



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 20, 2016 – 10:08 AM EDT

PDB ID : 4YR6  
Title : Fab fragment of 5G6 in complex with epitope peptide  
Authors : Tao, Y.; Mo, X.; Li, R.  
Deposited on : 2015-03-14  
Resolution : 2.38 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 : 1.7.1 (RC1), CSD as537be (2016)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20027107  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0122  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : rb-20027107

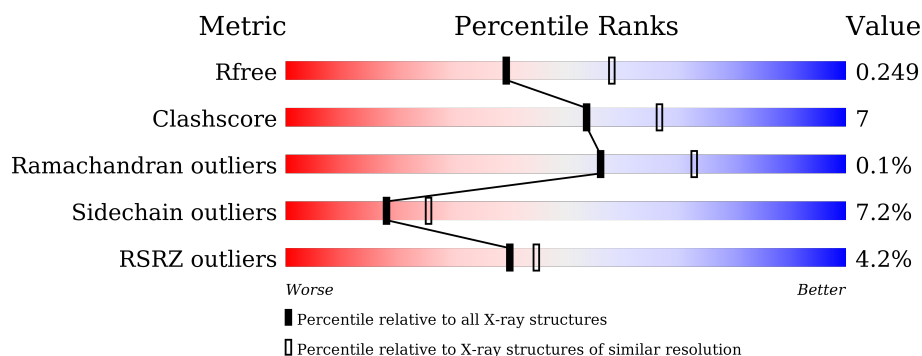
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.38 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	4019 (2.40-2.36)
Clashscore	102246	4595 (2.40-2.36)
Ramachandran outliers	100387	4520 (2.40-2.36)
Sidechain outliers	100360	4522 (2.40-2.36)
RSRZ outliers	91569	4034 (2.40-2.36)

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	221	<div> <div>2%</div> <div> <div></div> <div>80%</div> <div>14%</div> <div>• •</div> </div> </div>
1	D	221	<div> <div>8%</div> <div> <div></div> <div>79%</div> <div>15%</div> <div>• •</div> </div> </div>
2	B	214	<div> <div></div> <div> <div></div> <div>86%</div> <div>11%</div> <div>• •</div> </div> </div>
2	E	214	<div> <div>6%</div> <div> <div></div> <div>79%</div> <div>18%</div> <div>• •</div> </div> </div>
3	C	11	<div> <div></div> <div> <div></div> <div>45%</div> <div>45%</div> <div>9%</div> </div> </div>
3	F	11	<div> <div></div> <div> <div></div> <div>73%</div> <div>27%</div> </div> </div>

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 6914 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 heavy chain of 5G6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	215	Total	C	N	O	S	0	0	0
			1616	1032	262	316	6			
1	D	213	Total	C	N	O	S	0	0	0
			1581	1010	256	309	6			

- Molecule 2 is a protein called light chain of 5G6.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	212	Total	C	N	O	S	0	1	0
			1647	1033	276	332	6			
2	E	211	Total	C	N	O	S	0	0	0
			1606	1011	270	319	6			

- Molecule 3 is a protein called ACE-LYS-LEU-ARG-GLY-VAL-LEU-GLN-GLY-HIS-LEU.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	C	11	Total	C	N	O	0	0	0
			81	52	17	12			
3	F	11	Total	C	N	O	0	0	0
			81	52	17	12			

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	B	1	Total	C	O	0	0
			6	3	3		
4	E	1	Total	C	O	0	0
			6	3	3		

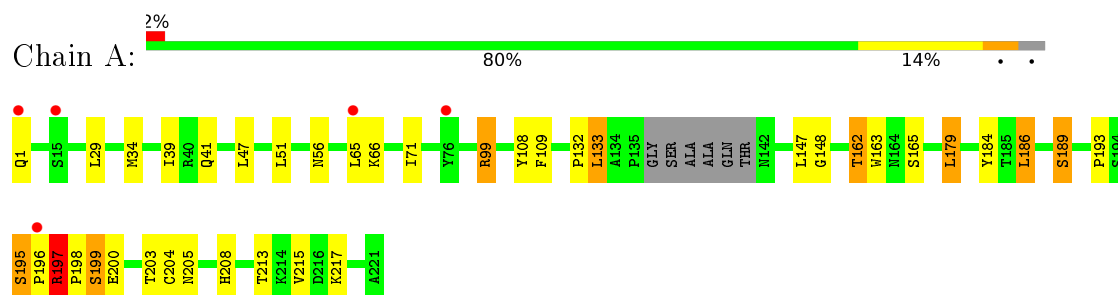
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	62	Total	O	0	0
			62	62		
5	B	80	Total	O	0	0
			80	80		
5	C	3	Total	O	0	0
			3	3		
5	D	70	Total	O	0	0
			70	70		
5	E	70	Total	O	0	0
			70	70		
5	F	5	Total	O	0	0
			5	5		

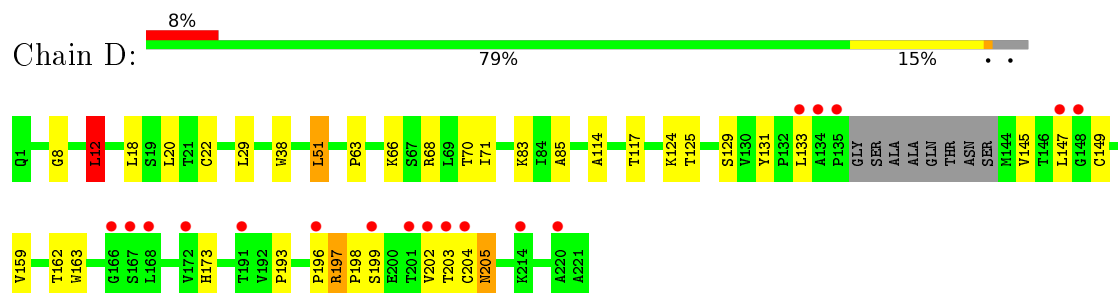
### 3 Residue-property plots

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 ( $\text{RSRZ} > 2$ ). 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.

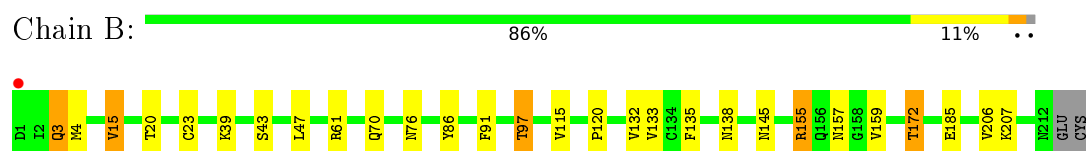
- Molecule 1: heavy chain of 5G6



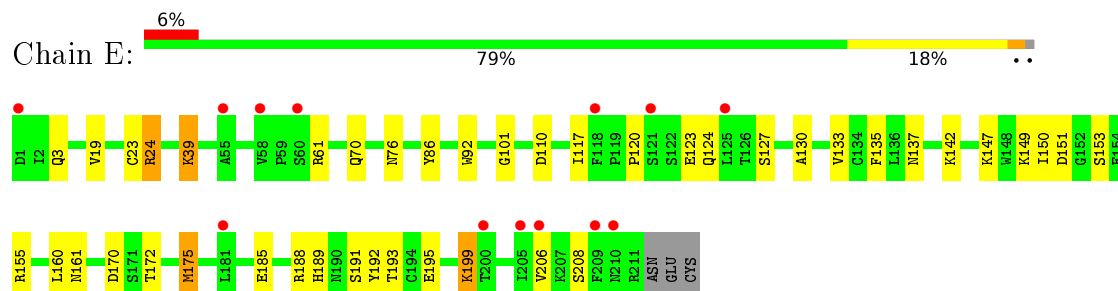
- Molecule 1: heavy chain of 5G6



- Molecule 2: light chain of 5G6



- Molecule 2: light chain of 5G6



- Molecule 3: ACE-LYS-LEU-ARG-GLY-VAL-LEU-GLN-GLY-HIS-LEU

Chain C:  45% 45% 9%



- Molecule 3: ACE-LYS-LEU-ARG-GLY-VAL-LEU-GLN-GLY-HIS-LEU

Chain F:  73% 27%



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	101.90Å 147.06Å 194.95Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	45.15 – 2.38 45.15 – 2.38	Depositor EDS
% Data completeness (in resolution range)	98.8 (45.15-2.38) 98.8 (45.15-2.38)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.55 (at 2.37Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.8.1_1168)	Depositor
R, $R_{free}$	0.211 , 0.251 0.208 , 0.249	Depositor DCC
$R_{free}$ test set	5649 reflections (5.07%)	DCC
Wilson B-factor (Å <sup>2</sup> )	42.4	Xtriage
Anisotropy	0.459	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 21.9	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.48$ , $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	0 of 58239 reflections	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	6914	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.18% 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

### 5.1 Standard geometry

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

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	0.43	0/1658	0.62	3/2274 (0.1%)
1	D	0.42	0/1623	0.64	1/2230 (0.0%)
2	B	0.45	0/1691	0.61	0/2299
2	E	0.44	0/1647	0.58	0/2243
3	C	0.38	0/79	1.26	1/104 (1.0%)
3	F	0.42	0/79	1.31	2/104 (1.9%)
All	All	0.43	0/6777	0.64	7/9254 (0.1%)

There are no bond length outliers.

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	C	0	ACE	O-C-N	-9.96	106.77	122.70
3	F	0	ACE	O-C-N	9.37	137.69	122.70
3	F	0	ACE	C-N-CA	-8.11	101.43	121.70
1	A	197	ARG	NE-CZ-NH2	5.93	123.27	120.30
1	D	12	LEU	CA-CB-CG	5.55	128.08	115.30
1	A	186	LEU	CA-CB-CG	5.28	127.44	115.30
1	A	99	ARG	NE-CZ-NH1	-5.26	117.67	120.30

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.



Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1616	0	1593	26	0
1	D	1581	0	1534	24	0
2	B	1647	0	1561	14	0
2	E	1606	0	1504	23	0
3	C	81	0	92	5	0
3	F	81	0	92	1	0
4	B	6	0	8	0	0
4	E	6	0	8	0	0
5	A	62	0	0	0	0
5	B	80	0	0	1	0
5	C	3	0	0	1	0
5	D	70	0	0	0	0
5	E	70	0	0	4	0
5	F	5	0	0	0	0
All	All	6914	0	6392	85	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 7.

All (85) 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:A:197:ARG:HG3	1:A:197:ARG:HH21	1.29	0.97
2:E:195:GLU:HG2	2:E:206:VAL:HG22	1.63	0.79
2:B:4:MET:HG2	2:B:97:THR:HG22	1.64	0.78
2:E:110:ASP:OD2	2:E:199:LYS:NZ	2.17	0.78
1:A:197:ARG:HD2	1:A:198:PRO:HA	1.65	0.78
1:A:132:PRO:HD3	1:A:217:LYS:HD3	1.68	0.76
1:D:197:ARG:HG3	1:D:197:ARG:HH21	1.52	0.74
2:E:185:GLU:OE2	2:E:189:HIS:NE2	2.22	0.72
1:A:197:ARG:HG3	1:A:197:ARG:NH2	2.02	0.71
1:D:173:HIS:NE2	2:E:137:ASN:OD1	2.24	0.69
2:E:151:ASP:HA	2:E:191:SER:HB3	1.73	0.69
1:A:56:ASN:HD21	3:C:10:LEU:HB3	1.59	0.68
1:D:197:ARG:HD2	1:D:198:PRO:HA	1.76	0.67
1:A:193:PRO:HB2	1:A:196:PRO:HD2	1.79	0.65
1:D:8:GLY:HA3	1:D:20:LEU:HD23	1.79	0.64
1:D:124:LYS:HD2	1:D:125:THR:H	1.63	0.63
1:D:162:THR:HG22	1:D:205:ASN:HB2	1.80	0.63
1:A:41:GLN:HB2	1:A:47:LEU:HD23	1.81	0.62
2:E:120:PRO:HG3	2:E:130:ALA:HB1	1.82	0.62
1:A:196:PRO:HA	1:A:200:GLU:HG3	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:150:ILE:O	2:E:153:SER:OG	2.18	0.61
1:A:162:THR:HG22	1:A:205:ASN:HB2	1.82	0.59
2:B:155:ARG:NH2	2:B:185:GLU:OE2	2.29	0.59
1:D:51:LEU:HD13	1:D:71:ILE:HD12	1.85	0.58
1:A:189:SER:HB2	2:B:135:PHE:CE2	2.42	0.55
1:D:163:TRP:CZ3	1:D:204:CYS:HB3	2.43	0.53
1:D:68:ARG:HD2	1:D:85:ALA:O	2.10	0.52
1:A:147:LEU:HD11	1:A:197:ARG:HG2	1.91	0.51
2:E:76:ASN:ND2	5:E:407:HOH:O	2.44	0.50
2:E:149:LYS:CB	2:E:193:THR:HB	2.41	0.50
1:D:196:PRO:HA	1:D:199:SER:HB2	1.94	0.50
3:C:4:GLY:H	3:C:7:GLN:HG2	1.78	0.49
1:A:195:SER:O	1:A:199:SER:HB3	2.13	0.49
1:D:149:CYS:HB2	1:D:163:TRP:CH2	2.47	0.49
1:D:193:PRO:O	1:D:196:PRO:HD2	2.13	0.48
1:A:39:ILE:HD11	1:A:109:PHE:CE2	2.48	0.48
1:A:163:TRP:CH2	1:A:204:CYS:HB3	2.48	0.48
1:A:51:LEU:HD11	1:A:71:ILE:HB	1.95	0.47
2:E:92:TRP:CE3	3:F:7:GLN:HG2	2.49	0.47
2:E:161:ASN:HB3	2:E:175:MET:HE3	1.96	0.47
1:D:70:THR:HB	1:D:83:LYS:HB2	1.96	0.47
1:D:205:ASN:OD1	1:D:205:ASN:N	2.47	0.46
2:E:150:ILE:HG12	2:E:192:TYR:CD1	2.50	0.46
2:B:155:ARG:HD2	2:B:157:ASN:O	2.16	0.46
2:E:172:THR:HG23	5:E:414:HOH:O	2.15	0.45
1:D:22:CYS:HB2	1:D:38:TRP:CZ2	2.51	0.45
1:A:163:TRP:CZ3	1:A:204:CYS:HB3	2.51	0.45
1:A:133:LEU:HB2	1:A:148:GLY:C	2.37	0.45
1:D:193:PRO:HB2	1:D:196:PRO:HD3	1.99	0.45
2:B:15:VAL:HG13	5:B:451:HOH:O	2.17	0.45
2:E:149:LYS:HA	2:E:153:SER:O	2.16	0.45
2:B:138:ASN:HA	2:B:172:THR:HG23	1.99	0.44
1:A:29:LEU:HD23	1:A:29:LEU:HA	1.85	0.44
1:D:29:LEU:HA	1:D:29:LEU:HD23	1.84	0.44
1:D:131:TYR:CE2	2:E:124:GLN:HG3	2.53	0.44
1:D:147:LEU:HD13	1:D:202:VAL:HG11	2.00	0.44
2:B:47:LEU:HD11	2:B:86:TYR:HE2	1.83	0.43
1:D:163:TRP:CE3	1:D:204:CYS:HB3	2.53	0.43
2:B:206:VAL:O	2:B:207:LYS:HD2	2.18	0.43
1:A:108:TYR:HA	2:B:91:PHE:CZ	2.53	0.43
2:E:170:ASP:OD1	2:E:172:THR:HG22	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:189:SER:HB2	2:B:135:PHE:CD2	2.54	0.43
1:A:193:PRO:O	1:A:196:PRO:HD2	2.19	0.43
1:D:12:LEU:HD21	1:D:18:LEU:HA	2.00	0.43
2:B:3:GLN:HA	2:B:97:THR:HG21	2.00	0.43
3:C:4:GLY:H	3:C:7:GLN:CG	2.31	0.43
1:A:208:HIS:HB3	1:A:213:THR:HB	1.99	0.43
3:C:6:LEU:HD23	3:C:6:LEU:HA	1.93	0.43
1:A:1:GLN:NE2	1:D:114:ALA:HB2	2.34	0.42
1:A:193:PRO:HB2	1:A:196:PRO:CD	2.47	0.42
2:B:120:PRO:HD3	2:B:132:VAL:HG22	2.01	0.42
2:E:39:LYS:NZ	5:E:411:HOH:O	2.51	0.42
2:E:61:ARG:HD2	2:E:76:ASN:O	2.20	0.42
1:A:34:MET:SD	1:A:99:ARG:HD2	2.60	0.42
1:D:197:ARG:CG	1:D:197:ARG:HH21	2.25	0.42
3:C:3:ARG:HD2	5:C:101:HOH:O	2.19	0.41
1:D:63:PRO:HA	1:D:66:LYS:HB2	2.02	0.41
2:E:135:PHE:HB3	2:E:137:ASN:ND2	2.34	0.41
2:E:160:LEU:HA	2:E:160:LEU:HD23	1.82	0.41
2:E:86:TYR:O	2:E:101:GLY:HA2	2.20	0.41
2:B:115:VAL:HA	2:B:135:PHE:O	2.21	0.41
2:B:61:ARG:HD2	2:B:76:ASN:O	2.21	0.41
2:E:76:ASN:OD1	5:E:401:HOH:O	2.22	0.40
1:A:179:LEU:HD13	1:A:184:TYR:CE1	2.56	0.40
2:E:24:ARG:HG3	2:E:70:GLN:OE1	2.21	0.40

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all 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	211/221 (96%)	203 (96%)	7 (3%)	1 (0%)	34 46

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	209/221 (95%)	198 (95%)	11 (5%)	0	100	100
2	B	211/214 (99%)	203 (96%)	8 (4%)	0	100	100
2	E	209/214 (98%)	203 (97%)	6 (3%)	0	100	100
3	C	9/11 (82%)	9 (100%)	0	0	100	100
3	F	9/11 (82%)	9 (100%)	0	0	100	100
All	All	858/892 (96%)	825 (96%)	32 (4%)	1 (0%)	56	73

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	165	SER

### 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	186/191 (97%)	174 (94%)	12 (6%)	21	30
1	D	178/191 (93%)	168 (94%)	10 (6%)	26	38
2	B	184/188 (98%)	171 (93%)	13 (7%)	18	26
2	E	174/188 (93%)	158 (91%)	16 (9%)	11	15
3	C	8/8 (100%)	7 (88%)	1 (12%)	6	6
3	F	8/8 (100%)	7 (88%)	1 (12%)	6	6
All	All	738/774 (95%)	685 (93%)	53 (7%)	18	25

All (53) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	65	LEU
1	A	66	LYS
1	A	133	LEU
1	A	162	THR
1	A	179	LEU

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Mol	Chain	Res	Type
1	A	186	LEU
1	A	189	SER
1	A	195	SER
1	A	197	ARG
1	A	199	SER
1	A	203	THR
1	A	215	VAL
2	B	3	GLN
2	B	15	VAL
2	B	20	THR
2	B	23	CYS
2	B	39	LYS
2	B	43	SER
2	B	70	GLN
2	B	97	THR
2	B	133	VAL
2	B	145	ASN
2	B	155	ARG
2	B	159	VAL
2	B	172	THR
3	C	7	GLN
1	D	12	LEU
1	D	51	LEU
1	D	117	THR
1	D	129	SER
1	D	133	LEU
1	D	145	VAL
1	D	159	VAL
1	D	197	ARG
1	D	203	THR
1	D	205	ASN
2	E	3	GLN
2	E	19	VAL
2	E	23	CYS
2	E	24	ARG
2	E	39	LYS
2	E	117	ILE
2	E	123	GLU
2	E	127	SER
2	E	133	VAL
2	E	142	LYS
2	E	147	LYS

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Mol	Chain	Res	Type
2	E	155	ARG
2	E	175	MET
2	E	188	ARG
2	E	199	LYS
2	E	208	SER
3	F	10	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
2	E	76	ASN
2	E	161	ASN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

2 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	GOL	B	301	-	5,5,5	0.29	0	5,5,5	0.36	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z  > 2$	Counts	RMSZ	$\# Z  > 2$
4	GOL	E	301	-	5,5,5	0.33	0	5,5,5	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
4	GOL	B	301	-	-	0/4/4/4	0/0/0/0
4	GOL	E	301	-	-	0/4/4/4	0/0/0/0

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.

No monomer is involved in short contacts.

## 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	215/221 (97%)	0.21	5 (2%) 64 67	15, 32, 53, 66	0
1	D	213/221 (96%)	0.34	18 (8%) 13 15	12, 31, 70, 84	0
2	B	212/214 (99%)	-0.01	1 (0%) 91 92	15, 29, 44, 54	0
2	E	211/214 (98%)	0.50	13 (6%) 24 28	12, 35, 68, 75	0
3	C	10/11 (90%)	0.63	0 100 100	22, 27, 29, 30	0
3	F	10/11 (90%)	-0.21	0 100 100	21, 25, 34, 35	0
All	All	871/892 (97%)	0.26	37 (4%) 40 45	12, 31, 64, 84	0

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	147	LEU	6.1
2	E	1	ASP	5.7
2	E	206	VAL	5.0
1	D	167	SER	4.5
1	D	168	LEU	4.1
2	E	209	PHE	4.1
1	D	172	VAL	3.8
2	B	1	ASP	3.7
1	D	191	THR	3.4
1	A	76	TYR	3.2
1	D	202	VAL	3.0
1	D	199	SER	3.0
1	D	196	PRO	2.9
2	E	181	LEU	2.9
1	D	201	THR	2.8
2	E	210	ASN	2.7
1	A	1	GLN	2.7
2	E	118	PHE	2.6
2	E	58	VAL	2.5

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Mol	Chain	Res	Type	RSRZ
1	D	134	ALA	2.5
1	D	135	PRO	2.4
1	D	166	GLY	2.3
1	D	203	THR	2.3
1	D	220	ALA	2.3
2	E	200	THR	2.3
1	D	204	CYS	2.3
1	D	148	GLY	2.3
2	E	55	ALA	2.3
2	E	205	ILE	2.2
1	D	133	LEU	2.2
2	E	121	SER	2.2
1	A	65	LEU	2.2
1	D	214	LYS	2.1
1	A	196	PRO	2.1
2	E	125	LEU	2.0
2	E	60	SER	2.0
1	A	15	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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
4	GOL	B	301	6/6	0.87	0.16	-	35,44,50,54	0
4	GOL	E	301	6/6	0.94	0.09	-	28,35,38,39	0

## 6.5 Other polymers

There are no such residues in this entry.