



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 20, 2026 – 01:32 AM UTC

PDB ID : 3CIK / pdb_00003cik
Title : Human GRK2 in Complex with Gbetagamma subunits
Authors : Tesmer, J.J.G.; Lodowski, D.T.
Deposited on : 2008-03-11
Resolution : 2.75 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

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 : 4-5-2 with Phenix2.0
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 2.0
EDS : 3.0
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

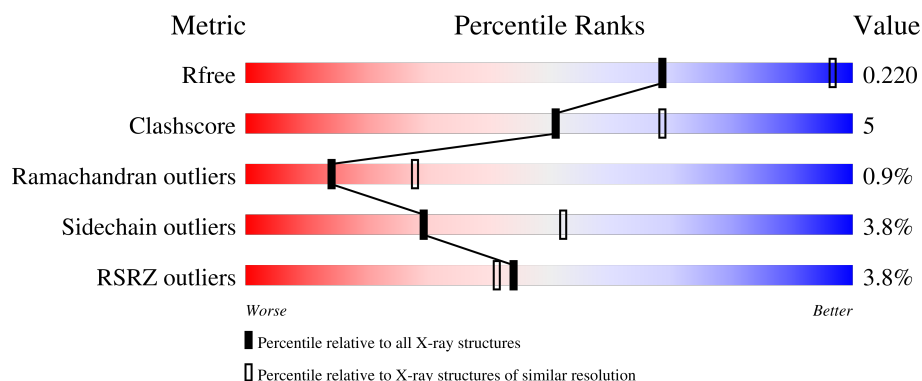
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.75 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}	180053	1009 (2.76-2.76)
Clashscore	190562	1044 (2.76-2.76)
Ramachandran outliers	187476	1024 (2.76-2.76)
Sidechain outliers	187428	1024 (2.76-2.76)
RSRZ outliers	180081	1009 (2.76-2.76)

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	689	5% 76% 12% • 10%
2	B	340	% 84% 14% •
3	G	74	3% 76% 5% • 18%

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 8185 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 Beta-adrenergic receptor kinase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	619	Total	C	N	O	S	0	0	0
			5077	3233	891	918	35			

- Molecule 2 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	339	Total	C	N	O	S	0	0	0
			2607	1607	468	511	21			

- Molecule 3 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	G	61	Total	C	N	O	S	0	0	0
			481	305	83	89	4			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	-5	HIS	-	expression tag	UNP P63212
G	-4	HIS	-	expression tag	UNP P63212
G	-3	HIS	-	expression tag	UNP P63212
G	-2	HIS	-	expression tag	UNP P63212
G	-1	HIS	-	expression tag	UNP P63212
G	0	HIS	-	expression tag	UNP P63212

- Molecule 4 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	1	Total	Mg	0	0
			1	1		

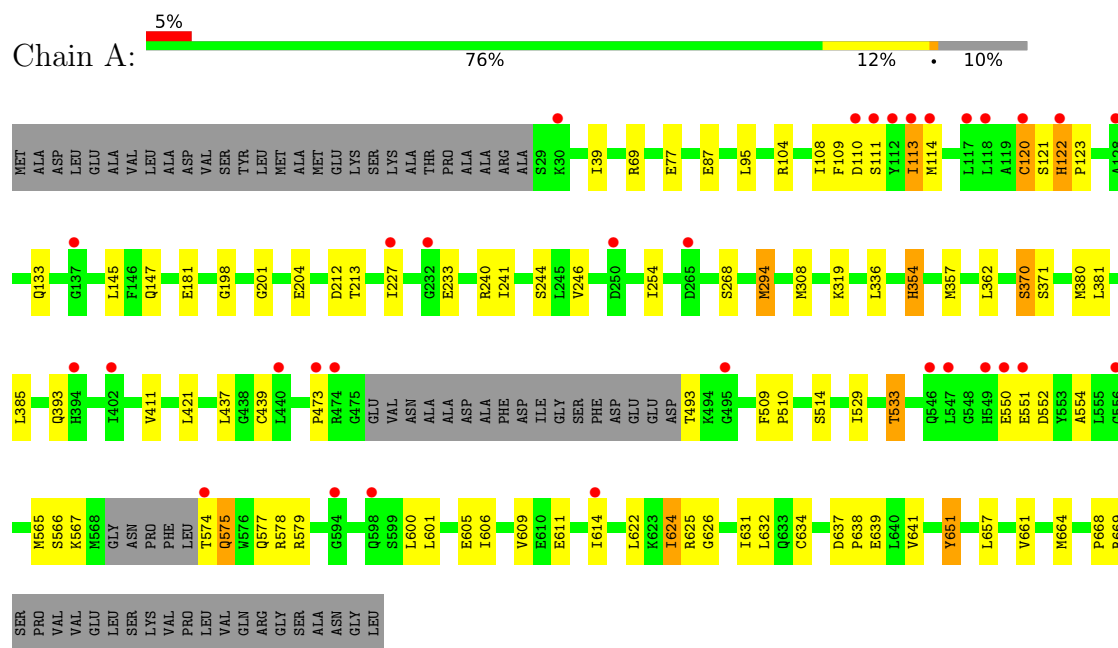
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	12	Total 12	O 12	0	0
5	B	7	Total 7	O 7	0	0

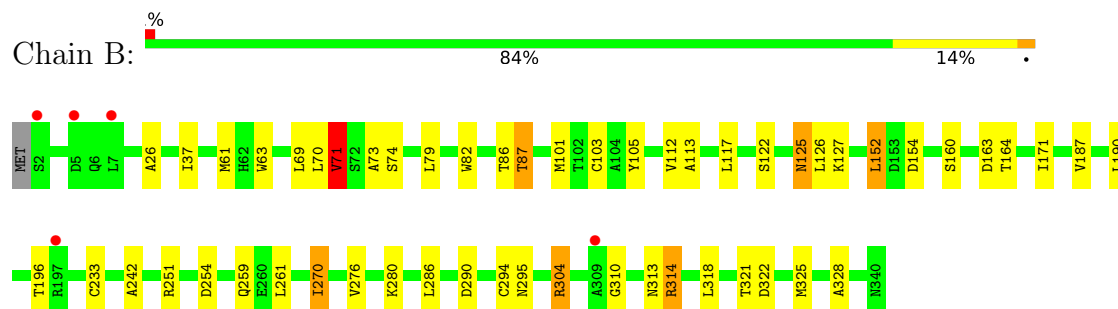
3 Residue-property plots [i](#)

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.

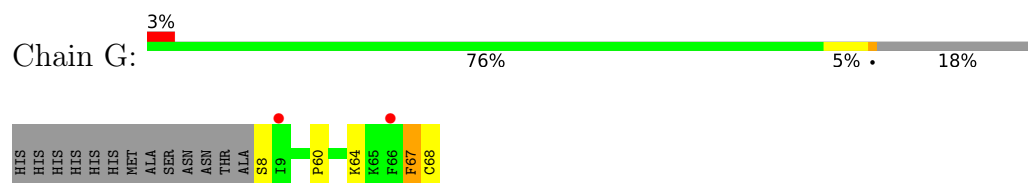
- Molecule 1: Beta-adrenergic receptor kinase 1



- Molecule 2: Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1



- Molecule 3: Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	185.74Å 73.60Å 122.91Å 90.00° 115.22° 90.00°	Depositor
Resolution (Å)	25.00 – 2.75 25.00 – 2.75	Depositor EDS
% Data completeness (in resolution range)	98.8 (25.00-2.75) 98.6 (25.00-2.75)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.64 (at 2.77Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.208 , 0.269 0.208 , 0.220	Depositor DCC
R_{free} test set	1949 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å ²)	56.5	Xtriage
Anisotropy	0.649	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 43.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	8185	wwPDB-VP
Average B, all atoms (Å ²)	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.15% 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

5.1 Standard geometry

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

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	0.67	0/5190	0.86	6/6970 (0.1%)
2	B	0.73	0/2654	0.85	3/3597 (0.1%)
3	G	0.66	0/481	0.80	0/646
All	All	0.69	0/8325	0.85	9/11213 (0.1%)

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
3	G	0	2

There are no bond length outliers.

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	122	HIS	CA-C-N	-9.68	110.08	119.76
1	A	122	HIS	C-N-CA	-9.68	110.08	119.76
2	B	71	VAL	CB-CA-C	-7.75	99.60	111.31
1	A	354	HIS	N-CA-C	6.20	119.01	111.82
2	B	270	ILE	CB-CA-C	-6.12	104.21	110.88
1	A	600	LEU	N-CA-C	5.48	115.77	108.38
2	B	74	SER	N-CA-C	5.27	117.40	109.23
1	A	111	SER	N-CA-C	5.09	116.68	111.03
1	A	624	ILE	N-CA-C	5.02	115.27	107.28

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	G	67	PHE	Mainchain,Peptide

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	5077	0	5073	48	0
2	B	2607	0	2510	39	0
3	G	481	0	493	2	0
4	A	1	0	0	0	0
5	A	12	0	0	0	0
5	B	7	0	0	0	0
All	All	8185	0	8076	85	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

All (85) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:113:ILE:HG22	1:A:114:MET:HE2	1.59	0.83
2:B:86:THR:O	2:B:87:THR:HB	1.87	0.74
2:B:125:ASN:HD22	2:B:125:ASN:C	1.97	0.72
1:A:565:MET:HE3	1:A:634:CYS:SG	2.32	0.70
1:A:529:ILE:O	1:A:533:THR:HG23	1.91	0.70
1:A:357:MET:HE3	1:A:362:LEU:HD21	1.73	0.69
1:A:294:MET:HE2	1:A:381:LEU:HB3	1.75	0.68
1:A:552:ASP:OD2	1:A:554:ALA:HB3	1.96	0.65
1:A:120:CYS:C	1:A:122:HIS:H	2.09	0.60
1:A:609:VAL:HG22	1:A:622:LEU:HD22	1.84	0.60
1:A:212:ASP:HB3	1:A:213:THR:HG23	1.85	0.59
1:A:227:ILE:HG22	1:A:233:GLU:HG3	1.84	0.58
2:B:61:MET:CE	2:B:70:LEU:HD12	2.32	0.58
1:A:147:GLN:HA	1:A:147:GLN:HE21	1.68	0.58
2:B:233:CYS:HB2	2:B:276:VAL:HG23	1.85	0.58
1:A:354:HIS:HA	1:A:357:MET:HE2	1.86	0.57
1:A:664:MET:HE3	2:B:101:MET:HG3	1.88	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:152:LEU:HD13	2:B:196:THR:HB	1.88	0.56
1:A:319:LYS:HA	1:A:380:MET:HG3	1.88	0.56
2:B:125:ASN:C	2:B:125:ASN:ND2	2.64	0.55
1:A:294:MET:SD	1:A:381:LEU:HD22	2.47	0.55
1:A:254:ILE:HD13	1:A:308:MET:HE2	1.88	0.55
2:B:61:MET:HE2	2:B:70:LEU:HD12	1.88	0.55
2:B:70:LEU:HD23	2:B:70:LEU:N	2.22	0.54
2:B:290:ASP:HA	2:B:314:ARG:HG2	1.88	0.54
1:A:120:CYS:SG	1:A:121:SER:N	2.80	0.54
2:B:61:MET:HE3	2:B:328:ALA:CB	2.38	0.53
1:A:661:VAL:HG21	2:B:117:LEU:HD21	1.89	0.53
1:A:294:MET:SD	1:A:294:MET:C	2.91	0.53
2:B:70:LEU:HD23	2:B:70:LEU:H	1.75	0.52
2:B:63:TRP:CD2	2:B:321:THR:HG22	2.45	0.52
1:A:567:LYS:HE3	1:A:577:GLN:OE1	2.11	0.50
2:B:73:ALA:HB2	2:B:103:CYS:HB3	1.94	0.50
1:A:113:ILE:HG22	1:A:114:MET:CE	2.35	0.50
2:B:70:LEU:HD21	2:B:82:TRP:HB2	1.92	0.50
1:A:39:ILE:HD11	1:A:639:GLU:CD	2.37	0.50
1:A:385:LEU:HD13	1:A:421:LEU:HD21	1.95	0.49
1:A:371:SER:HA	1:A:439:CYS:SG	2.52	0.49
1:A:551:GLU:O	1:A:552:ASP:C	2.54	0.49
1:A:637:ASP:HB2	1:A:638:PRO:HD3	1.95	0.48
2:B:61:MET:HE3	2:B:328:ALA:HB1	1.95	0.48
2:B:280:LYS:NZ	2:B:322:ASP:O	2.43	0.48
2:B:313:ASN:O	2:B:314:ARG:C	2.54	0.48
2:B:295:ASN:OD1	2:B:304:ARG:NE	2.47	0.48
1:A:122:HIS:N	1:A:123:PRO:CD	2.77	0.47
2:B:242:ALA:HA	2:B:251:ARG:O	2.14	0.47
1:A:637:ASP:O	1:A:641:VAL:HG23	2.13	0.47
1:A:145:LEU:HD12	1:A:145:LEU:O	2.14	0.47
1:A:605:GLU:HB3	1:A:624:ILE:HG23	1.97	0.47
2:B:152:LEU:HD23	2:B:152:LEU:N	2.31	0.46
2:B:26:ALA:HB2	2:B:259:GLN:HE22	1.81	0.46
2:B:71:VAL:HG22	2:B:105:TYR:CD2	2.50	0.45
1:A:614:ILE:HD11	1:A:631:ILE:HD13	1.97	0.45
1:A:113:ILE:CG2	1:A:114:MET:HE2	2.38	0.45
1:A:241:ILE:O	1:A:244:SER:HB3	2.17	0.45
2:B:125:ASN:ND2	2:B:127:LYS:H	2.14	0.45
2:B:163:ASP:C	2:B:164:THR:HG23	2.42	0.44
1:A:574:THR:HG22	1:A:575:GLN:N	2.32	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:651:TYR:C	1:A:651:TYR:CD1	2.95	0.44
2:B:103:CYS:HA	2:B:113:ALA:O	2.18	0.44
2:B:112:VAL:HG13	2:B:126:LEU:HD11	1.99	0.44
1:A:181:GLU:OE2	1:A:514:SER:OG	2.28	0.44
2:B:69:LEU:HA	2:B:82:TRP:O	2.18	0.43
1:A:664:MET:HE3	2:B:101:MET:CG	2.48	0.43
1:A:95:LEU:HD11	1:A:104:ARG:HG3	2.01	0.43
1:A:509:PHE:N	1:A:510:PRO:CD	2.82	0.43
2:B:154:ASP:O	2:B:171:ILE:HD12	2.18	0.43
2:B:63:TRP:CE2	2:B:321:THR:HG22	2.53	0.42
1:A:565:MET:HE2	1:A:632:LEU:HB3	2.01	0.42
2:B:254:ASP:HB2	2:B:261:LEU:HD11	2.01	0.42
1:A:578:ARG:O	1:A:579:ARG:HD3	2.19	0.42
2:B:70:LEU:CD2	2:B:82:TRP:HB2	2.49	0.42
2:B:160:SER:HB3	2:B:190:LEU:HD23	2.02	0.42
3:G:64:LYS:HD3	3:G:67:PHE:CE1	2.55	0.41
2:B:325:MET:HE3	3:G:60:PRO:HD3	2.01	0.41
1:A:120:CYS:C	1:A:122:HIS:N	2.77	0.41
1:A:77:GLU:HA	1:A:77:GLU:OE1	2.21	0.41
2:B:70:LEU:N	2:B:70:LEU:CD2	2.84	0.41
2:B:286:LEU:N	2:B:286:LEU:HD12	2.36	0.41
1:A:69:ARG:NE	1:A:87:GLU:OE1	2.52	0.41
1:A:108:ILE:C	1:A:110:ASP:H	2.29	0.41
1:A:624:ILE:O	1:A:626:GLY:N	2.53	0.41
2:B:73:ALA:HA	2:B:79:LEU:HD23	2.01	0.41
1:A:370:SER:O	1:A:371:SER:C	2.64	0.40
1:A:606:ILE:HD13	1:A:622:LEU:HD13	2.02	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	613/689 (89%)	575 (94%)	31 (5%)	7 (1%)	11	22
2	B	337/340 (99%)	312 (93%)	23 (7%)	2 (1%)	21	38
3	G	59/74 (80%)	58 (98%)	1 (2%)	0	100	100
All	All	1009/1103 (92%)	945 (94%)	55 (6%)	9 (1%)	14	28

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	473	PRO
1	A	625	ARG
1	A	109	PHE
1	A	668	PRO
1	A	201	GLY
1	A	575	GLN
2	B	314	ARG
2	B	310	GLY
1	A	198	GLY

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	555/609 (91%)	533 (96%)	22 (4%)	28	50
2	B	282/283 (100%)	271 (96%)	11 (4%)	28	51
3	G	50/61 (82%)	49 (98%)	1 (2%)	48	69
All	All	887/953 (93%)	853 (96%)	34 (4%)	29	52

All (34) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	113	ILE
1	A	120	CYS
1	A	133	GLN
1	A	204	GLU

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Mol	Chain	Res	Type
1	A	240	ARG
1	A	246	VAL
1	A	268	SER
1	A	294	MET
1	A	336	LEU
1	A	370	SER
1	A	393	GLN
1	A	411	VAL
1	A	437	LEU
1	A	493	THR
1	A	533	THR
1	A	550	GLU
1	A	566	SER
1	A	601	LEU
1	A	611	GLU
1	A	651	TYR
1	A	657	LEU
1	A	669	ARG
2	B	37	ILE
2	B	71	VAL
2	B	87	THR
2	B	122	SER
2	B	125	ASN
2	B	152	LEU
2	B	187	VAL
2	B	270	ILE
2	B	294	CYS
2	B	304	ARG
2	B	318	LEU
3	G	8	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (14) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	147	GLN
1	A	275	ASN
1	A	310	ASN
1	A	393	GLN
1	A	546	GLN
1	A	598	GLN
1	A	629	GLN
1	A	633	GLN

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Mol	Chain	Res	Type
1	A	666	ASN
2	B	6	GLN
2	B	13	GLN
2	B	125	ASN
2	B	239	ASN
2	B	259	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

1 non-standard protein/DNA/RNA residue 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
3	CMT	G	68	3	7,7,7	2.22	1 (14%)	6,8,8	2.82	4 (66%)

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	CMT	G	68	3	-	2/8/8/8	-

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	G	68	CMT	OXT-C	5.67	1.47	1.33

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
3	G	68	CMT	OXT-C-CA	4.24	122.28	111.50
3	G	68	CMT	CA-CB-SG	-3.71	106.47	114.40
3	G	68	CMT	C1-OXT-C	3.07	122.88	115.92
3	G	68	CMT	OXT-C-O	-2.20	119.56	123.85

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	G	68	CMT	CA-C-OXT-C1
3	G	68	CMT	O-C-OXT-C1

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	619/689 (89%)	0.54	32 (5%) 33 32	43, 59, 78, 91	0
2	B	339/340 (99%)	0.29	5 (1%) 72 71	39, 52, 74, 88	0
3	G	60/74 (81%)	0.47	2 (3%) 49 47	47, 55, 73, 74	0
All	All	1018/1103 (92%)	0.46	39 (3%) 44 41	39, 56, 76, 91	0

All (39) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	137	GLY	4.5
1	A	112	TYR	3.8
1	A	556	GLY	3.7
1	A	547	LEU	3.7
1	A	122	HIS	3.6
1	A	549	HIS	3.2
1	A	110	ASP	3.1
2	B	197	ARG	2.9
1	A	113	ILE	2.9
1	A	114	MET	2.8
1	A	594	GLY	2.8
1	A	117	LEU	2.7
1	A	495	GLY	2.7
1	A	574	THR	2.7
1	A	111	SER	2.6
1	A	250	ASP	2.6
1	A	550	GLU	2.6
1	A	120	CYS	2.5
1	A	440	LEU	2.5
1	A	614	ILE	2.4
3	G	9	ILE	2.4
1	A	598	GLN	2.4
1	A	30	LYS	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	118	LEU	2.3
1	A	551	GLU	2.3
1	A	473	PRO	2.3
1	A	232	GLY	2.3
1	A	227	ILE	2.2
1	A	128	ALA	2.2
1	A	265	ASP	2.2
2	B	2	SER	2.2
2	B	7	LEU	2.2
1	A	394	HIS	2.2
1	A	402	ILE	2.2
1	A	546	GLN	2.1
2	B	5	ASP	2.1
3	G	66	PHE	2.1
1	A	474	ARG	2.0
2	B	309	ALA	2.0

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, 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(Å ²)	Q<0.9
3	CMT	G	68	8/8	0.80	0.17	65,67,68,71	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides 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(Å ²)	Q<0.9
4	MG	A	690	1/1	0.92	0.07	57,57,57,57	0

6.5 Other polymers [i](#)

There are no such residues in this entry.