3	1:C:211:GLN:HE22	1.85	0.41
1:A:167:TRP:NE1	1:A:205:GLY:N	2.68	0.41
2:D:21:ARG:HA	2:D:24:ILE:HD12	2.03	0.41
1:C:186:ILE:HD11	1:C:277:ALA:N	2.35	0.41
1:A:195:GLU:HA	1:A:200:ARG:O	2.19	0.41

*Continued on next page...*



Continued from previous page...

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:296:LEU:O	1:C:297:ARG:CB	2.68	0.41
2:D:220:LYS:HZ3	2:D:220:LYS:HB2	1.82	0.41
2:D:79:GLU:O	2:D:83:SER:CB	2.65	0.41
2:D:88:ARG:CG	2:D:88:ARG:HH11	2.32	0.41
1:A:105:LYS:HD3	1:A:285:PHE:O	2.20	0.41
2:B:169:ASN:HB2	4:B:289:HOH:O	2.21	0.41
1:A:6:LYS:HD3	1:A:19:TYR:CG	2.56	0.41
1:A:167:TRP:CD1	1:A:203:PHE:O	2.74	0.41
2:D:87:ASP:HB3	2:D:89:GLU:OE2	2.21	0.41
2:D:12:SER:OG	2:D:12:SER:O	2.35	0.41
1:C:113:GLN:HB3	1:C:113:GLN:HE21	1.55	0.41
1:A:255:LEU:HD23	1:A:260:ARG:HD3	2.03	0.41
1:C:54:LEU:HD13	1:C:151:ALA:CB	2.51	0.41
1:A:72:THR:HG23	1:A:72:THR:O	2.20	0.41
2:B:175:ARG:N	2:B:176:PRO:HD2	2.36	0.41
1:C:286:PHE:O	1:C:288:ASP:N	2.54	0.40
1:A:209:ILE:O	1:A:213:PHE:CD1	2.74	0.40
2:D:162:ALA:HA	2:D:163:PRO:HD3	1.97	0.40
1:C:60:HIS:HD2	1:C:62:ASN:HB2	1.87	0.40
1:C:255:LEU:HD23	1:C:260:ARG:CA	2.51	0.40
1:C:6:LYS:CE	1:C:20:LYS:HG2	2.52	0.40
1:C:54:LEU:HD13	1:C:151:ALA:HB2	2.02	0.40
1:A:216:PHE:CE2	1:A:222:PRO:HD2	2.56	0.40
1:C:258:ASP:HB3	1:C:285:PHE:HA	2.04	0.40
1:C:200:ARG:O	1:C:201:ALA:O	2.39	0.40
1:A:84:HIS:HB3	1:A:298:LEU:CD2	2.50	0.40
2:B:21:ARG:HG2	2:B:21:ARG:HH11	1.86	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	292/298 (98%)	257 (88%)	23 (8%)	12 (4%)	<b>4</b> <b>5</b>

Continued on next page...

*Continued from previous page...*

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	280/298 (94%)	219 (78%)	45 (16%)	16 (6%)	3	2
2	B	246/252 (98%)	235 (96%)	10 (4%)	1 (0%)	43	66
2	D	246/252 (98%)	235 (96%)	10 (4%)	1 (0%)	43	66
All	All	1064/1100 (97%)	946 (89%)	88 (8%)	30 (3%)	8	10

All (30) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	3	ASN
1	A	13	GLY
1	A	94	SER
1	A	160	THR
1	A	164	VAL
1	A	208	GLU
1	C	6	LYS
1	C	8	GLU
1	C	94	SER
1	C	163	VAL
1	C	201	ALA
2	D	39	ASN
1	A	6	LYS
1	A	206	ASP
2	B	36	VAL
1	C	296	LEU
1	A	18	VAL
1	C	160	THR
1	C	194	ALA
1	C	217	ARG
1	C	285	PHE
1	C	287	GLN
1	A	254	PRO
1	C	73	GLU
1	C	245	ARG
1	C	106	SER
1	C	254	PRO
1	A	204	PRO
1	C	7	VAL
1	A	98	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	253/263 (96%)	236 (93%)	17 (7%)	23	40
1	C	237/263 (90%)	223 (94%)	14 (6%)	28	48
2	B	220/225 (98%)	214 (97%)	6 (3%)	57	83
2	D	217/225 (96%)	212 (98%)	5 (2%)	63	87
All	All	927/976 (95%)	885 (96%)	42 (4%)	38	63

All (42) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	GLU
1	A	30	VAL
1	A	57	GLU
1	A	160	THR
1	A	164	VAL
1	A	206	ASP
1	A	209	ILE
1	A	212	LEU
1	A	214	ARG
1	A	230	VAL
1	A	248	PHE
1	A	249	SER
1	A	256	ASP
1	A	258	ASP
1	A	260	ARG
1	A	290	THR
1	A	293	VAL
2	B	35	MET
2	B	52	LEU
2	B	66	ASP
2	B	88	ARG
2	B	132	LEU
2	B	193	VAL
1	C	2	GLU
1	C	8	GLU
1	C	78	LEU

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
1	C	86	ASP
1	C	94	SER
1	C	120	SER
1	C	131	GLN
1	C	160	THR
1	C	193	PHE
1	C	230	VAL
1	C	240	PHE
1	C	284	PRO
1	C	293	VAL
1	C	294	PRO
2	D	47	GLN
2	D	61	LYS
2	D	85	ARG
2	D	89	GLU
2	D	132	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	3	ASN
1	A	60	HIS
1	A	62	ASN
1	A	131	GLN
1	A	268	HIS
1	A	272	ASN
2	B	47	GLN
2	B	115	GLN
2	B	169	ASN
2	B	213	ASN
2	B	230	HIS
1	C	60	HIS
1	C	62	ASN
1	C	85	GLN
1	C	113	GLN
1	C	131	GLN
1	C	211	GLN
2	D	39	ASN
2	D	65	GLN
2	D	67	ASN
2	D	115	GLN
2	D	169	ASN

*Continued on next page...*

*Continued from previous page...*

Mol	Chain	Res	Type
2	D	205	ASN
2	D	246	ASN
2	D	251	ASN

### 5.3.3 RNA ⓘ

There are no RNA chains 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 carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

Of 1 ligands modelled in this entry, 1 is 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.

## 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 ⓘ

EDS was not executed - this section will therefore be empty.

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

EDS was not executed - this section will therefore be empty.

### 6.3 Carbohydrates ⓘ

EDS was not executed - this section will therefore be empty.

### 6.4 Ligands ⓘ

EDS was not executed - this section will therefore be empty.

### 6.5 Other polymers ⓘ

EDS was not executed - this section will therefore be empty.