wwPDB X-ray Structure Validation Summary Report (i)

Feb 19, 2016 – 07:33 PM GMT

PDB ID	:	4UFR
Title	:	Structure of the ectodomain of LGR5 in complex with R-spondin-2 (Fu1Fu2)
Authors	:	Zebisch, M.; Jones, E.Y.
Deposited on	:	2015-03-18
Resolution	:	2.20 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
http://wwpdb.org/validation/2016/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The following versions of software and data (see references (1)) were used in the production of this report:

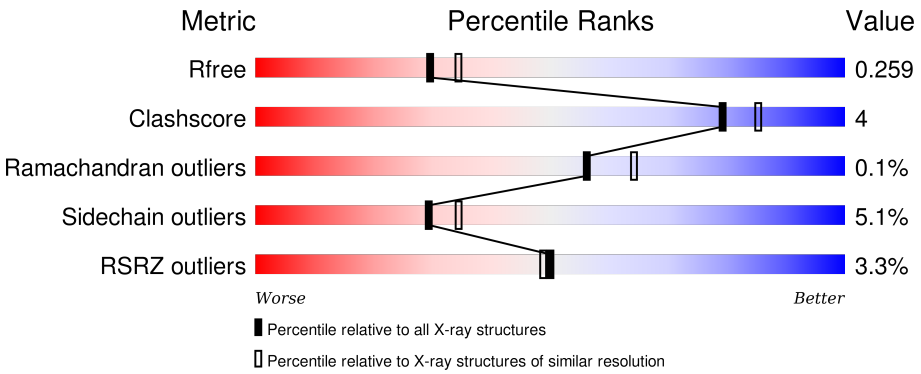
MolProbity	:	4.02b-467
Mogul	:	unknown
Xtriage (Phenix)	:	1.9-1692
EDS	:	rb-20026982
Percentile statistics	:	20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac	:	5.8.0135
CCP4	:	6.5.0
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	rb-20026982

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 2.20 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	3774 (2.20-2.20)
Clashscore	102246	4477 (2.20-2.20)
Ramachandran outliers	100387	4404 (2.20-2.20)
Sidechain outliers	100360	4405 (2.20-2.20)
RSRZ outliers	91569	3781 (2.20-2.20)

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 on the lower bar indicate the fraction of residues that contain outliers for >=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 <=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	484	2%, 83%, 11%, • 5%
1	C	484	%, 84%, 11%, 5%
2	B	120	8%, 71%, 14%, 15%
2	D	120	12%, 72%, 13%, • 15%

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	CL	A	1545	-	-	-	X

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 8912 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 LEUCINE-RICH REPEAT-CONTAINING G-PROTEIN COUPLED RECEPTOR 5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	459	3608	2301	622	668	17	0	1	0
1	C	458	3588	2288	617	667	16	0	0	0

There are 44 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	29	GLU	-	EXPRESSION TAG	UNP O75473
A	30	THR	-	EXPRESSION TAG	UNP O75473
A	31	GLY	-	EXPRESSION TAG	UNP O75473
A	488	ASN	-	LINKER	UNP O75473
A	489	ASN	-	LINKER	UNP O75473
A	490	GLY	-	LINKER	UNP O75473
A	491	ASN	-	LINKER	UNP O75473
A	492	ASN	-	LINKER	UNP O75473
A	493	GLY	-	LINKER	UNP O75473
A	494	ASP	-	LINKER	UNP O75473
A	545	GLY	-	EXPRESSION TAG	UNP O75473
A	546	THR	-	EXPRESSION TAG	UNP O75473
A	547	HIS	-	EXPRESSION TAG	UNP O75473
A	548	HIS	-	EXPRESSION TAG	UNP O75473
A	549	HIS	-	EXPRESSION TAG	UNP O75473
A	550	HIS	-	EXPRESSION TAG	UNP O75473
A	551	HIS	-	EXPRESSION TAG	UNP O75473
A	552	HIS	-	EXPRESSION TAG	UNP O75473
A	553	HIS	-	EXPRESSION TAG	UNP O75473
A	554	HIS	-	EXPRESSION TAG	UNP O75473
A	555	HIS	-	EXPRESSION TAG	UNP O75473
A	556	HIS	-	EXPRESSION TAG	UNP O75473
C	29	GLU	-	EXPRESSION TAG	UNP O75473
C	30	THR	-	EXPRESSION TAG	UNP O75473

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Chain	Residue	Modelled	Actual	Comment	Reference
C	31	GLY	-	EXPRESSION TAG	UNP O75473
C	488	ASN	-	LINKER	UNP O75473
C	489	ASN	-	LINKER	UNP O75473
C	490	GLY	-	LINKER	UNP O75473
C	491	ASN	-	LINKER	UNP O75473
C	492	ASN	-	LINKER	UNP O75473
C	493	GLY	-	LINKER	UNP O75473
C	494	ASP	-	LINKER	UNP O75473
C	545	GLY	-	EXPRESSION TAG	UNP O75473
C	546	THR	-	EXPRESSION TAG	UNP O75473
C	547	HIS	-	EXPRESSION TAG	UNP O75473
C	548	HIS	-	EXPRESSION TAG	UNP O75473
C	549	HIS	-	EXPRESSION TAG	UNP O75473
C	550	HIS	-	EXPRESSION TAG	UNP O75473
C	551	HIS	-	EXPRESSION TAG	UNP O75473
C	552	HIS	-	EXPRESSION TAG	UNP O75473
C	553	HIS	-	EXPRESSION TAG	UNP O75473
C	554	HIS	-	EXPRESSION TAG	UNP O75473
C	555	HIS	-	EXPRESSION TAG	UNP O75473
C	556	HIS	-	EXPRESSION TAG	UNP O75473

- Molecule 2 is a protein called R-SPONDIN-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	102	781	477	146	139	19	0	0	0
			Total	C	N	O	S			
2	D	102	751	459	140	135	17	0	0	0

There are 28 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	36	GLU	-	EXPRESSION TAG	UNP Q8BFU0
B	37	THR	-	EXPRESSION TAG	UNP Q8BFU0
B	38	GLY	-	EXPRESSION TAG	UNP Q8BFU0
B	145	THR	-	EXPRESSION TAG	UNP Q8BFU0
B	146	HIS	-	EXPRESSION TAG	UNP Q8BFU0
B	147	HIS	-	EXPRESSION TAG	UNP Q8BFU0
B	148	HIS	-	EXPRESSION TAG	UNP Q8BFU0
B	149	HIS	-	EXPRESSION TAG	UNP Q8BFU0
B	150	HIS	-	EXPRESSION TAG	UNP Q8BFU0
B	151	HIS	-	EXPRESSION TAG	UNP Q8BFU0

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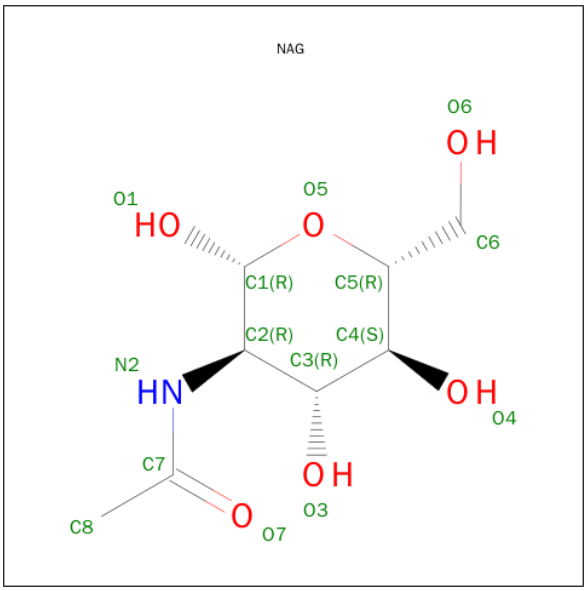
Chain	Residue	Modelled	Actual	Comment	Reference
B	152	HIS	-	EXPRESSION TAG	UNP Q8BFU0
B	153	HIS	-	EXPRESSION TAG	UNP Q8BFU0
B	154	HIS	-	EXPRESSION TAG	UNP Q8BFU0
B	155	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	36	GLU	-	EXPRESSION TAG	UNP Q8BFU0
D	37	THR	-	EXPRESSION TAG	UNP Q8BFU0
D	38	GLY	-	EXPRESSION TAG	UNP Q8BFU0
D	145	THR	-	EXPRESSION TAG	UNP Q8BFU0
D	146	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	147	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	148	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	149	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	150	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	151	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	152	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	153	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	154	HIS	-	EXPRESSION TAG	UNP Q8BFU0
D	155	HIS	-	EXPRESSION TAG	UNP Q8BFU0

- Molecule 3 is SUGAR (N-ACETYL-D-GLUCOSAMINE) (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



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

- Molecule 4 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	B	1	Total Cl 1 1	0	0
4	A	3	Total Cl 3 3	0	0
4	D	1	Total Cl 1 1	0	0
4	C	1	Total Cl 1 1	0	0

- Molecule 5 is water.

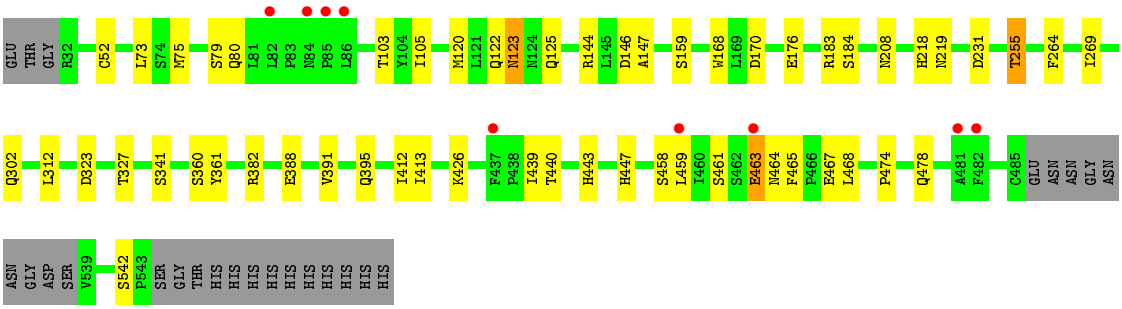
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	74	Total O 74 74	0	0
5	B	1	Total O 1 1	0	0
5	C	72	Total O 72 72	0	0
5	D	3	Total O 3 3	0	0

3 Residue-property plots (i)

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 (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.

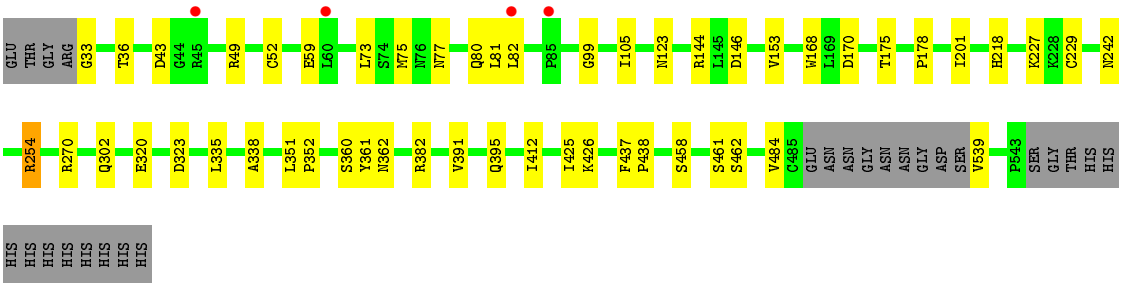
• Molecule 1: LEUCINE-RICH REPEAT-CONTAINING G-PROTEIN COUPLED RECEPTOR 5

Chain A:



• Molecule 1: LEUCINE-RICH REPEAT-CONTAINING G-PROTEIN COUPLED RECEPTOR 5

Chain C:



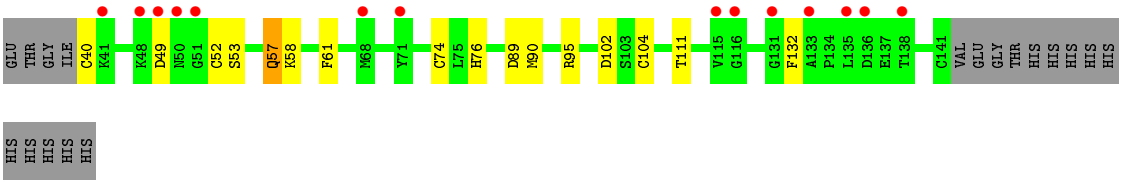
• Molecule 2: R-SPONDIN-2

Chain B:

• Molecule 2: R-SPONDIN-2

Chain D:

12%
72%
13%
•
15%


GLU THR GLY ILE C40 K41 K48 D49 N50 G51 C52 S53 Q57 K58 F61 M68 Y71 C74 L75 H76 D89 N90 R95 D102 S103 C104 T111 V115 G116 G131 F132 A133 P134 L135 D136 E137 T138 C141 VAL GLU GLY THR HIS HIS HIS HIS HIS
HIS HIS HIS HIS HIS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	205.15Å 59.78Å 112.21Å 90.00° 99.51° 90.00°	Depositor
Resolution (Å)	110.67 – 2.20 69.19 – 2.20	Depositor EDS
% Data completeness (in resolution range)	90.5 (110.67-2.20) 90.5 (69.19-2.20)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.61 (at 2.20Å)	Xtriage
Refinement program	REFMAC 5.8.0073	Depositor
R, R_{free}	0.208 , 0.262 0.212 , 0.259	Depositor DCC
R_{free} test set	1184 reflections (1.94%)	DCC
Wilson B-factor (Å^2)	44.1	Xtriage
Anisotropy	0.360	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 34.0	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Outliers	2 of 62086 reflections (0.003%)	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	8912	wwPDB-VP
Average B, all atoms (Å^2)	60.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.71% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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, CL

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	0.63	0/3691	0.80	3/5024 (0.1%)
1	C	0.69	0/3668	0.81	0/4996
2	B	0.57	0/798	0.79	0/1064
2	D	0.67	1/768 (0.1%)	0.82	1/1029 (0.1%)
All	All	0.65	1/8925 (0.0%)	0.80	4/12113 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
1	C	0	1
All	All	0	2

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	104	CYS	CB-SG	-7.40	1.69	1.82

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	104	CYS	CB-CA-C	-9.33	91.74	110.40
1	A	542	SER	C-N-CD	-6.14	107.09	120.60
1	A	183	ARG	NE-CZ-NH2	-5.30	117.65	120.30
1	A	183	ARG	NE-CZ-NH1	5.27	122.93	120.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	463	GLU	Peptide
1	C	33	GLY	Peptide

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	3608	0	3626	29	0
1	C	3588	0	3593	30	0
2	B	781	0	704	5	0
2	D	751	0	643	4	0
3	A	14	0	13	2	0
3	C	14	0	13	6	0
4	A	3	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	A	74	0	0	0	0
5	B	1	0	0	0	0
5	C	72	0	0	0	0
5	D	3	0	0	0	0
All	All	8912	0	8592	60	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 4.

The worst 5 of 60 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:208:ASN:HD21	3:A:1001:NAG:C1	1.02	1.65
1:C:77:ASN:HD21	3:C:1001:NAG:C1	1.08	1.61
1:C:77:ASN:ND2	3:C:1001:NAG:C1	1.92	1.31
1:C:77:ASN:HD21	3:C:1001:NAG:C2	1.79	0.96
1:A:361:TYR:OH	1:C:361:TYR:OH	2.02	0.73

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	456/484 (94%)	416 (91%)	40 (9%)	0	100	100
1	C	454/484 (94%)	417 (92%)	36 (8%)	1 (0%)	52	59
2	B	100/120 (83%)	90 (90%)	10 (10%)	0	100	100
2	D	100/120 (83%)	90 (90%)	10 (10%)	0	100	100
All	All	1110/1208 (92%)	1013 (91%)	96 (9%)	1 (0%)	56	64

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	484	VAL

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	417/437 (95%)	400 (96%)	17 (4%)	37	45
1	C	414/437 (95%)	400 (97%)	14 (3%)	44	54
2	B	84/106 (79%)	75 (89%)	9 (11%)	8	7
2	D	76/106 (72%)	66 (87%)	10 (13%)	5	4
All	All	991/1086 (91%)	941 (95%)	50 (5%)	29	35

5 of 50 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
2	B	111	THR
1	C	59	GLU
2	D	95	ARG
2	B	112	LYS
2	B	132	PHE

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 13 such sidechains are listed below:

Mol	Chain	Res	Type
1	A	313	ASN
1	A	374	GLN
1	C	349	ASN
1	A	219	ASN
1	C	80	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 carbohydrates in this entry.

5.6 Ligand geometry (i)

Of 8 ligands modelled in this entry, 6 are monoatomic - leaving 2 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	$\#\|Z\| > 2$
3	NAG	A	1001	1	14,14,15	0.91	1 (7%)	15,19,21	1.38	1 (6%)
3	NAG	C	1001	-	14,14,15	0.71	0	15,19,21	1.95	4 (26%)

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	A	1001	1	-	0/6/23/26	0/1/1/1
3	NAG	C	1001	-	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1001	NAG	O5-C1	-2.21	1.40	1.43

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	1001	NAG	C4-C3-C2	-3.31	106.20	111.34
3	C	1001	NAG	C1-O5-C5	2.37	115.62	112.14
3	C	1001	NAG	C3-C4-C5	3.17	115.88	110.23
3	A	1001	NAG	C4-C3-C2	3.77	117.19	111.34
3	C	1001	NAG	O5-C5-C4	4.66	117.86	110.13

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 8 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1001	NAG	2	0
3	C	1001	NAG	6	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	459/484 (94%)	-0.08	9 (1%) 68 67	36, 53, 87, 126	0
1	C	458/484 (94%)	-0.16	4 (0%) 85 85	35, 51, 85, 118	0
2	B	102/120 (85%)	0.65	10 (9%) 10 8	42, 86, 135, 149	0
2	D	102/120 (85%)	0.67	14 (13%) 4 4	41, 80, 135, 150	0
All	All	1121/1208 (92%)	0.02	37 (3%) 50 49	35, 54, 111, 150	0

The worst 5 of 37 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	49	ASP	6.9
1	A	82	LEU	6.4
2	D	136	ASP	5.3
1	C	82	LEU	4.4
2	D	68	MET	4.3

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, 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	LLDF	B-factors(Å^2)	Q<0.9
4	CL	A	1545	1/1	0.94	0.27	12.50	59,59,59,59	0
3	NAG	A	1001	14/15	0.80	0.15	1.14	79,84,90,90	0
4	CL	A	1546	1/1	0.97	0.25	-	57,57,57,57	0
4	CL	A	1547	1/1	0.95	0.06	-	84,84,84,84	0
4	CL	B	1142	1/1	0.97	0.27	-	61,61,61,61	0
4	CL	C	1545	1/1	0.97	0.27	-	53,53,53,53	0
3	NAG	C	1001	14/15	0.90	0.16	-	106,112,122,127	0
4	CL	D	1142	1/1	0.92	0.22	-	59,59,59,59	0

6.5 Other polymers (i)

There are no such residues in this entry.