



# wwPDB X-ray Structure Validation Summary Report

Jun 23, 2024 – 11:30 AM EDT

PDB ID : 5N2K  
Title : Structure of unbound Briakinumab FAb  
Authors : Bloch, Y.; Savvides, S.N.  
Deposited on : 2017-02-07  
Resolution : 2.22 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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) : 1.13  
EDS : 2.37.1  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.37.1

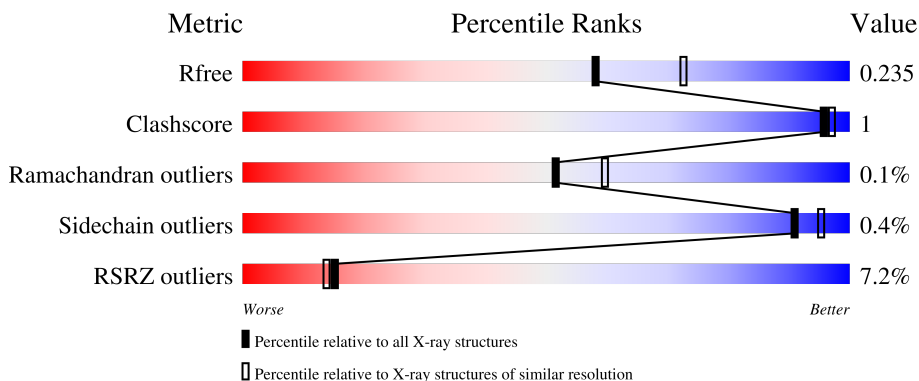
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.22 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))
$R_{free}$	130704	5912 (2.24-2.20)
Clashscore	141614	6646 (2.24-2.20)
Ramachandran outliers	138981	6543 (2.24-2.20)
Sidechain outliers	138945	6544 (2.24-2.20)
RSRZ outliers	127900	5797 (2.24-2.20)

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	245	
1	C	245	
1	E	245	
1	I	245	
1	K	245	

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Mol	Chain	Length	Quality of chain
1	M	245	<p>4% 86% 13%</p>
1	O	245	<p>9% 83% 14%</p>
2	B	289	<p>1% 71% 27%</p>
2	D	289	<p>7% 74% 23%</p>
2	F	289	<p>2% 71% 27%</p>
2	H	289	<p>17% 64% 33%</p>
2	L	289	<p>5% 70% 28%</p>
2	N	289	<p>4% 70% 28%</p>
2	P	289	<p>6% 68% 28%</p>
3	G	245	<p>10% 83% 13%</p>
4	J	289	<p>6% 70% 27%</p>

## 2 Entry composition [i](#)

There are 6 unique types of molecules in this entry. The entry contains 50584 atoms, of which 24272 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 Briakinumab FAb light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
1	A	216	Total 3271	C 1043	H 1605	N 280	O 338	S 5	0	7	0
1	C	215	Total 3106	C 997	H 1521	N 262	O 321	S 5	0	0	0
1	E	214	Total 3153	C 1001	H 1554	N 270	O 324	S 4	0	0	0
1	I	214	Total 3299	C 1050	H 1624	N 284	O 337	S 4	0	10	0
1	K	214	Total 3082	C 989	H 1509	N 262	O 318	S 4	0	0	0
1	M	212	Total 3035	C 977	H 1477	N 259	O 318	S 4	0	0	0
1	O	210	Total 3026	C 974	H 1476	N 255	O 317	S 4	0	0	0

- Molecule 2 is a protein called Briakinumab FAb heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
2	B	212	Total 3138	C 1007	H 1539	N 274	O 308	S 10	0	5	0
2	D	223	Total 3253	C 1044	H 1594	N 282	O 323	S 10	0	3	0
2	F	210	Total 3101	C 995	H 1524	N 270	O 303	S 9	0	3	0
2	H	193	Total 2731	C 897	H 1309	N 248	O 269	S 8	0	2	0
2	L	209	Total 3096	C 993	H 1524	N 268	O 303	S 8	0	2	0
2	N	209	Total 3076	C 987	H 1510	N 270	O 301	S 8	0	2	0
2	P	207	Total 3048	C 981	H 1490	N 268	O 301	S 8	0	2	0

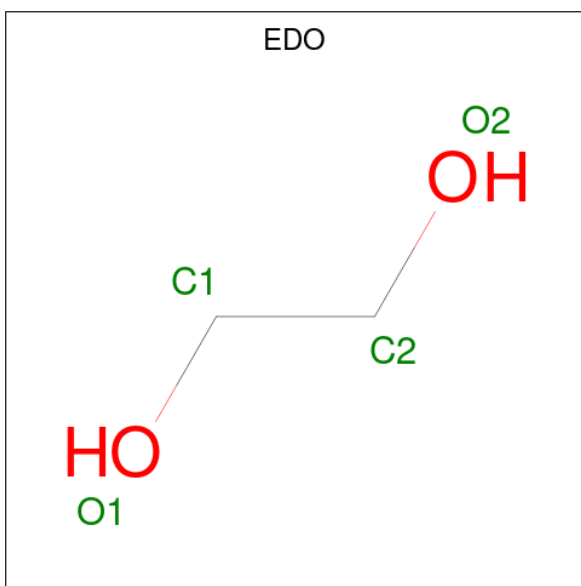
- Molecule 3 is a protein called Briakinumab FAb light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
3	G	213	3061	982	1496	259	319	5	0	2	0

- Molecule 4 is a protein called Briakinumab FAb heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	H	N	O				S
4	J	211	3093	994	1514	270	307	8	0	2	0

- Molecule 5 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C<sub>2</sub>H<sub>6</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
			Total	C	H			O
5	I	1	10	2	6	2	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	138	Total O 138 138	0	0
6	B	84	Total O 84 84	0	0
6	C	59	Total O 59 59	0	0
6	D	44	Total O 44 44	0	0

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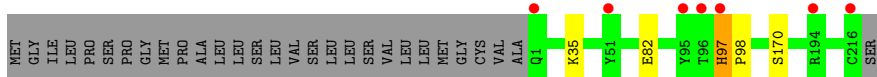
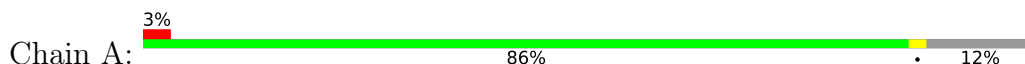
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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	E	72	Total O 72 72	0	0
6	F	60	Total O 60 60	0	0
6	G	67	Total O 67 67	0	0
6	H	35	Total O 35 35	0	0
6	I	103	Total O 103 103	0	0
6	J	36	Total O 36 36	0	0
6	K	28	Total O 28 28	0	0
6	L	56	Total O 56 56	0	0
6	M	37	Total O 37 37	0	0
6	N	56	Total O 56 56	0	0
6	P	63	Total O 63 63	0	0
6	O	67	Total O 67 67	0	0

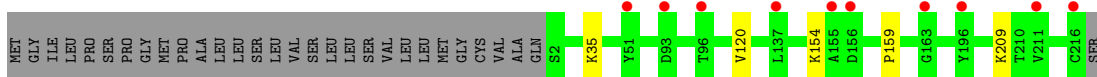
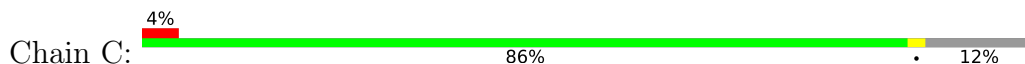
### 3 Residue-property plots [i](#)

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.

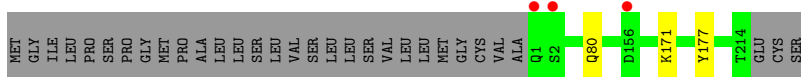
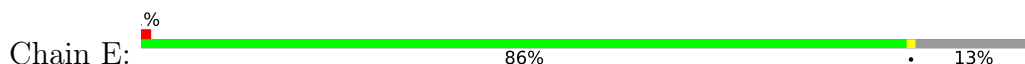
- Molecule 1: Briakinumab FAb light chain



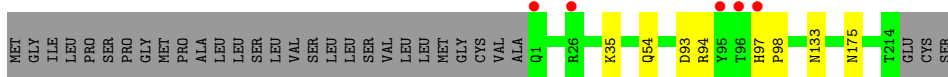
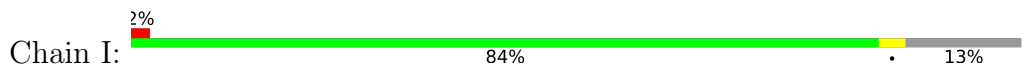
- Molecule 1: Briakinumab FAb light chain



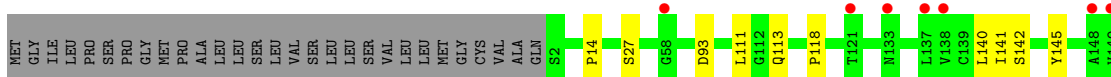
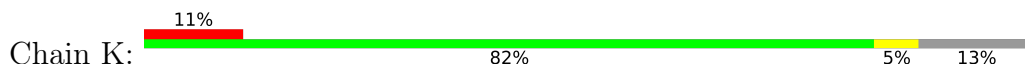
- Molecule 1: Briakinumab FAb light chain



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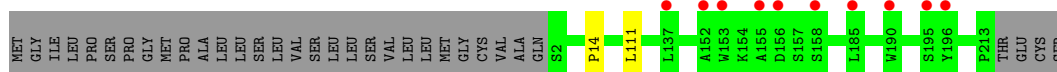
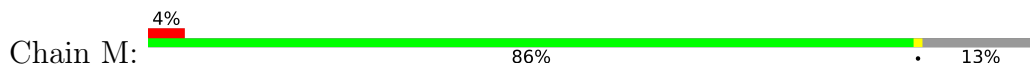


- Molecule 1: Briakinumab FAb light chain

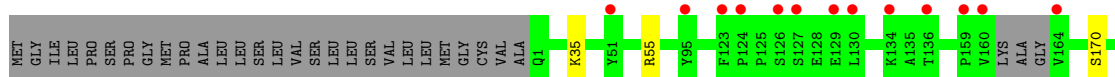
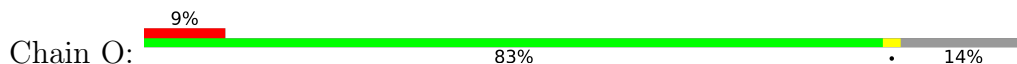




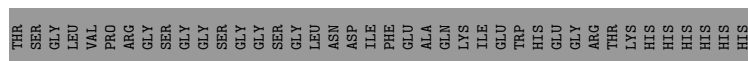
- Molecule 1: Briakinumab FAb light chain



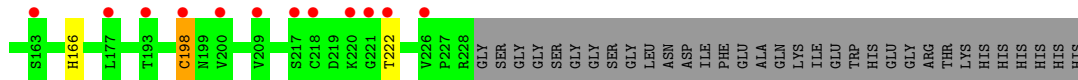
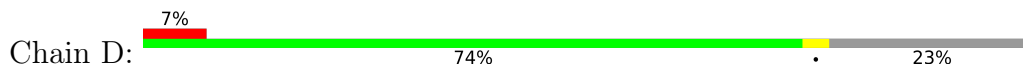
- Molecule 1: Briakinumab FAb light chain



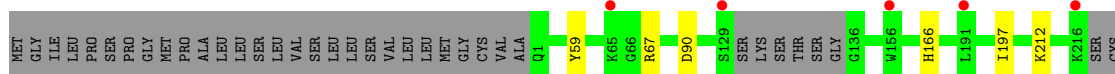
- Molecule 2: Briakinumab FAb heavy chain



- Molecule 2: Briakinumab FAb heavy chain

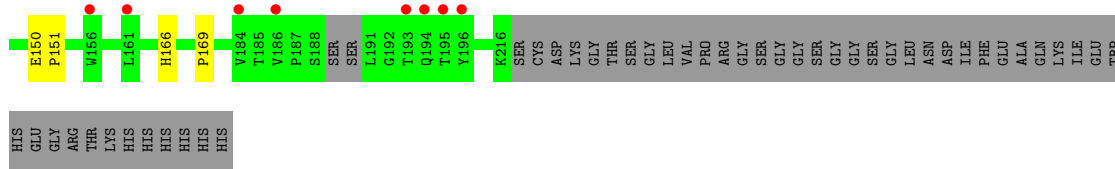


- Molecule 2: Briakinumab FAb heavy chain

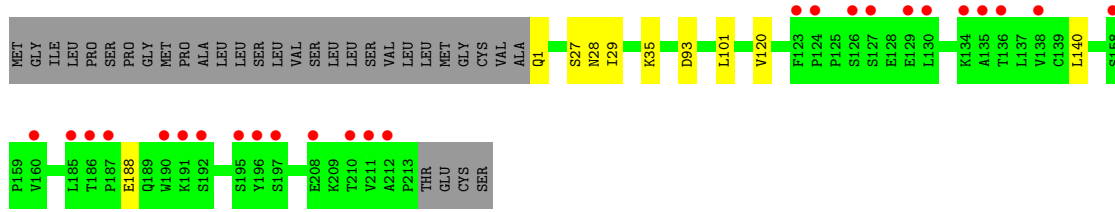
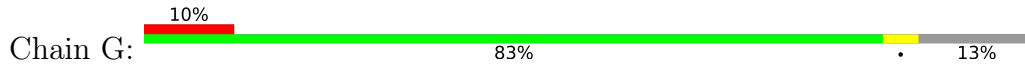




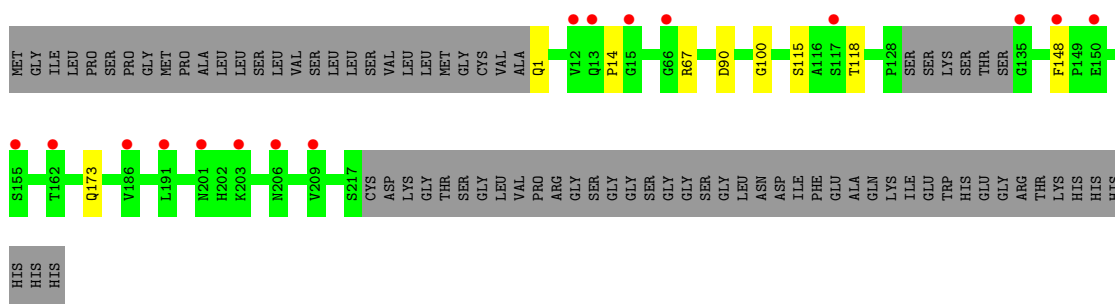




● Molecule 3: Briakinumab FAB light chain



● Molecule 4: Briakinumab FAB heavy chain



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	85.25Å 172.54Å 138.16Å 90.00° 106.16° 90.00°	Depositor
Resolution (Å)	81.88 – 2.22 81.88 – 2.22	Depositor EDS
% Data completeness (in resolution range)	94.5 (81.88-2.22) 94.5 (81.88-2.22)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.05 (at 2.22Å)	Xtrriage
Refinement program	PHENIX (dev_2614: ???)	Depositor
R, $R_{free}$	0.204 , 0.234 0.204 , 0.235	Depositor DCC
$R_{free}$ test set	2154 reflections (1.21%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	42.5	Xtrriage
Anisotropy	0.308	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 46.5	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	0.014 for h,-k,-h-l	Xtrriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	50584	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	70.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 31.57 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.0840e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<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

### 5.1 Standard geometry

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

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.27	0/1714	0.47	0/2345
1	C	0.25	0/1625	0.45	0/2226
1	E	0.25	0/1639	0.46	0/2242
1	I	0.27	0/1735	0.48	0/2373
1	K	0.26	0/1613	0.46	0/2211
1	M	0.26	0/1598	0.46	0/2192
1	O	0.26	0/1589	0.46	0/2178
2	B	0.27	0/1658	0.48	0/2256
2	D	0.26	0/1711	0.47	0/2328
2	F	0.26	0/1627	0.47	0/2215
2	H	0.26	0/1465	0.48	0/1993
2	L	0.28	0/1620	0.49	0/2203
2	N	0.26	0/1614	0.47	0/2196
2	P	0.26	0/1605	0.48	0/2183
3	G	0.26	0/1606	0.46	0/2203
4	J	0.26	0/1620	0.48	0/2207
All	All	0.26	0/26039	0.47	0/35551

There are no bond length outliers.

There are no bond angle outliers.

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	1666	1605	1599	5	0
1	C	1585	1521	1514	3	0
1	E	1599	1554	1552	2	0
1	I	1675	1624	1607	7	0
1	K	1573	1509	1505	7	0
1	M	1558	1477	1475	1	0
1	O	1550	1476	1475	5	0
2	B	1599	1539	1517	3	1
2	D	1659	1594	1576	4	1
2	F	1577	1524	1508	3	1
2	H	1422	1309	1294	3	1
2	L	1572	1524	1508	4	1
2	N	1566	1510	1496	3	0
2	P	1558	1490	1470	6	1
3	G	1565	1496	1479	6	0
4	J	1579	1514	1496	5	0
5	I	4	6	6	0	0
6	A	138	0	0	0	0
6	B	84	0	0	0	0
6	C	59	0	0	0	0
6	D	44	0	0	0	0
6	E	72	0	0	0	0
6	F	60	0	0	0	0
6	G	67	0	0	0	0
6	H	35	0	0	0	1
6	I	103	0	0	0	0
6	J	36	0	0	1	0
6	K	28	0	0	0	0
6	L	56	0	0	0	1
6	M	37	0	0	0	0
6	N	56	0	0	0	0
6	O	67	0	0	1	0
6	P	63	0	0	0	0
All	All	26312	24272	24077	54	4

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 1.

The worst 5 of 54 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:I:133:ASN:ND2	2:L:72:ARG:O	2.30	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:67:ARG:NH2	2:F:90:ASP:OD2	2.35	0.57
4:J:67:ARG:NH2	4:J:90:ASP:OD2	2.33	0.57
4:J:173:GLN:NE2	6:J:302:HOH:O	2.39	0.55
2:F:197:ILE:HD13	2:F:212:LYS:HA	1.89	0.53

All (4) 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:D:59:TYR:OH	2:P:59:TYR:OH[2_445]	1.91	0.29
2:B:59:TYR:OH	2:F:59:TYR:OH[2_454]	1.92	0.28
2:H:59:TYR:OH	2:L:59:TYR:OH[2_445]	1.95	0.25
6:H:329:HOH:O	6:L:330:HOH:O[2_445]	2.12	0.08

## 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	221/245 (90%)	210 (95%)	9 (4%)	2 (1%)	17	15
1	C	213/245 (87%)	205 (96%)	8 (4%)	0	100	100
1	E	212/245 (86%)	204 (96%)	8 (4%)	0	100	100
1	I	222/245 (91%)	212 (96%)	10 (4%)	0	100	100
1	K	212/245 (86%)	205 (97%)	7 (3%)	0	100	100
1	M	210/245 (86%)	202 (96%)	8 (4%)	0	100	100
1	O	206/245 (84%)	199 (97%)	7 (3%)	0	100	100
2	B	213/289 (74%)	210 (99%)	3 (1%)	0	100	100
2	D	222/289 (77%)	218 (98%)	3 (1%)	1 (0%)	29	30
2	F	209/289 (72%)	206 (99%)	3 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	H	187/289 (65%)	183 (98%)	4 (2%)	0	100	100
2	L	207/289 (72%)	204 (99%)	3 (1%)	0	100	100
2	N	207/289 (72%)	204 (99%)	3 (1%)	0	100	100
2	P	203/289 (70%)	200 (98%)	3 (2%)	0	100	100
3	G	213/245 (87%)	206 (97%)	7 (3%)	0	100	100
4	J	209/289 (72%)	205 (98%)	4 (2%)	0	100	100
All	All	3366/4272 (79%)	3273 (97%)	90 (3%)	3 (0%)	51	60

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	222	THR
1	A	97[A]	HIS
1	A	97[B]	HIS

### 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	186/207 (90%)	186 (100%)	0	100	100
1	C	173/207 (84%)	173 (100%)	0	100	100
1	E	179/207 (86%)	179 (100%)	0	100	100
1	I	189/207 (91%)	189 (100%)	0	100	100
1	K	172/207 (83%)	172 (100%)	0	100	100
1	M	170/207 (82%)	170 (100%)	0	100	100
1	O	171/207 (83%)	171 (100%)	0	100	100
2	B	179/240 (75%)	178 (99%)	1 (1%)	86	92
2	D	183/240 (76%)	179 (98%)	4 (2%)	52	64
2	F	174/240 (72%)	173 (99%)	1 (1%)	86	92
2	H	146/240 (61%)	145 (99%)	1 (1%)	84	91

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	L	174/240 (72%)	172 (99%)	2 (1%)	73	84
2	N	173/240 (72%)	170 (98%)	3 (2%)	60	73
2	P	170/240 (71%)	169 (99%)	1 (1%)	86	92
3	G	171/206 (83%)	171 (100%)	0	100	100
4	J	173/239 (72%)	173 (100%)	0	100	100
All	All	2783/3574 (78%)	2770 (100%)	13 (0%)	91	94

5 of 13 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	L	172	LEU
2	L	211	LYS
2	P	166	HIS
2	N	201	ASN
2	N	211	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
2	D	201	ASN
1	K	199	GLN
2	L	173	GLN
2	L	206	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](#)

2 non-standard protein/DNA/RNA residues 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	PCA	J	1	4	7,8,9	1.77	1 (14%)	9,10,12	1.63	3 (33%)
3	PCA	G	1	3	7,8,9	1.77	1 (14%)	9,10,12	1.70	4 (44%)

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	PCA	J	1	4	-	0/0/11/13	0/1/1/1
3	PCA	G	1	3	-	0/0/11/13	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	G	1	PCA	CD-N	4.55	1.46	1.34
4	J	1	PCA	CD-N	4.54	1.46	1.34

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	G	1	PCA	OE-CD-CG	-2.58	122.26	126.76
4	J	1	PCA	OE-CD-CG	-2.49	122.43	126.76
3	G	1	PCA	CB-CA-N	2.20	109.61	103.30
3	G	1	PCA	CB-CA-C	-2.16	109.73	112.70
4	J	1	PCA	CB-CA-N	2.14	109.44	103.30

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

1 ligand is 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	$\# Z  > 2$
5	EDO	I	301	-	3,3,3	0.47	0	2,2,2	0.25	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
5	EDO	I	301	-	-	0/1/1/1	-

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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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	216/245 (88%)	0.46	7 (3%) 47 45	26, 41, 71, 139	0
1	C	215/245 (87%)	0.53	10 (4%) 31 29	28, 60, 114, 144	0
1	E	214/245 (87%)	0.37	3 (1%) 75 73	30, 50, 86, 111	0
1	I	214/245 (87%)	0.41	5 (2%) 60 58	28, 42, 65, 121	0
1	K	214/245 (87%)	0.83	26 (12%) 4 3	35, 71, 132, 152	0
1	M	212/245 (86%)	0.54	10 (4%) 31 29	31, 65, 125, 157	0
1	O	210/245 (85%)	0.76	23 (10%) 5 4	30, 58, 144, 170	0
2	B	212/289 (73%)	0.50	3 (1%) 75 73	27, 50, 101, 152	0
2	D	223/289 (77%)	0.67	19 (8%) 10 9	35, 70, 105, 143	0
2	F	210/289 (72%)	0.48	5 (2%) 59 57	32, 57, 108, 134	0
2	H	193/289 (66%)	1.34	48 (24%) 0 0	33, 70, 162, 191	0
2	L	209/289 (72%)	0.61	15 (7%) 15 14	30, 64, 110, 138	0
2	N	209/289 (72%)	0.61	12 (5%) 23 22	32, 65, 117, 131	0
2	P	207/289 (71%)	0.81	18 (8%) 10 8	28, 57, 135, 158	0
3	G	212/245 (86%)	0.91	25 (11%) 4 3	29, 55, 136, 162	0
4	J	210/289 (72%)	0.71	16 (7%) 13 12	37, 63, 107, 148	0
All	All	3380/4272 (79%)	0.65	245 (7%) 15 14	26, 57, 125, 191	0

The worst 5 of 245 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	H	170	ALA	9.3
1	O	196	TYR	8.6
2	H	169	PRO	7.3
2	P	195	THR	7.2
2	H	142	CYS	7.2

## 6.2 Non-standard residues in protein, DNA, RNA chains [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	PCA	G	1	8/9	0.80	0.30	116,124,146,149	0
4	PCA	J	1	8/9	0.87	0.17	68,77,92,92	0

## 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
5	EDO	I	301	4/4	0.90	0.18	44,59,65,71	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.