



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 15, 2017 – 12:33 am GMT

PDB ID : 5CZX  
Title : Crystal structure of Notch3 NRR in complex with 20358 Fab  
Authors : Hu, T.; Fryer, C.; Chopra, R.; Clark, K.  
Deposited on : 2015-08-01  
Resolution : 2.10 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467  
Mogul : 1.7.2 (RC1), CSD as538be (2017)  
Xtriage (Phenix) : 1.9-1692  
EDS : trunk28683  
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : recalc28949

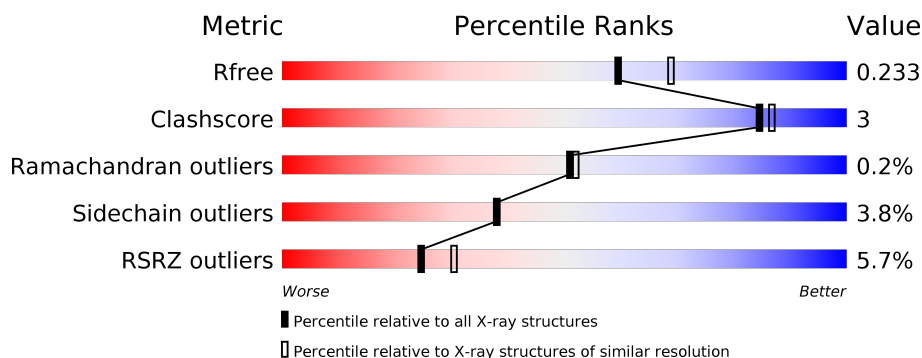
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.10 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	100719	4243 (2.10-2.10)
Clashscore	112137	4788 (2.10-2.10)
Ramachandran outliers	110173	4740 (2.10-2.10)
Sidechain outliers	110143	4741 (2.10-2.10)
RSRZ outliers	101464	4275 (2.10-2.10)

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	271	<div> <div>11%</div> <div>79% 5% 16%</div> </div>
1	B	271	<div> <div>12%</div> <div>73% 10% 16%</div> </div>
2	C	226	<div> <div>%</div> <div>88% 6% 5%</div> </div>
2	H	226	<div> <div>%</div> <div>88% 6% 5%</div> </div>
3	D	214	<div> <div>3%</div> <div>88% 12%</div> </div>
3	L	214	<div> <div></div> <div>89% 9% .</div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	NAG	A	1701	-	-	-	X
4	NAG	B	1701	-	-	-	X
6	EDO	A	1705	-	-	-	X
6	EDO	B	1705	-	-	-	X
6	EDO	B	1706	-	-	-	X
7	CL	H	301	-	-	-	X

## 2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 10929 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 Neurogenic locus notch homolog protein 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	227	Total	C	N	O	S	0	0	0
			1752	1076	320	334	22			
1	B	227	Total	C	N	O	S	0	0	0
			1752	1076	320	334	22			

There are 16 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1641	GLY	-	expression tag	UNP Q9UM47
A	1642	SER	-	expression tag	UNP Q9UM47
A	1643	HIS	-	expression tag	UNP Q9UM47
A	1644	HIS	-	expression tag	UNP Q9UM47
A	1645	HIS	-	expression tag	UNP Q9UM47
A	1646	HIS	-	expression tag	UNP Q9UM47
A	1647	HIS	-	expression tag	UNP Q9UM47
A	1648	HIS	-	expression tag	UNP Q9UM47
B	1641	GLY	-	expression tag	UNP Q9UM47
B	1642	SER	-	expression tag	UNP Q9UM47
B	1643	HIS	-	expression tag	UNP Q9UM47
B	1644	HIS	-	expression tag	UNP Q9UM47
B	1645	HIS	-	expression tag	UNP Q9UM47
B	1646	HIS	-	expression tag	UNP Q9UM47
B	1647	HIS	-	expression tag	UNP Q9UM47
B	1648	HIS	-	expression tag	UNP Q9UM47

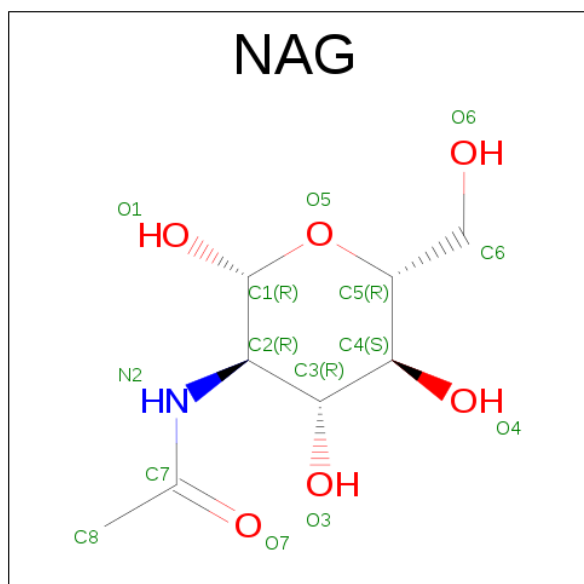
- Molecule 2 is a protein called 20358 Fab heavy chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	214	Total	C	N	O	S	0	0	0
			1610	1018	269	316	7			
2	H	215	Total	C	N	O	S	0	0	0
			1614	1020	270	317	7			

- Molecule 3 is a protein called 20358 Fab light chain.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	D	213	Total	C	N	O	S	0	0	0
			1637	1025	273	334	5			
3	L	213	Total	C	N	O	S	0	0	0
			1637	1025	273	334	5			

- Molecule 4 is N-ACETYL-D-GLUCOSAMINE (three-letter code: NAG) (formula:  $C_8H_{15}NO_6$ ).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	N	O	0	0
			14	8	1	5		
4	B	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 5 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	3	Total	Ca	0	0
			3	3		
5	A	3	Total	Ca	0	0
			3	3		

- Molecule 6 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula:  $C_2H_6O_2$ ).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total	C	O	0	0
			4	2	2		
6	A	1	Total	C	O	0	0
			4	2	2		
6	A	1	Total	C	O	0	0
			4	2	2		
6	B	1	Total	C	O	0	0
			4	2	2		
6	B	1	Total	C	O	0	0
			4	2	2		
6	C	1	Total	C	O	0	0
			4	2	2		
6	D	1	Total	C	O	0	0
			4	2	2		
6	D	1	Total	C	O	0	0
			4	2	2		
6	H	1	Total	C	O	0	0
			4	2	2		
6	L	1	Total	C	O	0	0
			4	2	2		

- Molecule 7 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	H	1	Total	Cl	0	0
			1	1		
7	L	1	Total	Cl	0	0
			1	1		

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	C	1	Total	Cl	0	0
			1	1		

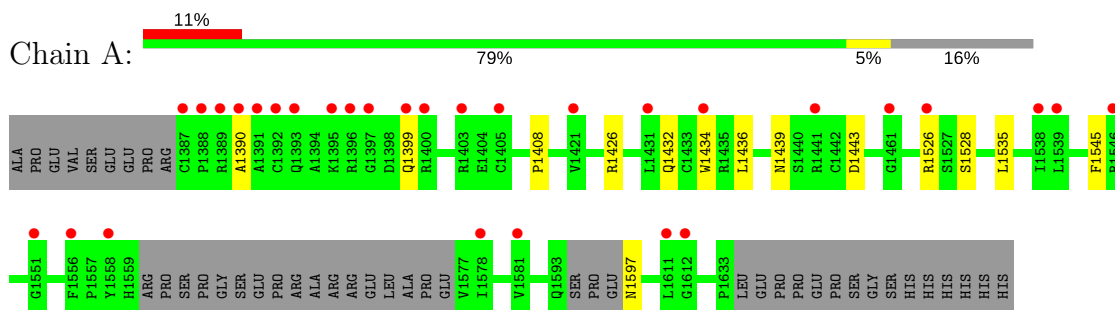
- Molecule 8 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	114	Total	O	0	0
			114	114		
8	B	121	Total	O	0	0
			121	121		
8	C	153	Total	O	0	0
			153	153		
8	D	154	Total	O	0	0
			154	154		
8	H	144	Total	O	0	0
			144	144		
8	L	164	Total	O	0	0
			164	164		

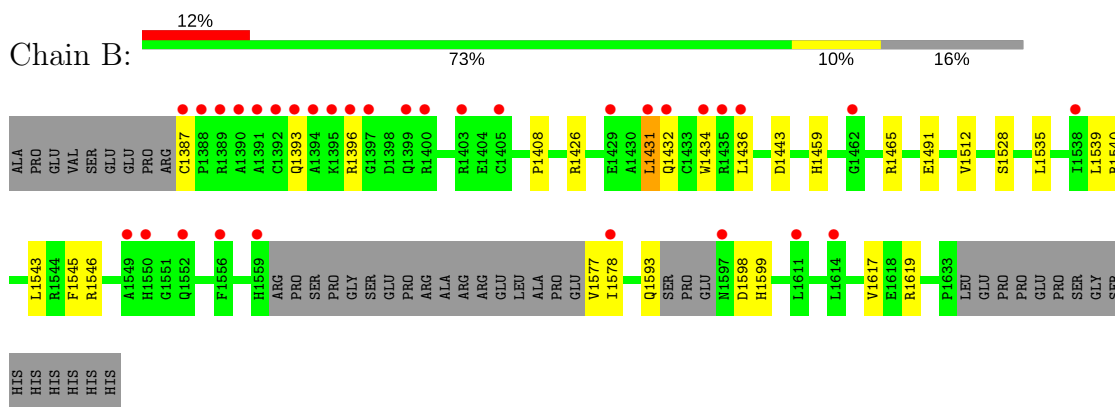
### 3 Residue-property plots

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

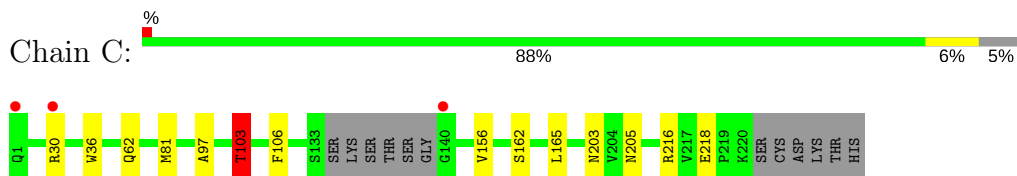
#### • Molecule 1: Neurogenic locus notch homolog protein 3



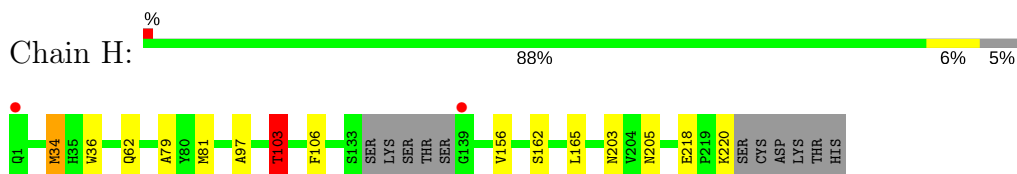
#### • Molecule 1: Neurogenic locus notch homolog protein 3



#### • Molecule 2: 20358 Fab heavy chain

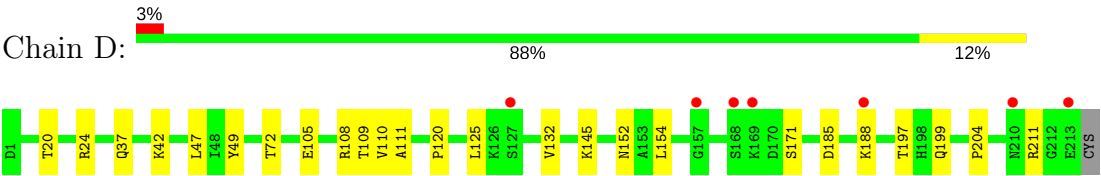


#### • Molecule 2: 20358 Fab heavy chain

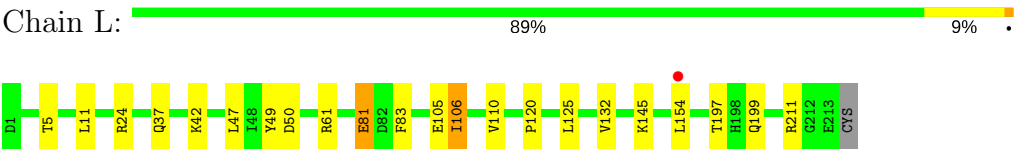




● Molecule 3: 20358 Fab light chain



● Molecule 3: 20358 Fab light chain



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	88.34Å 123.86Å 150.57Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.99 – 2.10 29.57 – 2.10	Depositor EDS
% Data completeness (in resolution range)	99.2 (29.99-2.10) 99.1 (29.57-2.10)	Depositor EDS
$R_{merge}$	0.08	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.62 (at 2.10Å)	Xtriage
Refinement program	BUSTER 2.11.2	Depositor
R, $R_{free}$	0.190 , 0.226 0.196 , 0.233	Depositor DCC
$R_{free}$ test set	4809 reflections (5.27%)	DCC
Wilson B-factor (Å <sup>2</sup> )	28.2	Xtriage
Anisotropy	0.515	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 55.0	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	10929	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	37.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 22.02 % 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 6.2160e-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 [i](#)

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

Bond lengths and bond angles in the following residue types are not validated in this section: CA, CL, EDO, 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	0.49	0/1790	0.70	0/2427
1	B	0.50	0/1790	0.70	0/2427
2	C	0.51	0/1650	0.68	1/2249 (0.0%)
2	H	0.53	0/1654	0.69	1/2254 (0.0%)
3	D	0.50	0/1672	0.69	0/2270
3	L	0.53	0/1672	0.72	0/2270
All	All	0.51	0/10228	0.70	2/13897 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	H	103	THR	CB-CA-C	-6.52	94.00	111.60
2	C	103	THR	CB-CA-C	-5.50	96.74	111.60

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	1752	0	1625	5	0
1	B	1752	0	1625	15	0
2	C	1610	0	1569	5	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	H	1614	0	1572	7	0
3	D	1637	0	1592	14	0
3	L	1637	0	1592	12	0
4	A	14	0	13	1	0
4	B	14	0	13	0	0
5	A	3	0	0	0	0
5	B	3	0	0	0	0
6	A	12	0	18	0	0
6	B	8	0	12	0	0
6	C	4	0	6	0	0
6	D	8	0	12	1	0
6	H	4	0	6	0	0
6	L	4	0	6	0	0
7	C	1	0	0	0	0
7	H	1	0	0	0	0
7	L	1	0	0	0	0
8	A	114	0	0	0	0
8	B	121	0	0	1	0
8	C	153	0	0	1	0
8	D	154	0	0	0	0
8	H	144	0	0	0	0
8	L	164	0	0	0	0
All	All	10929	0	9661	54	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 3.

All (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:B:1599:HIS:HD2	8:B:1884:HOH:O	1.71	0.72
3:D:108:ARG:HD2	3:D:171:SER:HB2	1.74	0.69
3:D:108:ARG:NH1	3:D:109:THR:O	2.28	0.67
2:H:162:SER:H	2:H:203:ASN:HD21	1.43	0.67
2:C:162:SER:H	2:C:203:ASN:HD21	1.41	0.66
1:B:1459:HIS:HE1	1:B:1491:GLU:OE1	1.83	0.62
2:C:103:THR:HG21	3:D:49:TYR:HB2	1.82	0.62
3:L:110:VAL:HG21	3:L:199:GLN:HE21	1.64	0.61
3:L:110:VAL:HG21	3:L:199:GLN:NE2	2.16	0.60
3:D:110:VAL:HG21	3:D:199:GLN:NE2	2.17	0.59
1:B:1465:ARG:HA	1:B:1540:ARG:NH2	2.19	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1512:VAL:HG21	1:B:1546:ARG:HD2	1.86	0.56
1:A:1528:SER:HB2	1:A:1545:PHE:HE2	1.69	0.56
3:L:61:ARG:NH2	3:L:81:GLU:OE2	2.40	0.54
3:D:108:ARG:HH12	3:D:111:ALA:HB2	1.72	0.53
2:C:36:TRP:CE2	2:C:81:MET:HB2	2.44	0.52
1:B:1577:VAL:HG13	1:B:1578:ILE:HG12	1.92	0.52
3:D:110:VAL:HG21	3:D:199:GLN:HE21	1.74	0.52
3:L:110:VAL:CG2	3:L:199:GLN:NE2	2.72	0.51
1:A:1528:SER:HB2	1:A:1545:PHE:CE2	2.47	0.50
3:D:185:ASP:HA	3:D:188:LYS:HD2	1.93	0.49
3:L:145:LYS:HB3	3:L:197:THR:HB	1.94	0.49
1:B:1465:ARG:O	1:B:1540:ARG:NH2	2.44	0.49
3:D:20:THR:HG23	3:D:72:THR:HG23	1.95	0.49
3:D:145:LYS:HB3	3:D:197:THR:HB	1.94	0.49
2:H:34:MET:HG2	2:H:79:ALA:HB2	1.96	0.48
1:B:1408:PRO:HG3	1:B:1434:TRP:CZ2	2.49	0.48
3:D:152:ASN:HD21	3:L:5:THR:HG23	1.79	0.47
1:B:1528:SER:HB2	1:B:1545:PHE:HE2	1.80	0.47
1:B:1465:ARG:CA	1:B:1540:ARG:NH2	2.79	0.46
1:B:1593:GLN:NE2	1:B:1598:ASP:HA	2.31	0.46
2:C:97:ALA:HB1	2:C:106:PHE:HB3	1.98	0.46
3:D:204:PRO:HD3	6:D:301:EDO:H21	1.98	0.46
2:H:103:THR:HG21	3:L:49:TYR:HB2	1.97	0.46
2:H:103:THR:HG23	3:L:50:ASP:OD2	2.15	0.45
1:A:1408:PRO:HG3	1:A:1434:TRP:CZ2	2.51	0.45
1:B:1465:ARG:C	1:B:1540:ARG:NH2	2.70	0.45
3:D:110:VAL:CG2	3:D:199:GLN:NE2	2.80	0.45
1:B:1528:SER:HB2	1:B:1545:PHE:CE2	2.51	0.44
3:L:83:PHE:CD2	3:L:106:ILE:HG12	2.53	0.43
1:A:1436:LEU:HB3	1:A:1443:ASP:OD2	2.18	0.43
1:B:1431:LEU:HB3	1:B:1432:GLN:H	1.54	0.43
3:L:120:PRO:HD3	3:L:132:VAL:HG22	2.01	0.43
3:D:37:GLN:HB2	3:D:47:LEU:HD11	2.01	0.42
2:H:97:ALA:HB1	2:H:106:PHE:HB3	2.01	0.42
2:C:216:ARG:NH2	8:C:403:HOH:O	2.53	0.42
2:H:36:TRP:CE2	2:H:81:MET:HB2	2.55	0.42
3:D:120:PRO:HD3	3:D:132:VAL:HG22	2.03	0.41
3:L:37:GLN:HB2	3:L:47:LEU:HD11	2.01	0.41
1:B:1539:LEU:HD12	1:B:1543:LEU:HD11	2.03	0.41
3:L:83:PHE:CZ	3:L:106:ILE:HG23	2.55	0.41
1:B:1436:LEU:HB3	1:B:1443:ASP:OD2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1439:ASN:HA	4:A:1701:NAG:H82	2.03	0.41
2:H:34:MET:HG2	2:H:79:ALA:CB	2.51	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	221/271 (82%)	211 (96%)	9 (4%)	1 (0%)	32	28
1	B	221/271 (82%)	208 (94%)	11 (5%)	2 (1%)	20	14
2	C	210/226 (93%)	209 (100%)	1 (0%)	0	100	100
2	H	211/226 (93%)	210 (100%)	1 (0%)	0	100	100
3	D	211/214 (99%)	205 (97%)	6 (3%)	0	100	100
3	L	211/214 (99%)	205 (97%)	6 (3%)	0	100	100
All	All	1285/1422 (90%)	1248 (97%)	34 (3%)	3 (0%)	51	52

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	1393	GLN
1	B	1431	LEU
1	A	1390	ALA

### 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	189/228 (83%)	183 (97%)	6 (3%)	44	46
1	B	189/228 (83%)	183 (97%)	6 (3%)	44	46
2	C	178/189 (94%)	171 (96%)	7 (4%)	37	37
2	H	178/189 (94%)	170 (96%)	8 (4%)	32	30
3	D	186/187 (100%)	180 (97%)	6 (3%)	44	46
3	L	186/187 (100%)	177 (95%)	9 (5%)	30	27
All	All	1106/1208 (92%)	1064 (96%)	42 (4%)	38	38

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

Mol	Chain	Res	Type
1	A	1399	GLN
1	A	1426	ARG
1	A	1432	GLN
1	A	1526	ARG
1	A	1535	LEU
1	A	1597	ASN
1	B	1387	CYS
1	B	1396	ARG
1	B	1426	ARG
1	B	1535	LEU
1	B	1617	VAL
1	B	1619	ARG
2	C	30	ARG
2	C	62	GLN
2	C	103	THR
2	C	156	VAL
2	C	165	LEU
2	C	205	ASN
2	C	218	GLU
3	D	24	ARG
3	D	42	LYS
3	D	105	GLU
3	D	125	LEU
3	D	154	LEU
3	D	211	ARG
2	H	34	MET
2	H	62	GLN
2	H	103	THR

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Mol	Chain	Res	Type
2	H	156	VAL
2	H	165	LEU
2	H	205	ASN
2	H	218	GLU
2	H	220	LYS
3	L	11	LEU
3	L	24	ARG
3	L	42	LYS
3	L	81	GLU
3	L	105	GLU
3	L	106	ILE
3	L	125	LEU
3	L	154	LEU
3	L	211	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1432	GLN
1	A	1455	ASN
1	B	1459	HIS
1	B	1593	GLN
1	B	1597	ASN
1	B	1599	HIS
2	C	198	GLN
2	C	203	ASN
3	D	137	ASN
3	D	152	ASN
2	H	203	ASN
3	L	137	ASN
3	L	199	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules 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 [i](#)

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

Of 21 ligands modelled in this entry, 9 are monoatomic - leaving 12 for Mogul analysis.

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	NAG	A	1701	1	14,14,15	0.37	0	15,19,21	1.67	2 (13%)
6	EDO	A	1705	-	3,3,3	0.40	0	2,2,2	0.45	0
6	EDO	A	1706	-	3,3,3	0.56	0	2,2,2	0.40	0
6	EDO	A	1707	-	3,3,3	0.63	0	2,2,2	0.15	0
4	NAG	B	1701	1	14,14,15	0.26	0	15,19,21	0.66	1 (6%)
6	EDO	B	1705	-	3,3,3	0.57	0	2,2,2	0.31	0
6	EDO	B	1706	-	3,3,3	0.49	0	2,2,2	0.52	0
6	EDO	C	302	-	3,3,3	0.70	0	2,2,2	0.18	0
6	EDO	D	301	-	3,3,3	0.47	0	2,2,2	0.20	0
6	EDO	D	302	-	3,3,3	0.71	0	2,2,2	0.30	0
6	EDO	H	302	-	3,3,3	0.60	0	2,2,2	0.25	0
6	EDO	L	302	-	3,3,3	0.62	0	2,2,2	0.45	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	NAG	A	1701	1	-	0/6/23/26	0/1/1/1
6	EDO	A	1705	-	-	0/1/1/1	0/0/0/0
6	EDO	A	1706	-	-	0/1/1/1	0/0/0/0
6	EDO	A	1707	-	-	0/1/1/1	0/0/0/0
4	NAG	B	1701	1	-	0/6/23/26	0/1/1/1
6	EDO	B	1705	-	-	0/1/1/1	0/0/0/0
6	EDO	B	1706	-	-	0/1/1/1	0/0/0/0

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	EDO	C	302	-	-	0/1/1/1	0/0/0/0
6	EDO	D	301	-	-	0/1/1/1	0/0/0/0
6	EDO	D	302	-	-	0/1/1/1	0/0/0/0
6	EDO	H	302	-	-	0/1/1/1	0/0/0/0
6	EDO	L	302	-	-	0/1/1/1	0/0/0/0

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	1701	NAG	C1-O5-C5	2.20	115.20	112.17
4	A	1701	NAG	O5-C1-C2	4.02	117.06	111.47
4	A	1701	NAG	C1-O5-C5	4.78	118.76	112.17

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1701	NAG	1	0
6	D	301	EDO	1	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	227/271 (83%)	0.86	30 (13%) 4 5	20, 43, 89, 123	0
1	B	227/271 (83%)	0.67	32 (14%) 3 4	19, 38, 85, 119	0
2	C	214/226 (94%)	-0.11	3 (1%) 75 79	18, 29, 54, 96	0
2	H	215/226 (95%)	-0.06	2 (0%) 84 86	19, 29, 53, 81	0
3	D	213/214 (99%)	0.09	7 (3%) 47 54	19, 32, 59, 97	0
3	L	213/214 (99%)	-0.23	1 (0%) 90 92	17, 27, 48, 64	0
All	All	1309/1422 (92%)	0.21	75 (5%) 24 30	17, 32, 68, 123	0

All (75) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1390	ALA	17.6
1	B	1389	ARG	13.0
1	A	1387	CYS	9.8
1	B	1390	ALA	8.6
1	B	1388	PRO	8.5
1	A	1389	ARG	8.2
1	B	1394	ALA	7.4
1	A	1392	CYS	6.7
1	B	1399	GLN	5.9
1	A	1405	CYS	5.4
1	B	1393	GLN	5.1
1	A	1403	ARG	4.7
1	B	1431	LEU	4.6
1	B	1403	ARG	4.2
1	A	1391	ALA	4.1
1	B	1435	ARG	4.0
1	B	1550	HIS	3.8
1	B	1387	CYS	3.7
2	C	1	GLN	3.6

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Mol	Chain	Res	Type	RSRZ
1	B	1391	ALA	3.5
1	B	1400	ARG	3.5
1	B	1549	ALA	3.4
1	A	1395	LYS	3.3
1	B	1392	CYS	3.3
1	A	1388	PRO	3.2
1	A	1461	GLY	3.1
1	A	1538	ILE	3.1
3	D	168	SER	3.1
1	A	1399	GLN	3.1
1	A	1397	GLY	3.0
2	H	139	GLY	3.0
1	A	1526	ARG	3.0
1	A	1578	ILE	3.0
3	D	157	GLY	3.0
1	B	1432	GLN	2.9
1	A	1434	TRP	2.8
1	A	1400	ARG	2.7
1	A	1551	GLY	2.7
1	B	1597	ASN	2.7
1	B	1538	ILE	2.6
1	B	1578	ILE	2.6
1	B	1434	TRP	2.6
1	A	1539	LEU	2.6
1	A	1396	ARG	2.6
1	A	1431	LEU	2.5
1	B	1614	LEU	2.5
1	B	1405	CYS	2.5
1	A	1611	LEU	2.5
3	D	188	LYS	2.5
1	B	1396	ARG	2.4
3	L	154	LEU	2.4
1	B	1559	HIS	2.3
1	A	1556	PHE	2.3
1	B	1462	GLY	2.3
1	B	1556	PHE	2.2
1	B	1395	LYS	2.2
1	B	1611	LEU	2.2
2	C	140	GLY	2.2
1	B	1397	GLY	2.2
1	B	1429	GLU	2.2
1	A	1581	VAL	2.2

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Mol	Chain	Res	Type	RSRZ
3	D	210	ASN	2.2
1	A	1441	ARG	2.2
1	A	1612	GLY	2.2
1	A	1393	GLN	2.1
2	C	30	ARG	2.1
1	B	1436	LEU	2.1
2	H	1	GLN	2.1
1	A	1421	VAL	2.1
1	A	1558	TYR	2.1
1	A	1546	ARG	2.1
1	B	1552	GLN	2.1
3	D	169	LYS	2.1
3	D	213	GLU	2.1
3	D	127	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
6	EDO	A	1705	4/4	0.96	0.22	4.02	29,30,30,35	0
7	CL	H	301	1/1	0.96	0.24	3.38	35,35,35,35	0
4	NAG	B	1701	14/15	0.71	0.26	3.33	78,88,92,93	0
6	EDO	B	1706	4/4	0.97	0.21	2.65	27,29,33,35	0
6	EDO	B	1705	4/4	0.96	0.19	2.38	29,33,37,40	0
4	NAG	A	1701	14/15	0.78	0.27	2.18	61,66,70,72	0
7	CL	L	301	1/1	0.85	0.14	1.62	58,58,58,58	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
7	CL	C	301	1/1	0.96	0.19	1.49	42,42,42,42	0
6	EDO	D	302	4/4	0.94	0.16	1.48	27,28,31,32	0
6	EDO	D	301	4/4	0.93	0.17	1.44	37,41,44,46	0
6	EDO	C	302	4/4	0.94	0.17	0.49	33,35,37,40	0
6	EDO	A	1707	4/4	0.94	0.14	0.37	29,32,34,39	0
6	EDO	L	302	4/4	0.98	0.08	-0.72	23,23,25,28	0
6	EDO	A	1706	4/4	0.97	0.10	-0.98	27,27,29,29	0
5	CA	B	1704	1/1	1.00	0.07	-1.35	20,20,20,20	0
5	CA	B	1702	1/1	0.92	0.04	-1.70	71,71,71,71	0
5	CA	A	1702	1/1	0.89	0.13	-1.74	71,71,71,71	0
5	CA	B	1703	1/1	0.96	0.05	-1.86	42,42,42,42	0
5	CA	A	1704	1/1	0.99	0.04	-1.97	24,24,24,24	0
5	CA	A	1703	1/1	0.99	0.04	-2.09	36,36,36,36	0
6	EDO	H	302	4/4	0.87	0.10	-	51,52,52,53	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.