



wwPDB X-ray Structure Validation Summary Report ⓘ

Nov 16, 2024 – 10:46 PM EST

PDB ID : 3NVQ
Title : Molecular mechanism of guidance cue recognition
Authors : Juo, Z.; Liu, H.; Shim, A.; Focia, P.; Chen, X.; Garcia, C.; He, X.
Deposited on : 2010-07-08
Resolution : 2.40 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

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>.

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

MolProbity : 4.02b-467
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 1.20.1
EDS : 3.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.003 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

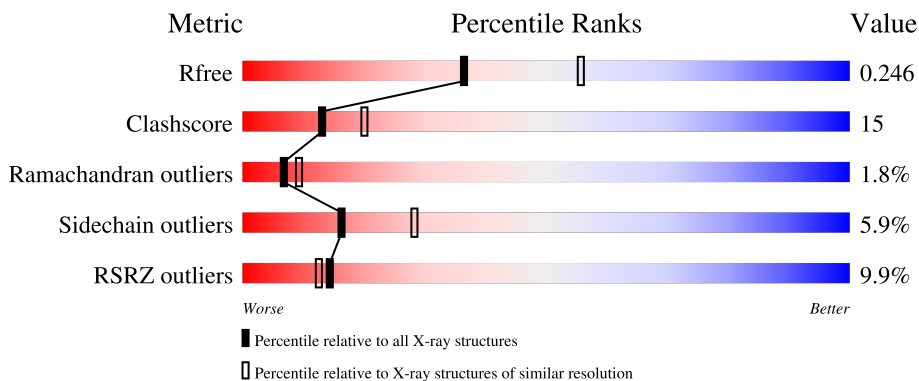
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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	4642 (2.40-2.40)
Clashscore	180529	5218 (2.40-2.40)
Ramachandran outliers	177936	5158 (2.40-2.40)
Sidechain outliers	177891	5159 (2.40-2.40)
RSRZ outliers	164620	4642 (2.40-2.40)

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 ≥ 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	590	<div style="display: flex; align-items: center;"> <div style="width: 6%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 69%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 27%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 10px;">6% 69% 27% •</p>
1	E	590	<div style="display: flex; align-items: center;"> <div style="width: 6%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 70%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 25%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 10px;">6% 70% 25% •</p>
2	B	476	<div style="display: flex; align-items: center;"> <div style="width: 14%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 70%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 26%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 10px;">14% 70% 26% •</p>
2	F	476	<div style="display: flex; align-items: center;"> <div style="width: 15%; height: 10px; background-color: red; margin-right: 5px;"></div> <div style="width: 67%; height: 10px; background-color: green; margin-right: 5px;"></div> <div style="width: 29%; height: 10px; background-color: yellow; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: orange; margin-right: 5px;"></div> <div style="width: 1%; height: 10px; background-color: grey;"></div> </div> <p style="margin-left: 10px;">15% 67% 29% •</p>

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
3	NAG	A	3	X	-	-	-
3	NAG	E	3	X	-	-	-
3	NAG	F	6	X	-	-	-

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 17824 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 Semaphorin-7A.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	588	4706	2957	840	882	27	0	0	0
1	E	588	4706	2957	840	882	27	0	0	0

- Molecule 2 is a protein called Plexin-C1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	474	3623	2261	645	696	21	0	0	0
2	F	474	3623	2261	645	696	21	0	0	0

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	508	GLY	-	expression tag	UNP O60486
B	509	ALA	-	expression tag	UNP O60486
B	510	PRO	-	expression tag	UNP O60486
F	508	GLY	-	expression tag	UNP O60486
F	509	ALA	-	expression tag	UNP O60486
F	510	PRO	-	expression tag	UNP O60486

- Molecule 3 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: C₈H₁₅NO₆).



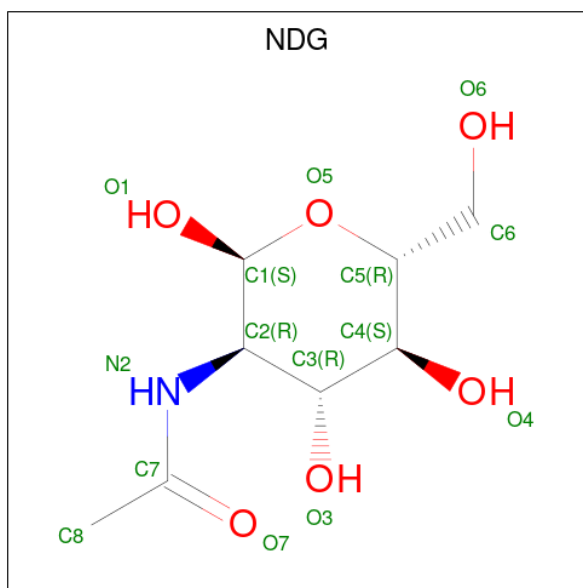
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	A	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
			14	8	1	5		
3	B	1	Total	C	N	O	0	0
	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

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	F	1	Total	C	N	O	0	0
			14	8	1	5		
3	F	1	Total	C	N	O	0	0
			14	8	1	5		
3	F	1	Total	C	N	O	0	0
			14	8	1	5		
3	F	1	Total	C	N	O	0	0
			14	8	1	5		
3	F	1	Total	C	N	O	0	0
			14	8	1	5		
3	F	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 4 is 2-acetamido-2-deoxy-alpha-D-glucopyranose (three-letter code: NDG) (formula: C₈H₁₅NO₆).



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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	279	Total	O	0	0
			279	279		

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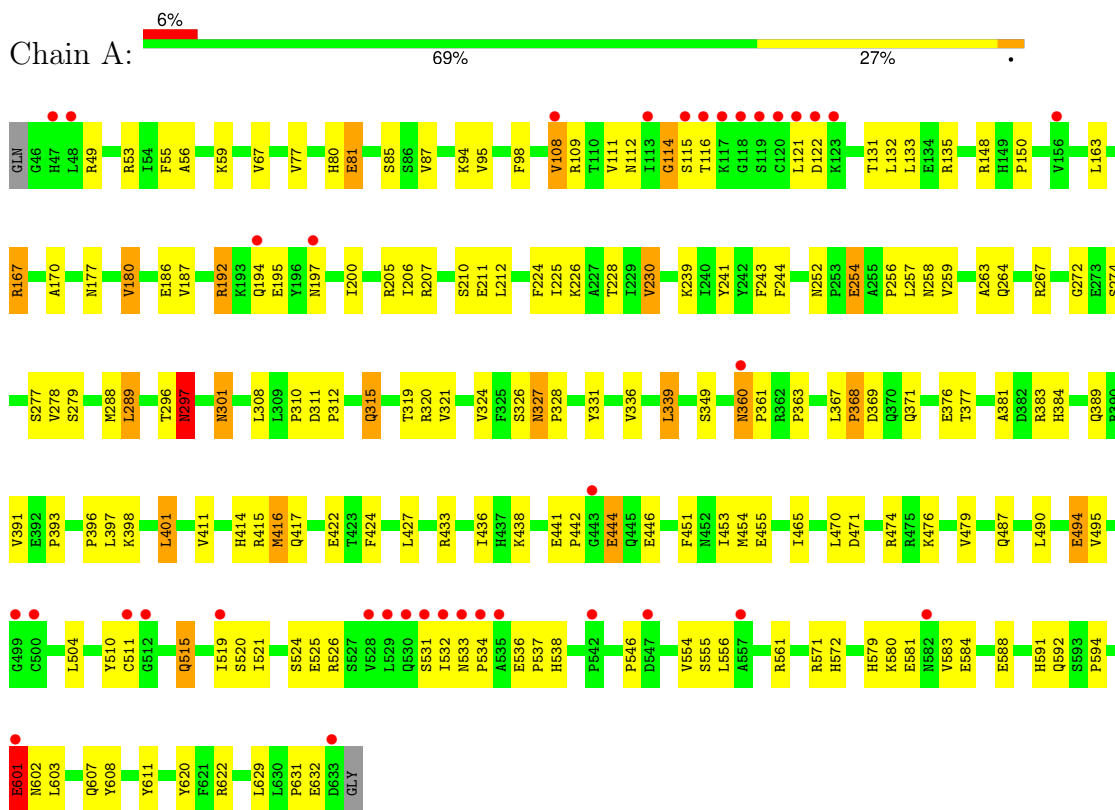
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	162	Total 162	O 162	0	0
5	E	297	Total 297	O 297	0	0
5	F	120	Total 120	O 120	0	0

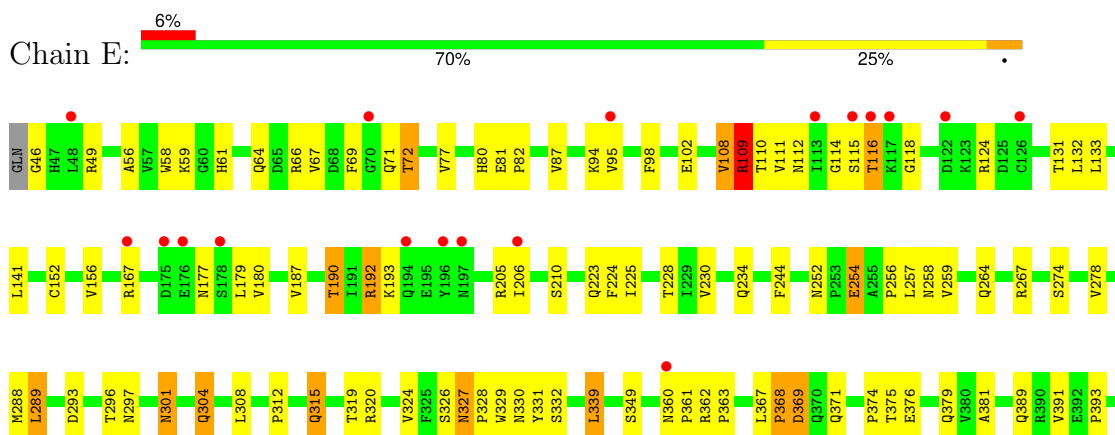
3 Residue-property plots [i](#)

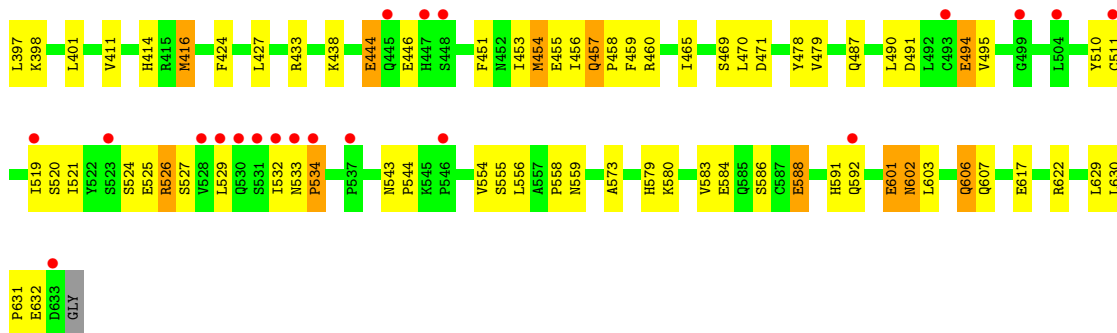
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: Semaphorin-7A

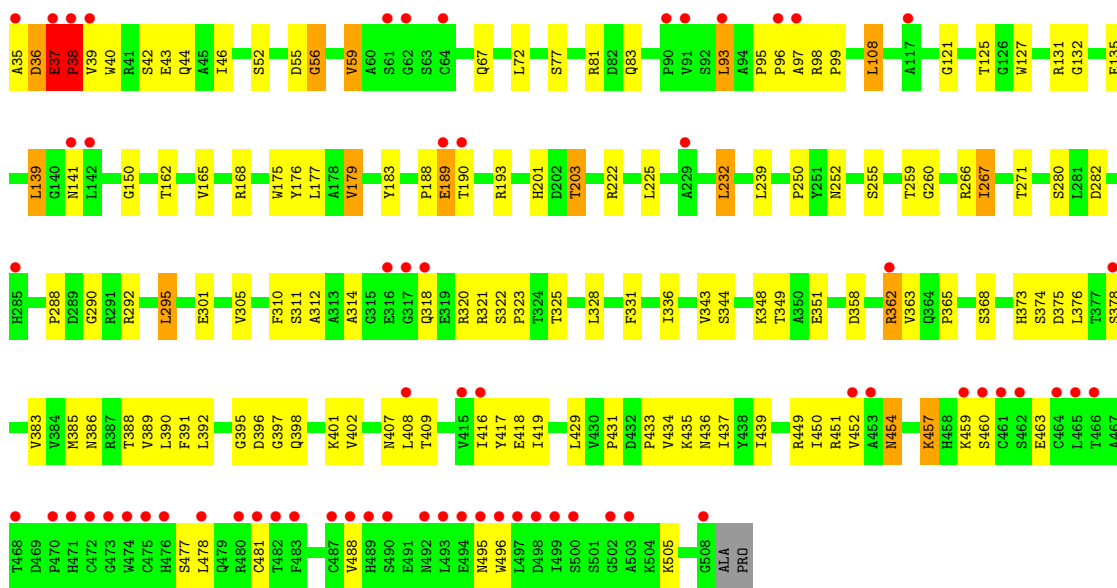


- Molecule 1: Semaphorin-7A

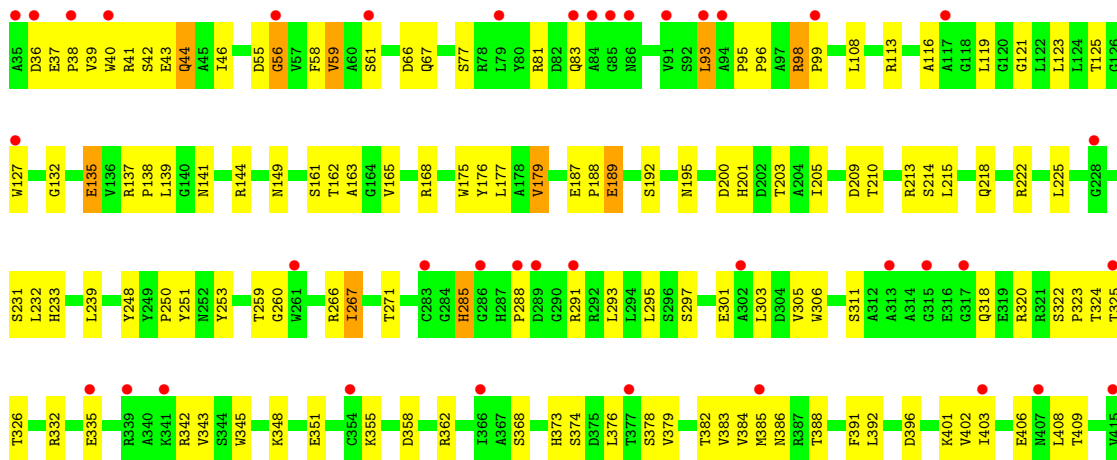


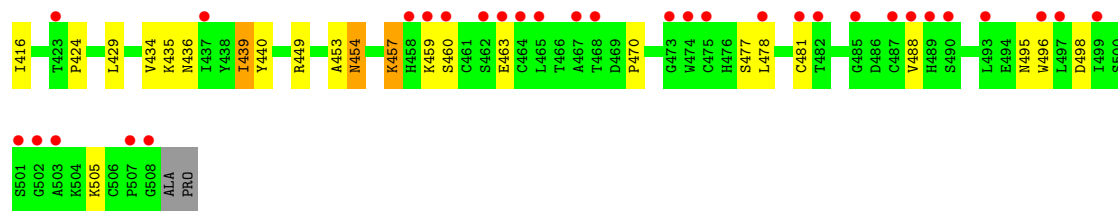


• Molecule 2: Plexin-C1



• Molecule 2: Plexin-C1





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	99.64Å 126.08Å 236.42Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	25.40 – 2.40 25.40 – 2.40	Depositor EDS
% Data completeness (in resolution range)	96.7 (25.40-2.40) 98.3 (25.40-2.40)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.34 (at 2.41Å)	Xtrriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.248 , 0.277 0.249 , 0.246	Depositor DCC
R_{free} test set	5760 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å ²)	55.8	Xtrriage
Anisotropy	0.106	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 43.3	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	17824	wwPDB-VP
Average B, all atoms (Å ²)	67.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.14% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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: NAG, NDG

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	0/4839	0.73	6/6568 (0.1%)
1	E	0.42	0/4839	0.71	3/6568 (0.0%)
2	B	0.37	0/3706	0.66	4/5039 (0.1%)
2	F	0.36	0/3706	0.60	0/5039
All	All	0.40	0/17090	0.68	13/23214 (0.1%)

There are no bond length outliers.

The worst 5 of 13 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	297	ASN	N-CA-CB	10.29	129.11	110.60
1	A	602	ASN	N-CA-CB	-9.26	93.93	110.60
1	A	601	GLU	CB-CA-C	8.97	128.33	110.40
1	A	296	THR	N-CA-C	8.90	135.04	111.00
2	B	37	GLU	N-CA-C	8.40	133.69	111.00

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	4706	0	4479	148	0
1	E	4706	0	4478	143	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	B	3623	0	3496	100	0
2	F	3623	0	3497	111	0
3	A	42	0	39	0	0
3	B	98	0	91	2	0
3	E	56	0	52	8	0
3	F	98	0	91	3	0
4	A	14	0	12	0	0
5	A	279	0	0	11	0
5	B	162	0	0	8	0
5	E	297	0	0	14	0
5	F	120	0	0	6	0
All	All	17824	0	16235	488	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 15.

The worst 5 of 488 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:592:GLN:HG3	1:E:592:GLN:NE2	1.63	1.11
2:B:35:ALA:N	2:B:451:ARG:HB2	1.72	1.04
1:E:360:ASN:HB3	1:E:361:PRO:HD3	1.39	1.02
2:F:203:THR:HG22	2:F:222:ARG:HH11	1.29	0.96
2:B:459:LYS:HD3	5:B:805:HOH:O	1.71	0.91

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	586/590 (99%)	530 (90%)	47 (8%)	9 (2%)	8 12

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	E	586/590 (99%)	529 (90%)	46 (8%)	11 (2%)	6	8
2	B	472/476 (99%)	422 (89%)	40 (8%)	10 (2%)	5	7
2	F	472/476 (99%)	417 (88%)	46 (10%)	9 (2%)	6	8
All	All	2116/2132 (99%)	1898 (90%)	179 (8%)	39 (2%)	7	9

5 of 39 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	368	PRO
1	A	444	GLU
2	B	36	ASP
2	B	301	GLU
1	E	368	PRO

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	518/519 (100%)	490 (95%)	28 (5%)	18	32
1	E	518/519 (100%)	483 (93%)	35 (7%)	13	22
2	B	389/390 (100%)	366 (94%)	23 (6%)	16	28
2	F	389/390 (100%)	368 (95%)	21 (5%)	18	32
All	All	1814/1818 (100%)	1707 (94%)	107 (6%)	16	28

5 of 107 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	190	THR
1	E	339	LEU
2	F	362	ARG
1	E	230	VAL
1	E	289	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 67 such sidechains are listed below:

Mol	Chain	Res	Type
2	F	44	GLN
2	F	172	ASN
2	F	436	ASN
2	B	67	GLN
2	B	44	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](#)

22 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	$\# Z > 2$
3	NAG	E	2	1	14,14,15	0.60	0	17,19,21	0.66	0
3	NAG	B	6	2	14,14,15	0.59	0	17,19,21	0.66	0
3	NAG	A	2	1	14,14,15	0.59	0	17,19,21	0.67	0
3	NAG	B	2	2	14,14,15	0.59	0	17,19,21	0.65	0
3	NAG	B	1	2	14,14,15	0.52	0	17,19,21	0.65	0
4	NDG	A	4	-	14,14,15	0.73	0	17,19,21	1.12	2 (11%)
3	NAG	F	6	2	14,14,15	0.60	0	17,19,21	0.66	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	NAG	B	5	2	14,14,15	0.48	0	17,19,21	0.81	1 (5%)
3	NAG	F	4	2	14,14,15	0.57	0	17,19,21	0.83	1 (5%)
3	NAG	A	1	1	14,14,15	0.60	0	17,19,21	0.66	0
3	NAG	F	1	2	14,14,15	0.63	0	17,19,21	0.69	0
3	NAG	E	1	1	14,14,15	0.59	0	17,19,21	0.79	0
3	NAG	B	4	2	14,14,15	0.60	0	17,19,21	1.07	1 (5%)
3	NAG	F	2	2	14,14,15	0.59	0	17,19,21	0.66	0
3	NAG	F	5	2	14,14,15	0.53	0	17,19,21	0.73	1 (5%)
3	NAG	F	3	2	14,14,15	0.62	0	17,19,21	0.70	0
3	NAG	E	3	1	14,14,15	0.60	0	17,19,21	0.66	0
3	NAG	E	4	1	14,14,15	0.56	0	17,19,21	0.73	0
3	NAG	F	7	2	14,14,15	0.59	0	17,19,21	0.66	0
3	NAG	B	7	2	14,14,15	0.61	0	17,19,21	0.66	0
3	NAG	B	3	2	14,14,15	0.69	0	17,19,21	0.61	0
3	NAG	A	3	1	14,14,15	0.60	0	17,19,21	0.66	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	E	2	1	-	4/6/23/26	0/1/1/1
3	NAG	B	6	2	-	4/6/23/26	0/1/1/1
3	NAG	A	2	1	-	4/6/23/26	0/1/1/1
3	NAG	B	2	2	-	4/6/23/26	0/1/1/1
3	NAG	B	1	2	-	3/6/23/26	0/1/1/1
4	NDG	A	4	-	-	3/6/23/26	0/1/1/1
3	NAG	F	6	2	1/1/5/7	4/6/23/26	0/1/1/1
3	NAG	B	5	2	-	2/6/23/26	0/1/1/1
3	NAG	F	4	2	-	4/6/23/26	0/1/1/1
3	NAG	A	1	1	-	4/6/23/26	0/1/1/1
3	NAG	F	1	2	-	4/6/23/26	0/1/1/1
3	NAG	E	1	1	-	5/6/23/26	0/1/1/1
3	NAG	B	4	2	-	2/6/23/26	0/1/1/1
3	NAG	F	2	2	-	4/6/23/26	0/1/1/1
3	NAG	F	5	2	-	2/6/23/26	0/1/1/1
3	NAG	F	3	2	-	4/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	NAG	E	3	1	1/1/5/7	4/6/23/26	0/1/1/1
3	NAG	E	4	1	-	2/6/23/26	0/1/1/1
3	NAG	F	7	2	-	4/6/23/26	0/1/1/1
3	NAG	B	7	2	-	4/6/23/26	0/1/1/1
3	NAG	B	3	2	-	2/6/23/26	0/1/1/1
3	NAG	A	3	1	1/1/5/7	4/6/23/26	0/1/1/1

There are no bond length outliers.

The worst 5 of 6 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	4	NAG	C2-N2-C7	-2.68	119.31	122.90
3	F	4	NAG	C2-N2-C7	-2.57	119.46	122.90
4	A	4	NDG	C4-C3-C2	2.29	114.38	111.02
3	B	5	NAG	C2-N2-C7	-2.27	119.86	122.90
4	A	4	NDG	C2-N2-C7	-2.26	119.87	122.90

All (3) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	A	3	NAG	C1
3	E	3	NAG	C1
3	F	6	NAG	C1

5 of 77 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	B	1	NAG	C8-C7-N2-C2
3	B	1	NAG	O7-C7-N2-C2
3	B	3	NAG	C8-C7-N2-C2
3	B	3	NAG	O7-C7-N2-C2
3	B	5	NAG	C8-C7-N2-C2

There are no ring outliers.

8 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	E	2	NAG	2	0
3	B	1	NAG	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	F	1	NAG	1	0
3	F	3	NAG	1	0
3	E	3	NAG	5	0
3	E	4	NAG	1	0
3	F	7	NAG	1	0
3	B	3	NAG	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 [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, 95th 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 ²)	Q<0.9
1	A	588/590 (99%)	0.30	37 (6%) 27 25	25, 55, 113, 150	0
1	E	588/590 (99%)	0.31	38 (6%) 26 24	27, 53, 107, 140	0
2	B	474/476 (99%)	0.83	65 (13%) 8 7	34, 70, 129, 150	0
2	F	474/476 (99%)	0.89	70 (14%) 7 6	37, 72, 131, 150	0
All	All	2124/2132 (99%)	0.55	210 (9%) 14 12	25, 62, 125, 150	0

The worst 5 of 210 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	465	LEU	5.9
2	F	488	VAL	5.6
2	B	493	LEU	4.9
2	F	468	THR	4.7
1	E	633	ASP	4.5

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, 95th 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(\AA^2)	Q<0.9
3	NAG	B	7	14/15	0.01	0.20	150,150,150,150	0
3	NAG	F	7	14/15	0.24	0.18	150,150,150,150	0
3	NAG	E	2	14/15	0.35	0.17	150,150,150,150	0
3	NAG	F	6	14/15	0.36	0.16	149,150,150,150	0
3	NAG	B	1	14/15	0.38	0.14	112,113,113,114	0
3	NAG	A	2	14/15	0.40	0.20	149,150,150,150	0
3	NAG	A	3	14/15	0.47	0.28	93,95,96,96	0
3	NAG	F	1	14/15	0.47	0.15	115,118,119,119	0
3	NAG	B	2	14/15	0.55	0.20	136,138,139,139	0
3	NAG	E	3	14/15	0.57	0.29	114,117,118,118	0
3	NAG	B	6	14/15	0.57	0.23	150,150,150,150	0
3	NAG	F	2	14/15	0.63	0.22	132,135,136,136	0
3	NAG	F	4	14/15	0.63	0.13	81,85,86,86	0
3	NAG	E	1	14/15	0.64	0.13	94,95,98,98	0
3	NAG	B	3	14/15	0.66	0.12	81,86,87,88	0
3	NAG	E	4	14/15	0.76	0.12	65,71,73,75	0
3	NAG	A	1	14/15	0.77	0.13	83,85,86,86	0
4	NDG	A	4	14/15	0.77	0.12	59,64,66,66	0
3	NAG	B	5	14/15	0.79	0.12	78,82,83,83	0
3	NAG	F	3	14/15	0.80	0.12	77,80,81,83	0
3	NAG	F	5	14/15	0.82	0.11	79,82,85,86	0
3	NAG	B	4	14/15	0.89	0.09	51,58,60,62	0

6.5 Other polymers [i](#)

There are no such residues in this entry.