



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 25, 2024 – 12:10 PM JST

PDB ID : 8XUB  
Title : Crystal structure of Y-50 TCR  
Authors : Asa, M.; Nagae, M.; Yamasaki, S.  
Deposited on : 2024-01-12  
Resolution : 2.50 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

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>.

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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 : 1.8.5 (274361), CSD as541be (2020)  
Xtriage (Phenix) : 1.21  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.004 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.40

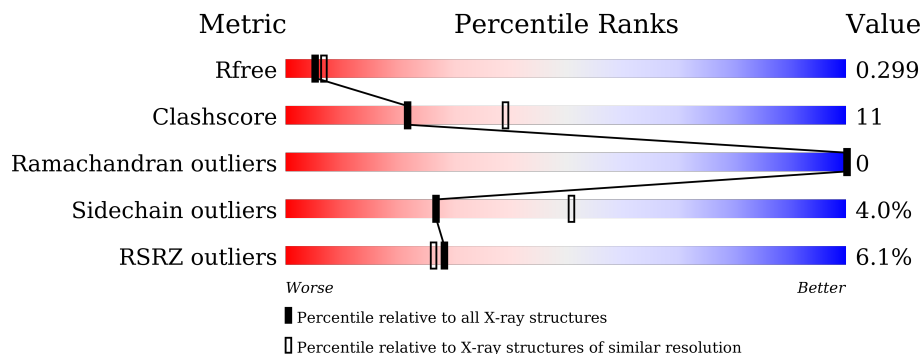
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

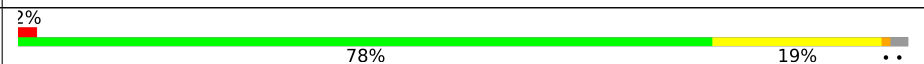
The reported resolution of this entry is 2.50 Å.

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.



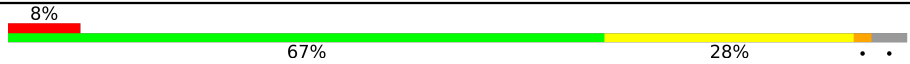

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	164625	5504 (2.50-2.50)
Clashscore	180529	6282 (2.50-2.50)
Ramachandran outliers	177936	6191 (2.50-2.50)
Sidechain outliers	177891	6193 (2.50-2.50)
RSRZ outliers	164620	5504 (2.50-2.50)

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 of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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  $\leq 5\%$ . 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	205	 % 85% 13% .
1	C	205	 3% 70% 29% .
1	E	205	 5% 68% 26% . .
1	G	205	 12% 72% 26% .
2	B	249	 2% 76% 23% .
2	D	249	 2% 78% 19% . .

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Mol	Chain	Length	Quality of chain
2	F	249	
2	H	249	

## 2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 14371 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 Y-50 alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	204	1616	1009	272	324	11	0	0	0
1	C	204	1616	1009	272	324	11	0	0	0
1	E	198	1569	979	265	314	11	0	0	0
1	G	204	1616	1009	272	324	11	0	0	0

- Molecule 2 is a protein called Y-50 beta.

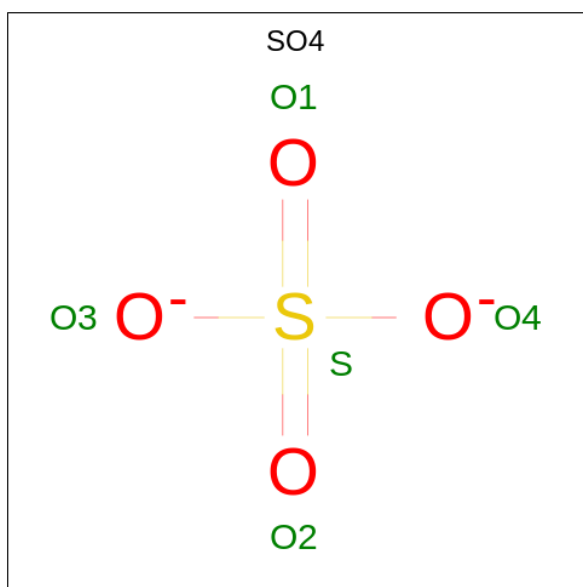
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	248	1974	1251	342	370	11	0	0	0
2	D	243	1945	1232	337	365	11	0	0	0
2	F	240	1929	1224	334	360	11	0	0	0
2	H	240	1930	1224	334	361	11	0	0	0

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
3	A	1	Total 14	8	1	5	0	0
3	B	1	Total 14	8	1	5	0	0
3	D	1	Total 14	8	1	5	0	0
3	E	1	Total 14	8	1	5	0	0
3	E	1	Total 14	8	1	5	0	0
3	F	1	Total 14	8	1	5	0	0
3	G	1	Total 14	8	1	5	0	0
3	H	1	Total 14	8	1	5	0	0

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	O	S	0	0
			5	4	1		
4	B	1	Total	O	S	0	0
			5	4	1		
4	C	1	Total	O	S	0	0
			5	4	1		
4	D	1	Total	O	S	0	0
			5	4	1		
4	E	1	Total	O	S	0	0
			5	4	1		
4	G	1	Total	O	S	0	0
			5	4	1		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	4	Total	O	0	0
			4	4		
5	B	11	Total	O	0	0
			11	11		
5	C	5	Total	O	0	0
			5	5		
5	D	5	Total	O	0	0
			5	5		
5	E	2	Total	O	0	0
			2	2		
5	F	2	Total	O	0	0
			2	2		

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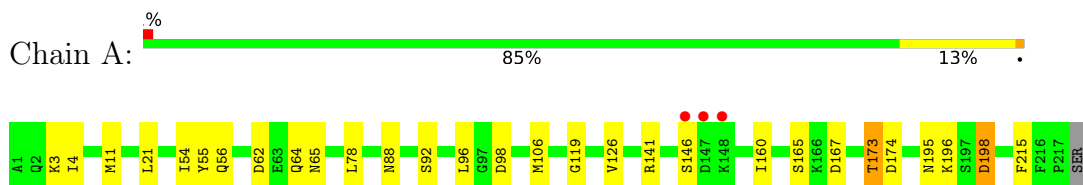
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<b>Mol</b>	<b>Chain</b>	<b>Residues</b>	<b>Atoms</b>		<b>ZeroOcc</b>	<b>AltConf</b>
5	H	5	Total	O	0	0
			5	5		

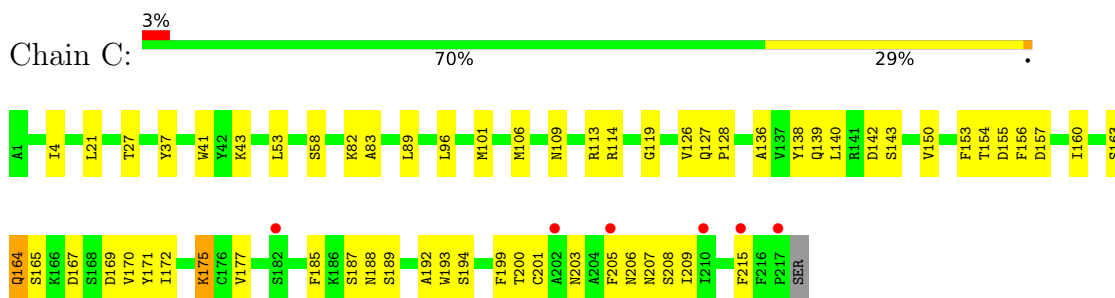
### 3 Residue-property plots [i](#)

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 and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

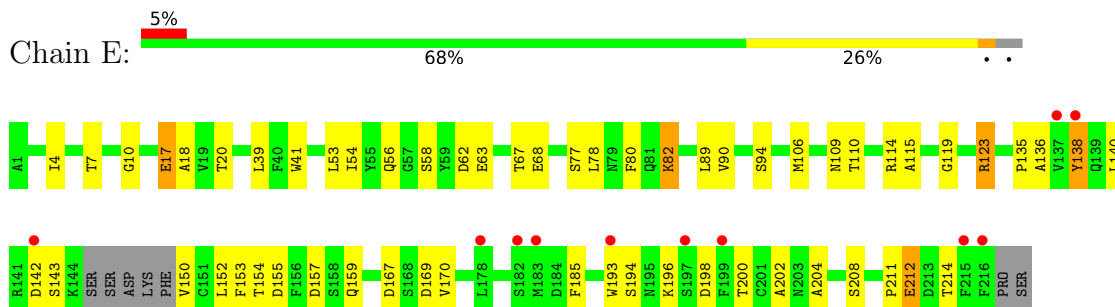
- Molecule 1: Y-50 alpha



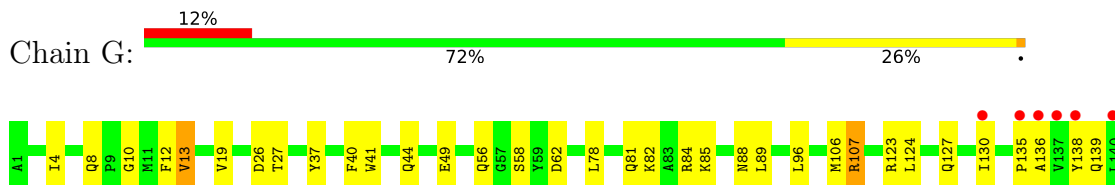
- Molecule 1: Y-50 alpha



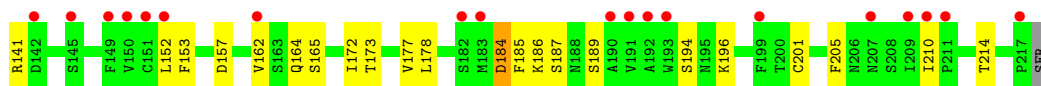
- Molecule 1: Y-50 alpha



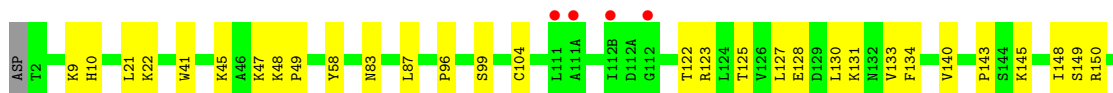
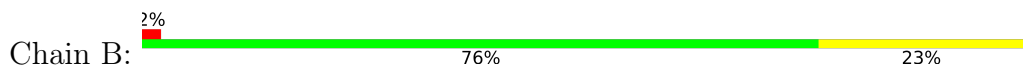
- Molecule 1: Y-50 alpha



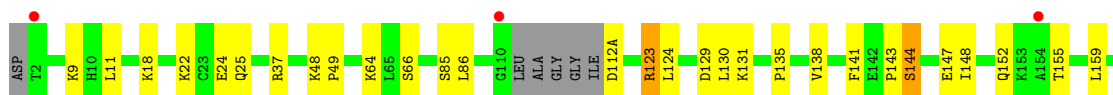
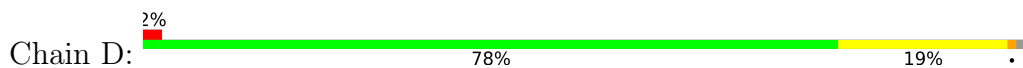




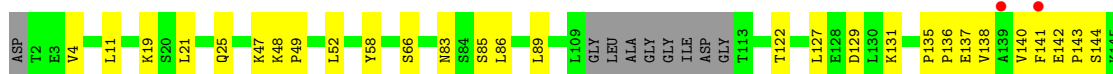
- Molecule 2: Y-50 beta



- Molecule 2: Y-50 beta



- Molecule 2: Y-50 beta



- Molecule 2: Y-50 beta





## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 2 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	68.11Å 168.69Å 173.12Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.03 – 2.50 44.03 – 2.50	Depositor EDS
% Data completeness (in resolution range)	100.0 (44.03-2.50) 100.0 (44.03-2.50)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.74 (at 2.51Å)	Xtrriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, $R_{free}$	0.226 , 0.299 0.226 , 0.299	Depositor DCC
$R_{free}$ test set	3387 reflections (4.84%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	59.7	Xtrriage
Anisotropy	0.326	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 40.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.015 for -h,l,k	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	14371	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	69.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.39% 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, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality [i](#)

### 5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, NAG

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	0.52	0/1649	0.68	0/2228
1	C	0.48	0/1649	0.64	0/2228
1	E	0.42	0/1599	0.64	0/2159
1	G	0.45	0/1649	0.70	2/2228 (0.1%)
2	B	0.53	1/2030 (0.0%)	0.70	1/2761 (0.0%)
2	D	0.50	0/2000	0.67	0/2719
2	F	0.45	0/1984	0.66	0/2698
2	H	0.45	0/1985	0.64	0/2699
All	All	0.48	1/14545 (0.0%)	0.67	3/19720 (0.0%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	104	CYS	CB-SG	-5.75	1.72	1.81

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	G	184	ASP	CB-CG-OD1	9.61	126.95	118.30
1	G	184	ASP	CB-CG-OD2	-5.18	113.64	118.30
2	B	190	LEU	CA-CB-CG	5.05	126.91	115.30

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	A	1616	0	1532	18	0
1	C	1616	0	1534	44	0
1	E	1569	0	1488	40	0
1	G	1616	0	1533	40	0
2	B	1974	0	1911	38	1
2	D	1945	0	1877	31	1
2	F	1929	0	1867	59	1
2	H	1930	0	1867	46	1
3	A	14	0	13	2	0
3	B	14	0	13	0	0
3	D	14	0	13	0	0
3	E	28	0	26	0	0
3	F	14	0	13	0	0
3	G	14	0	13	0	0
3	H	14	0	13	0	0
4	A	5	0	0	0	0
4	B	5	0	0	1	0
4	C	5	0	0	0	0
4	D	5	0	0	0	0
4	E	5	0	0	0	0
4	G	5	0	0	0	0
5	A	4	0	0	0	0
5	B	11	0	0	0	0
5	C	5	0	0	0	0
5	D	5	0	0	0	0
5	E	2	0	0	0	0
5	F	2	0	0	0	0
5	H	5	0	0	0	0
All	All	14371	0	13713	296	2

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 11.

All (296) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:13:VAL:HG11	1:G:19:VAL:HG22	1.42	0.99
2:D:236:TRP:HB2	2:D:242:LYS:HG3	1.45	0.96
1:G:12:PHE:HD1	1:G:127:GLN:HE22	1.14	0.92

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:156:PHE:HB2	1:C:160:ILE:HD13	1.53	0.88
1:G:135:PRO:HB2	1:G:214:THR:HG22	1.57	0.86
1:G:130:ILE:HG21	1:G:157:ASP:HA	1.65	0.79
2:F:160:ALA:HB2	2:F:225:VAL:HG21	1.64	0.78
2:H:131:LYS:NZ	2:H:238:GLN:OE1	2.16	0.77
1:E:20:THR:HG22	1:E:90:VAL:HG22	1.66	0.77
1:C:43:LYS:HB3	1:C:53:LEU:HD21	1.67	0.76
1:C:163:SER:N	1:C:208:SER:OG	2.18	0.76
1:E:135:PRO:HB2	1:E:214:THR:HG22	1.70	0.73
2:H:6:GLN:HB2	2:H:120:PRO:HD2	1.71	0.73
1:G:139:GLN:NE2	1:G:201:CYS:SG	2.62	0.71
1:E:4:ILE:HD11	1:E:106:MET:HB2	1.70	0.71
1:G:210:ILE:HG22	1:G:214:THR:HG21	1.72	0.71
1:G:26:ASP:OD1	1:G:85:LYS:NZ	2.25	0.70
1:E:54:ILE:HD12	1:E:68:GLU:HB2	1.76	0.68
2:B:127:LEU:HD21	2:B:164:TYR:HE1	1.59	0.68
2:F:147:GLU:OE1	2:F:155:THR:OG1	2.09	0.68
2:H:138:VAL:HG23	2:H:250:ALA:HB2	1.76	0.67
2:H:242:LYS:HG2	2:H:244:VAL:HG13	1.75	0.67
2:F:226:GLN:NE2	2:F:246:GLN:O	2.28	0.66
1:A:56:GLN:HB2	1:A:78:LEU:HD23	1.78	0.66
2:F:138:VAL:HG23	2:F:250:ALA:HB2	1.77	0.66
1:C:206:ASN:OD1	1:C:207:ASN:ND2	2.28	0.65
2:B:134:PHE:HD2	2:B:200:ARG:CZ	2.11	0.64
2:H:91:LEU:HD13	2:H:94:LEU:HD11	1.80	0.64
1:E:200:THR:HG23	1:E:202:ALA:H	1.63	0.63
1:C:138:TYR:CD1	2:D:147:GLU:HB2	2.33	0.63
1:C:153:PHE:HB2	1:C:205:PHE:CE2	2.33	0.63
2:H:101:LEU:HD13	2:H:123:ARG:HG3	1.80	0.63
1:G:139:GLN:OE1	1:G:141:ARG:NH2	2.31	0.63
2:B:156:LEU:HD13	2:B:207:LEU:HD23	1.81	0.63
2:H:143:PRO:HD2	2:H:214:TRP:CZ2	2.35	0.62
2:H:138:VAL:HA	2:H:159:LEU:O	2.01	0.61
2:B:130:LEU:O	2:B:133:VAL:HG12	2.01	0.61
1:E:170:VAL:HA	1:E:194:SER:OG	2.01	0.61
1:C:150:VAL:HG12	1:C:193:TRP:HB3	1.83	0.60
2:B:133:VAL:C	2:B:134:PHE:HD1	2.05	0.60
1:G:81:GLN:HB3	1:G:84:ARG:HD2	1.85	0.59
1:C:139:GLN:O	2:D:144:SER:HB2	2.03	0.59
2:H:224:GLN:HE21	2:H:247:ILE:HD12	1.67	0.59
2:H:2:THR:HG22	2:H:2:THR:O	2.03	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:25:GLN:O	2:F:85:SER:HB2	2.04	0.58
2:F:193:GLN:CD	2:F:196:LEU:H	2.07	0.57
2:F:193:GLN:NE2	2:F:195:ALA:H	2.02	0.57
2:B:134:PHE:CD2	2:B:200:ARG:CZ	2.87	0.57
2:F:154:ALA:N	2:F:209:VAL:O	2.38	0.57
1:E:211:PRO:O	1:E:214:THR:HG23	2.05	0.56
2:D:129:ASP:OD2	2:D:131:LYS:HE3	2.05	0.56
2:D:143:PRO:HD2	2:D:214:TRP:CZ2	2.41	0.56
1:E:136:ALA:HA	1:E:214:THR:HB	1.87	0.56
1:A:78:LEU:HD12	1:A:88:ASN:O	2.06	0.55
1:E:212:GLU:N	1:E:212:GLU:OE1	2.38	0.55
1:C:150:VAL:HG13	2:D:141:PHE:CE1	2.42	0.55
1:G:56:GLN:HB2	1:G:78:LEU:HD23	1.89	0.55
2:H:193:GLN:HB3	2:H:196:LEU:HD23	1.87	0.55
2:H:226:GLN:HG2	2:H:247:ILE:CD1	2.37	0.55
1:C:200:THR:HG23	1:C:203:ASN:HB3	1.89	0.54
2:F:193:GLN:HE22	2:F:195:ALA:H	1.54	0.54
2:B:186:ASP:OD1	2:B:206:ARG:NH2	2.39	0.54
1:E:80:PHE:CZ	1:E:82:LYS:HG3	2.42	0.54
2:H:129:ASP:OD1	2:H:131:LYS:HB2	2.07	0.54
1:C:200:THR:CG2	1:C:203:ASN:HB3	2.36	0.54
1:A:96:LEU:HD23	1:A:126:VAL:HG12	1.90	0.54
2:H:209:VAL:HG12	2:H:210:SER:H	1.73	0.54
2:F:137:GLU:N	2:F:161:THR:O	2.39	0.54
1:A:65:ASN:HB2	3:A:301:NAG:N2	2.23	0.54
2:B:41:TRP:CD1	2:B:87:LEU:HD21	2.43	0.53
2:H:216:ASP:OD1	2:H:218:ARG:HG3	2.08	0.53
2:F:140:VAL:HG23	2:F:250:ALA:HB3	1.90	0.53
2:H:238:GLN:HG3	2:H:239:ASP:N	2.24	0.53
2:F:158:CYS:HB2	2:F:172:TRP:CH2	2.43	0.53
2:D:230:LEU:HD13	2:D:234:ASP:HB3	1.91	0.53
2:F:148:ILE:HG23	2:F:211:ALA:HB1	1.91	0.53
2:F:150:ARG:HB3	2:F:150:ARG:HH11	1.74	0.53
2:H:131:LYS:NZ	2:H:238:GLN:HB2	2.24	0.53
2:H:226:GLN:HG2	2:H:247:ILE:HD13	1.91	0.53
2:F:226:GLN:HE21	2:F:227:PHE:N	2.06	0.52
2:H:171:SER:OG	2:H:224:GLN:OE1	2.27	0.52
2:H:230:LEU:HD12	2:H:230:LEU:H	1.74	0.52
1:G:205:PHE:O	1:G:210:ILE:HD11	2.10	0.52
1:A:65:ASN:HB2	3:A:301:NAG:C7	2.40	0.52
2:D:236:TRP:CB	2:D:242:LYS:HG3	2.29	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:135:PRO:HD3	2:H:243:PRO:HB3	1.91	0.51
1:G:40:PHE:HE1	1:G:107:ARG:HG2	1.75	0.51
2:D:135:PRO:HD3	2:D:243:PRO:HB3	1.92	0.51
1:E:200:THR:O	1:E:204:ALA:N	2.42	0.51
2:F:162:GLY:O	2:F:200:ARG:NE	2.33	0.51
1:A:160:ILE:HD12	1:A:160:ILE:H	1.76	0.51
2:D:123:ARG:HD3	2:D:167:HIS:CG	2.46	0.51
1:E:109:ASN:O	1:E:114:ARG:NH1	2.43	0.51
1:A:54:ILE:HG13	1:A:55:TYR:N	2.25	0.51
1:C:127:GLN:OE1	1:C:175:LYS:NZ	2.37	0.51
1:E:150:VAL:HG12	1:E:193:TRP:HB3	1.92	0.50
2:F:155:THR:HG23	2:F:208:ARG:HG3	1.92	0.50
2:F:164:TYR:HB3	2:F:165:PRO:HD3	1.93	0.50
2:D:11:LEU:HD23	2:D:124:LEU:HD13	1.93	0.50
1:G:96:LEU:HD22	1:G:177:VAL:HG11	1.92	0.50
1:A:173:THR:HG22	1:A:174:ASP:O	2.12	0.50
1:E:17:GLU:HG3	1:E:18:ALA:H	1.77	0.50
2:D:25:GLN:O	2:D:85:SER:HB2	2.12	0.50
1:E:167:ASP:HB2	1:E:170:VAL:HG22	1.92	0.50
1:G:152:LEU:HD11	1:G:189:SER:HB2	1.94	0.50
2:D:193:GLN:HB2	2:D:196:LEU:HD13	1.93	0.50
1:E:41:TRP:CE2	1:E:89:LEU:HB2	2.47	0.50
1:C:154:THR:OG1	1:C:155:ASP:N	2.45	0.49
2:H:166:PRO:HB3	2:H:201:TYR:CG	2.47	0.49
2:F:135:PRO:HB3	2:F:246:GLN:OE1	2.11	0.49
2:B:236:TRP:HB2	2:B:242:LYS:HD2	1.94	0.49
2:H:81:PRO:HG2	2:H:86:LEU:HD23	1.94	0.49
1:G:10:GLY:HA2	1:G:123:ARG:O	2.12	0.49
2:B:143:PRO:HD2	2:B:214:TRP:CZ2	2.47	0.49
1:E:10:GLY:HA2	1:E:123:ARG:O	2.12	0.49
2:F:193:GLN:OE1	2:F:196:LEU:N	2.41	0.49
1:C:140:LEU:HD21	2:D:155:THR:O	2.11	0.49
1:E:150:VAL:HG13	2:F:141:PHE:CE1	2.48	0.49
2:B:193:GLN:OE1	2:B:199:SER:HA	2.12	0.49
1:G:184:ASP:OD1	1:G:184:ASP:O	2.30	0.49
2:F:83:ASN:HB2	2:F:86:LEU:HD23	1.94	0.48
2:F:127:LEU:HD21	2:F:164:TYR:CE2	2.48	0.48
1:G:185:PHE:CE2	1:G:187:SER:HB3	2.48	0.48
2:F:150:ARG:HB3	2:F:150:ARG:NH1	2.28	0.48
1:G:136:ALA:HB3	1:G:138:TYR:CE1	2.48	0.48
1:A:141:ARG:HD2	1:A:146:SER:O	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:213:PHE:CE2	2:F:221:PHE:HE1	2.31	0.48
1:G:13:VAL:CG1	1:G:19:VAL:HG22	2.29	0.48
1:G:210:ILE:CG2	1:G:214:THR:HG21	2.42	0.48
1:C:4:ILE:HD11	1:C:106:MET:HB2	1.94	0.48
1:E:58:SER:O	1:E:82:LYS:HD2	2.14	0.48
1:G:210:ILE:HD12	1:G:210:ILE:N	2.29	0.48
2:H:148:ILE:HG23	2:H:211:ALA:HB1	1.95	0.48
1:C:170:VAL:HG21	1:C:199:PHE:CE1	2.48	0.48
1:A:4:ILE:HD11	1:A:106:MET:HB3	1.96	0.47
2:B:47:LYS:HB2	2:B:47:LYS:HE2	1.64	0.47
2:B:125:THR:HG21	2:B:165:PRO:HB3	1.96	0.47
1:E:56:GLN:HB2	1:E:78:LEU:HD21	1.95	0.47
2:H:242:LYS:HE3	2:H:244:VAL:CG1	2.44	0.47
2:F:154:ALA:O	2:F:208:ARG:HA	2.14	0.47
2:B:162:GLY:O	2:B:200:ARG:NH2	2.45	0.47
2:B:133:VAL:HG13	2:B:243:PRO:HG2	1.96	0.47
1:G:165:SER:HB2	1:G:172:ILE:HD11	1.96	0.47
1:C:113:ARG:CZ	2:D:66:SER:HB3	2.45	0.47
1:E:138:TYR:CD1	2:F:147:GLU:HB2	2.50	0.47
2:F:143:PRO:HD2	2:F:214:TRP:CH2	2.50	0.47
2:B:180:HIS:HB2	4:B:302:SO4:O1	2.15	0.47
1:G:58:SER:O	1:G:82:LYS:NZ	2.32	0.46
2:D:242:LYS:O	2:D:244:VAL:N	2.48	0.46
2:D:24:GLU:HG3	2:D:86:LEU:HD22	1.98	0.46
1:G:41:TRP:CE2	1:G:89:LEU:HB2	2.50	0.46
2:B:123:ARG:HD2	2:B:167:HIS:NE2	2.30	0.46
2:D:48:LYS:HA	2:D:48:LYS:HD3	1.71	0.46
1:A:98:ASP:HB2	1:A:126:VAL:HG21	1.97	0.46
2:B:215:GLN:HA	2:B:255:ARG:O	2.16	0.46
1:E:138:TYR:HB3	2:F:144:SER:OG	2.16	0.46
1:G:13:VAL:HG22	1:G:124:LEU:HD11	1.98	0.46
1:G:177:VAL:N	2:H:184:CYS:SG	2.89	0.46
2:B:47:LYS:O	2:B:48:LYS:HD3	2.16	0.46
2:D:217:PRO:HA	2:D:254:GLY:O	2.15	0.46
1:G:194:SER:OG	1:G:196:LYS:HG3	2.15	0.46
1:C:136:ALA:HB1	1:C:138:TYR:HE2	1.80	0.46
1:A:196:LYS:HE3	1:A:198:ASP:OD1	2.16	0.46
2:B:143:PRO:HD2	2:B:214:TRP:CE2	2.51	0.46
1:C:21:LEU:HD12	1:C:89:LEU:HD23	1.99	0.45
1:G:56:GLN:NE2	1:G:62:ASP:HB2	2.32	0.45
2:B:45:LYS:NZ	2:B:99:SER:O	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:170:VAL:HA	1:C:194:SER:HB3	1.97	0.45
1:C:185:PHE:CE2	1:C:187:SER:HB3	2.51	0.45
2:D:218:ARG:HE	2:D:218:ARG:HB3	1.39	0.45
2:B:9:LYS:HD3	2:B:10:HIS:NE2	2.32	0.45
2:B:21:LEU:HD22	2:B:122:THR:HG21	1.99	0.45
2:B:140:VAL:HG23	2:B:250:ALA:HB3	1.98	0.45
1:C:109:ASN:O	1:C:114:ARG:NH1	2.48	0.45
2:F:136:PRO:HG3	2:F:227:PHE:HB2	1.99	0.45
1:C:150:VAL:HG12	1:C:193:TRP:CB	2.47	0.45
1:C:193:TRP:CD2	2:D:159:LEU:HD21	2.52	0.45
1:E:119:GLY:O	2:F:49:PRO:HB3	2.16	0.45
1:C:106:MET:HE3	1:C:106:MET:HB3	1.80	0.45
2:B:220:HIS:NE2	2:B:251:GLU:OE1	2.49	0.45
2:D:130:LEU:H	2:D:130:LEU:HD12	1.82	0.45
2:F:136:PRO:HD3	2:F:227:PHE:CD1	2.52	0.45
2:F:226:GLN:HE21	2:F:227:PHE:H	1.65	0.45
2:H:21:LEU:HB2	2:H:89:LEU:HB3	1.99	0.45
2:B:242:LYS:HG2	2:B:244:VAL:HG13	1.99	0.44
2:D:236:TRP:CE2	2:D:243:PRO:HD3	2.52	0.44
1:G:4:ILE:HD11	1:G:106:MET:HB3	1.98	0.44
2:F:191:LYS:HE2	2:F:199:SER:HB3	1.99	0.44
2:H:136:PRO:HB3	2:H:163:PHE:CD2	2.52	0.44
1:C:167:ASP:HB3	1:C:170:VAL:HG12	2.00	0.44
1:E:170:VAL:HG12	1:E:196:LYS:HD3	2.00	0.44
1:C:171:TYR:O	1:C:192:ALA:HA	2.18	0.44
2:F:220:HIS:CE1	2:F:222:ARG:HB2	2.53	0.44
2:H:25:GLN:O	2:H:85:SER:HB2	2.18	0.44
2:B:96:PRO:HG2	2:B:128:GLU:HG2	1.99	0.44
2:D:209:VAL:HG12	2:D:210:SER:N	2.33	0.44
2:F:172:TRP:CD2	2:F:207:LEU:HD22	2.52	0.44
2:H:173:TRP:NE1	2:H:224:GLN:OE1	2.46	0.44
1:E:62:ASP:O	1:E:63:GLU:HG2	2.18	0.44
1:E:115:ALA:HB1	2:F:52:LEU:HD22	1.98	0.44
1:E:138:TYR:HD1	2:F:144:SER:OG	2.01	0.44
2:F:183:VAL:HA	2:F:206:ARG:O	2.17	0.44
2:B:133:VAL:O	2:B:134:PHE:HD1	1.99	0.44
2:D:209:VAL:HG12	2:D:210:SER:H	1.82	0.44
1:E:185:PHE:HE1	2:F:208:ARG:HE	1.66	0.44
2:H:154:ALA:O	2:H:208:ARG:HA	2.18	0.44
1:C:136:ALA:HB1	1:C:138:TYR:CE2	2.53	0.43
1:G:96:LEU:HD11	1:G:186:LYS:HD3	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:215:PHE:CZ	2:B:150:ARG:HD3	2.52	0.43
1:A:119:GLY:O	2:B:49:PRO:HB3	2.18	0.43
2:B:145:LYS:H	2:B:145:LYS:HD2	1.83	0.43
1:C:4:ILE:CD1	1:C:106:MET:HE2	2.48	0.43
2:D:232:GLU:HG3	2:D:233:ASN:N	2.33	0.43
2:B:148:ILE:HG23	2:B:211:ALA:HB1	2.00	0.43
2:F:129:ASP:HB3	2:F:131:LYS:HG3	2.00	0.43
1:G:13:VAL:HG21	1:G:19:VAL:CG2	2.48	0.43
1:G:164:GLN:OE1	1:G:164:GLN:HA	2.18	0.43
2:H:5:THR:HG22	2:H:24:GLU:HB2	1.99	0.43
2:B:166:PRO:HB3	2:B:201:TYR:CG	2.54	0.43
2:H:181:ASP:OD1	2:H:182:GLY:N	2.51	0.43
2:D:9:LYS:HD3	2:D:9:LYS:N	2.33	0.43
2:D:209:VAL:HG11	2:D:213:PHE:CD2	2.53	0.43
2:F:220:HIS:CD2	2:F:251:GLU:HG3	2.54	0.43
1:G:27:THR:HG21	1:G:37:TYR:CD2	2.53	0.43
1:G:56:GLN:CB	1:G:78:LEU:HD23	2.49	0.43
2:H:135:PRO:HB3	2:H:246:GLN:NE2	2.33	0.43
1:C:41:TRP:CE2	1:C:89:LEU:HB2	2.54	0.43
1:C:164:GLN:OE1	1:C:164:GLN:N	2.39	0.43
1:E:41:TRP:O	1:E:53:LEU:HB2	2.19	0.43
2:F:172:TRP:CG	2:F:207:LEU:HD22	2.54	0.43
1:C:200:THR:OG1	1:C:201:CYS:N	2.52	0.43
1:E:136:ALA:HB3	1:E:138:TYR:HE2	1.83	0.43
1:E:140:LEU:HD13	1:E:152:LEU:HB3	2.00	0.43
1:E:169:ASP:HB3	1:E:196:LYS:HD2	2.00	0.43
2:F:193:GLN:NE2	2:F:196:LEU:H	2.17	0.43
1:A:11:MET:HG3	1:A:21:LEU:CD2	2.49	0.42
2:B:131:LYS:O	2:B:134:PHE:HE1	2.03	0.42
1:C:27:THR:HG21	1:C:37:TYR:CD2	2.54	0.42
2:H:145:LYS:HE3	2:H:145:LYS:HB2	1.70	0.42
2:F:89:LEU:HA	2:F:89:LEU:HD23	1.60	0.42
2:D:138:VAL:HG21	2:D:248:VAL:O	2.19	0.42
2:H:91:LEU:HB3	2:H:94:LEU:HD21	2.01	0.42
2:F:158:CYS:HB2	2:F:172:TRP:CZ2	2.53	0.42
1:G:78:LEU:HD12	1:G:88:ASN:O	2.20	0.42
1:E:154:THR:HG22	1:E:155:ASP:OD1	2.19	0.42
2:H:89:LEU:HD12	2:H:89:LEU:HA	1.80	0.42
1:C:58:SER:O	1:C:82:LYS:HE3	2.20	0.42
2:H:148:ILE:HG23	2:H:211:ALA:CB	2.50	0.42
1:C:96:LEU:HA	1:C:126:VAL:HB	2.02	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:11:LEU:HD11	2:H:19:LYS:HE3	2.02	0.42
1:E:135:PRO:O	1:E:214:THR:HA	2.19	0.42
1:A:62:ASP:O	1:A:64:GLN:HG2	2.20	0.41
2:H:191:LYS:HG2	2:H:194:PRO:HA	2.02	0.41
1:C:128:PRO:HG3	1:C:177:VAL:HG13	2.01	0.41
1:G:44:GLN:HA	1:G:49:GLU:O	2.19	0.41
1:G:81:GLN:HG2	1:G:84:ARG:CZ	2.50	0.41
1:C:157:ASP:O	1:C:160:ILE:HD12	2.20	0.41
1:C:119:GLY:O	2:D:49:PRO:HB3	2.20	0.41
2:F:21:LEU:HD22	2:F:122:THR:HG21	2.02	0.41
2:F:48:LYS:HD3	2:F:48:LYS:HA	1.70	0.41
2:F:136:PRO:HB3	2:F:163:PHE:HB3	2.02	0.41
2:F:146:ALA:O	2:F:150:ARG:N	2.53	0.41
2:B:156:LEU:HD12	2:B:156:LEU:H	1.86	0.41
2:B:242:LYS:HA	2:B:243:PRO:HD3	1.86	0.41
2:F:137:GLU:O	2:F:161:THR:N	2.32	0.41
2:F:193:GLN:HA	2:F:194:PRO:HD3	1.85	0.41
2:H:137:GLU:O	2:H:161:THR:N	2.54	0.41
1:C:142:ASP:OD1	1:C:143:SER:N	2.53	0.41
2:F:11:LEU:HD11	2:F:19:LYS:HG3	2.02	0.41
2:F:142:GLU:OE1	2:F:255:ARG:NH1	2.36	0.41
1:E:110:THR:O	1:E:110:THR:OG1	2.30	0.41
1:E:138:TYR:HE1	2:F:147:GLU:HA	1.86	0.41
2:F:216:ASP:HA	2:F:217:PRO:HD3	1.95	0.41
1:A:141:ARG:HD3	1:A:141:ARG:HA	1.82	0.41
1:C:156:PHE:CE1	1:C:188:ASN:HB2	2.56	0.41
1:E:67:THR:HG22	1:E:77:SER:HB2	2.03	0.41
1:G:178:LEU:HD13	2:H:184:CYS:HB2	2.03	0.41
2:H:131:LYS:CE	2:H:238:GLN:HB2	2.50	0.41
2:B:131:LYS:NZ	2:B:238:GLN:HG3	2.36	0.41
1:E:142:ASP:OD1	1:E:143:SER:N	2.54	0.41
1:E:157:ASP:OD2	1:E:159:GLN:HG2	2.22	0.41
1:C:164:GLN:H	1:C:164:GLN:CD	2.11	0.40
1:C:209:ILE:O	1:C:209:ILE:HG22	2.20	0.40
2:D:148:ILE:HD12	2:D:148:ILE:H	1.87	0.40
2:H:137:GLU:O	2:H:160:ALA:HA	2.21	0.40
1:E:154:THR:HG22	1:E:155:ASP:N	2.36	0.40
2:F:183:VAL:HG22	2:F:207:LEU:HD13	2.04	0.40
2:H:143:PRO:HD2	2:H:214:TRP:CE2	2.56	0.40
2:B:195:ALA:HB1	1:C:83:ALA:HB1	2.03	0.40
1:C:165:SER:HB2	1:C:172:ILE:HD11	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:81:GLN:HE21	1:G:84:ARG:HD2	1.86	0.40
2:F:4:VAL:HG22	2:F:25:GLN:HB3	2.03	0.40
2:F:207:LEU:HD12	2:F:207:LEU:HA	1.81	0.40
1:G:153:PHE:HE2	1:G:162:VAL:HG22	1.86	0.40
2:H:5:THR:CG2	2:H:24:GLU:HB2	2.52	0.40
1:A:56:GLN:CB	1:A:78:LEU:HD23	2.50	0.40

All (2) 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)
2:F:58:TYR:O	2:H:37:ARG:NH2[1_655]	2.10	0.10
2:B:58:TYR:O	2:D:37:ARG:NH2[2_455]	2.16	0.04

## 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 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	202/205 (98%)	195 (96%)	7 (4%)	0	100	100
1	C	202/205 (98%)	185 (92%)	17 (8%)	0	100	100
1	E	194/205 (95%)	178 (92%)	16 (8%)	0	100	100
1	G	202/205 (98%)	187 (93%)	15 (7%)	0	100	100
2	B	246/249 (99%)	239 (97%)	7 (3%)	0	100	100
2	D	239/249 (96%)	228 (95%)	11 (5%)	0	100	100
2	F	236/249 (95%)	222 (94%)	14 (6%)	0	100	100
2	H	236/249 (95%)	227 (96%)	9 (4%)	0	100	100
All	All	1757/1816 (97%)	1661 (94%)	96 (6%)	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 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	181/182 (100%)	174 (96%)	7 (4%)	27	52
1	C	181/182 (100%)	175 (97%)	6 (3%)	33	59
1	E	175/182 (96%)	164 (94%)	11 (6%)	15	30
1	G	181/182 (100%)	177 (98%)	4 (2%)	47	73
2	B	218/219 (100%)	211 (97%)	7 (3%)	34	60
2	D	216/219 (99%)	207 (96%)	9 (4%)	25	49
2	F	215/219 (98%)	205 (95%)	10 (5%)	22	44
2	H	215/219 (98%)	206 (96%)	9 (4%)	25	49
All	All	1582/1604 (99%)	1519 (96%)	63 (4%)	27	51

All (63) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	LYS
1	A	92	SER
1	A	165	SER
1	A	167	ASP
1	A	173	THR
1	A	195	ASN
1	A	198	ASP
2	B	22	LYS
2	B	83	ASN
2	B	149	SER
2	B	190	LEU
2	B	206	ARG
2	B	239	ASP
2	B	247	ILE
1	C	101	MET
1	C	164	GLN
1	C	169	ASP
1	C	175	LYS
1	C	189	SER

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	C	215	PHE
2	D	18	LYS
2	D	22	LYS
2	D	64	LYS
2	D	112(A)	ASP
2	D	123	ARG
2	D	144	SER
2	D	152	GLN
2	D	206	ARG
2	D	238	GLN
1	E	7	THR
1	E	17	GLU
1	E	39	LEU
1	E	82	LYS
1	E	94	SER
1	E	123	ARG
1	E	138	TYR
1	E	153	PHE
1	E	198	ASP
1	E	208	SER
1	E	212	GLU
2	F	47	LYS
2	F	66	SER
2	F	147	GLU
2	F	165	PRO
2	F	171	SER
2	F	189	PRO
2	F	206	ARG
2	F	218	ARG
2	F	220	HIS
2	F	233	ASN
1	G	8	GLN
1	G	13	VAL
1	G	107	ARG
1	G	173	THR
2	H	3	GLU
2	H	84	SER
2	H	123	ARG
2	H	129	ASP
2	H	147	GLU
2	H	180	HIS
2	H	190	LEU

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Mol	Chain	Res	Type
2	H	200	ARG
2	H	204	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	17	ASN
2	B	233	ASN
1	C	79	ASN
2	D	17	ASN
2	D	193	GLN
2	F	83	ASN
2	F	226	GLN
1	G	79	ASN
1	G	127	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](#)

14 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).



Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
4	SO4	D	302	-	4,4,4	0.17	0	6,6,6	0.25	0
4	SO4	A	302	-	4,4,4	0.29	0	6,6,6	0.24	0
4	SO4	G	302	-	4,4,4	0.27	0	6,6,6	0.28	0
3	NAG	H	301	2	14,14,15	0.58	1 (7%)	17,19,21	0.77	1 (5%)
3	NAG	F	301	2	14,14,15	0.27	0	17,19,21	1.18	1 (5%)
4	SO4	C	301	-	4,4,4	0.34	0	6,6,6	0.25	0
3	NAG	G	301	1	14,14,15	0.48	0	17,19,21	0.50	0
3	NAG	D	301	2	14,14,15	0.68	1 (7%)	17,19,21	0.70	1 (5%)
4	SO4	B	302	-	4,4,4	0.16	0	6,6,6	0.24	0
3	NAG	A	301	1	14,14,15	0.67	0	17,19,21	0.55	0
3	NAG	E	302	1	14,14,15	0.66	1 (7%)	17,19,21	0.95	1 (5%)
3	NAG	B	301	2	14,14,15	0.43	0	17,19,21	0.81	1 (5%)
4	SO4	E	303	-	4,4,4	0.24	0	6,6,6	0.37	0
3	NAG	E	301	1	14,14,15	0.27	0	17,19,21	0.43	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	H	301	2	-	0/6/23/26	0/1/1/1
3	NAG	F	301	2	-	2/6/23/26	0/1/1/1
3	NAG	G	301	1	-	2/6/23/26	0/1/1/1
3	NAG	D	301	2	-	0/6/23/26	0/1/1/1
3	NAG	A	301	1	-	2/6/23/26	0/1/1/1
3	NAG	E	302	1	-	2/6/23/26	0/1/1/1
3	NAG	B	301	2	-	0/6/23/26	0/1/1/1
3	NAG	E	301	1	-	0/6/23/26	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	301	NAG	O5-C1	2.28	1.47	1.43
3	E	302	NAG	C1-C2	2.19	1.55	1.52
3	H	301	NAG	O5-C1	2.02	1.46	1.43

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	F	301	NAG	C1-O5-C5	4.11	117.76	112.19
3	E	302	NAG	C1-O5-C5	3.37	116.76	112.19
3	H	301	NAG	C1-O5-C5	2.56	115.66	112.19
3	D	301	NAG	C1-O5-C5	2.38	115.42	112.19
3	B	301	NAG	C1-O5-C5	2.14	115.09	112.19

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	G	301	NAG	O5-C5-C6-O6
3	E	302	NAG	O5-C5-C6-O6
3	E	302	NAG	C4-C5-C6-O6
3	A	301	NAG	C4-C5-C6-O6
3	G	301	NAG	C4-C5-C6-O6
3	A	301	NAG	O5-C5-C6-O6
3	F	301	NAG	C4-C5-C6-O6
3	F	301	NAG	O5-C5-C6-O6

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	B	302	SO4	1	0
3	A	301	NAG	2	0

## 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	204/205 (99%)	0.12	3 (1%) 71 68	35, 57, 86, 105	0
1	C	204/205 (99%)	0.29	6 (2%) 54 50	38, 65, 102, 111	0
1	E	198/205 (96%)	0.44	11 (5%) 31 29	45, 71, 112, 130	0
1	G	204/205 (99%)	0.62	25 (12%) 9 9	43, 76, 110, 121	0
2	B	248/249 (99%)	0.03	5 (2%) 64 62	32, 55, 92, 113	0
2	D	243/249 (97%)	0.13	5 (2%) 63 60	36, 61, 91, 108	0
2	F	240/249 (96%)	0.56	20 (8%) 19 18	37, 79, 111, 122	0
2	H	240/249 (96%)	0.64	34 (14%) 7 7	39, 77, 117, 146	0
All	All	1781/1816 (98%)	0.35	109 (6%) 28 26	32, 64, 109, 146	0

All (109) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	H	174	VAL	4.1
2	D	154	ALA	4.0
2	H	209	VAL	4.0
2	B	111(A)	ALA	3.9
1	E	137	VAL	3.9
2	H	250	ALA	3.8
2	H	179	VAL	3.7
2	H	157	VAL	3.6
2	H	252	ALA	3.6
2	H	257	ASP	3.5
2	F	221	PHE	3.5
1	G	137	VAL	3.5
1	G	136	ALA	3.5
1	G	152	LEU	3.4
2	H	146	ALA	3.3
2	F	209	VAL	3.3

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	F	176	GLY	3.3
2	B	111	LEU	3.2
2	F	151	THR	3.2
1	G	209	ILE	3.1
1	G	151	CYS	3.1
1	C	205	PHE	3.1
1	G	182	SER	3.1
2	F	214	TRP	3.1
2	H	195	ALA	3.0
2	H	156	LEU	3.0
2	H	140	VAL	3.0
1	E	215	PHE	3.0
2	F	213	PHE	3.0
1	G	192	ALA	3.0
2	H	205	SER	2.9
1	G	211	PRO	2.9
1	G	130	ILE	2.9
1	G	191	VAL	2.9
2	D	256	ALA	2.9
2	H	139	ALA	2.9
1	E	182	SER	2.8
2	H	221	PHE	2.8
1	C	202	ALA	2.8
2	B	112(B)	ILE	2.8
2	H	172	TRP	2.8
2	B	112	GLY	2.8
1	E	183	MET	2.7
1	G	199	PHE	2.7
2	F	207	LEU	2.7
2	F	208	ARG	2.7
2	F	139	ALA	2.7
1	C	217	PRO	2.6
1	E	216	PHE	2.6
1	G	150	VAL	2.6
1	A	147	ASP	2.6
2	H	214	TRP	2.6
2	H	151	THR	2.6
2	H	173	TRP	2.5
1	G	138	TYR	2.5
2	D	110	GLY	2.5
1	G	207	ASN	2.5
2	F	211	ALA	2.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	H	154	ALA	2.5
1	E	197	SER	2.5
1	G	183	MET	2.5
1	G	210	ILE	2.4
1	E	178	LEU	2.4
2	F	217	PRO	2.4
1	C	210	ILE	2.4
2	H	215	GLN	2.4
2	H	182	GLY	2.4
1	G	162	VAL	2.4
2	D	2	THR	2.4
1	E	142	ASP	2.4
2	F	154	ALA	2.4
2	H	148	ILE	2.3
1	G	140	LEU	2.3
2	F	156	LEU	2.3
2	H	220	HIS	2.3
2	F	141	PHE	2.3
2	H	211	ALA	2.3
2	H	256	ALA	2.3
2	F	155	THR	2.3
1	G	149	PHE	2.3
2	H	236	TRP	2.3
2	H	167	HIS	2.3
1	G	190	ALA	2.2
1	A	146	SER	2.2
1	G	135	PRO	2.2
2	H	210	SER	2.2
2	F	164	TYR	2.1
1	E	199	PHE	2.1
2	F	210	SER	2.1
2	H	249	SER	2.1
1	A	148	LYS	2.1
2	F	159	LEU	2.1
2	H	196	LEU	2.1
1	E	138	TYR	2.1
2	H	143	PRO	2.1
2	F	158	CYS	2.1
1	G	142	ASP	2.1
2	H	181	ASP	2.1
1	G	193	TRP	2.1
1	G	217	PRO	2.1

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Mol	Chain	Res	Type	RSRZ
1	G	145	SER	2.1
2	F	180	HIS	2.1
2	D	209	VAL	2.1
2	H	170	LEU	2.1
1	C	215	PHE	2.1
1	E	193	TRP	2.0
2	B	236	TRP	2.0
2	H	149	SER	2.0
1	C	182	SER	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
3	NAG	E	302	14/15	0.65	0.16	94,104,107,107	0
3	NAG	E	301	14/15	0.67	0.12	84,97,104,105	0
3	NAG	G	301	14/15	0.68	0.11	86,94,104,107	0
3	NAG	A	301	14/15	0.71	0.12	77,81,86,90	0
4	SO4	B	302	5/5	0.81	0.14	72,80,95,95	0
4	SO4	D	302	5/5	0.81	0.09	78,80,97,99	0
4	SO4	E	303	5/5	0.84	0.17	69,73,81,86	0
4	SO4	A	302	5/5	0.87	0.15	58,61,65,82	0
4	SO4	G	302	5/5	0.88	0.12	61,64,76,79	0
3	NAG	F	301	14/15	0.92	0.10	31,49,58,67	0
3	NAG	B	301	14/15	0.92	0.09	32,44,52,53	0
4	SO4	C	301	5/5	0.92	0.14	62,63,76,83	0
3	NAG	D	301	14/15	0.94	0.07	31,45,57,61	0
3	NAG	H	301	14/15	0.94	0.06	34,50,53,67	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.