



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 29, 2018 – 07:31 AM EST

PDB ID : 6H7Y
Title : X-ray structure of human glutamate carboxypeptidase II (GCPII) in complex with a inhibitor RNA 1-79-1
Authors : Motlova, L.; Novakova, Z.; Barinka, C.
Deposited on : 2018-07-31
Resolution : 1.81 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 following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtriage (Phenix) : 1.13
EDS : rb-20031633
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)
Refmac : 5.8.0158
CCP4 : 7.0 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20031633

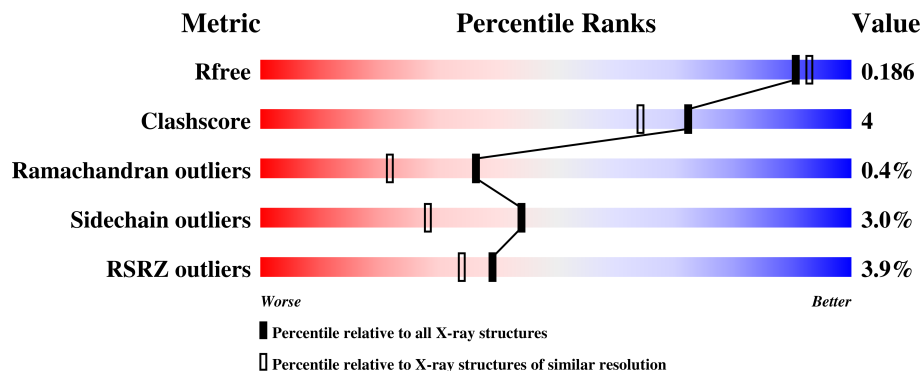
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

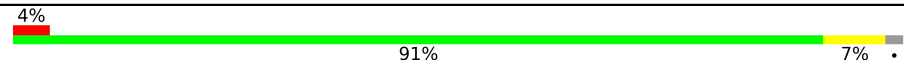
The reported resolution of this entry is 1.81 Å.

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}	111664	6455 (1.84-1.80)
Clashscore	122126	7349 (1.84-1.80)
Ramachandran outliers	120053	7272 (1.84-1.80)
Sidechain outliers	120020	7272 (1.84-1.80)
RSRZ outliers	108989	6347 (1.84-1.80)

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 $\leq 5\%$. 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	707	

2 Entry composition [i](#)

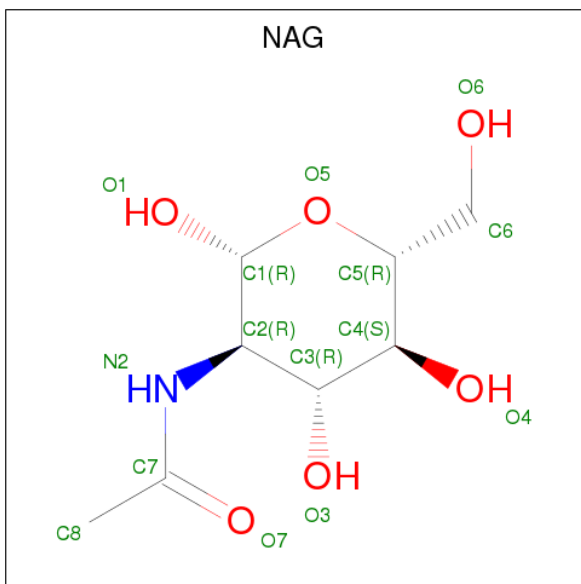
There are 13 unique types of molecules in this entry. The entry contains 6760 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Glutamate carboxypeptidase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	696	6012	3845	1015	1124	28	0	65	0

- Molecule 2 is N-ACETYL-D-GLUCOSAMINE (three-letter code: NAG) (formula: C₈H₁₅NO₆).



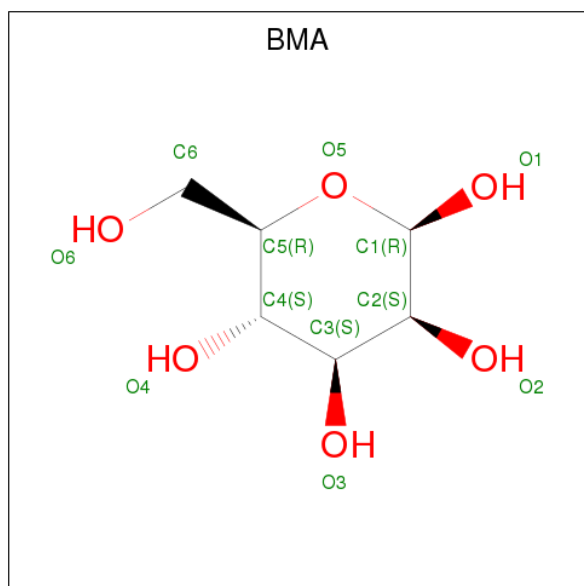
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	N	O		
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0
2	A	1	14	8	1	5	0	0

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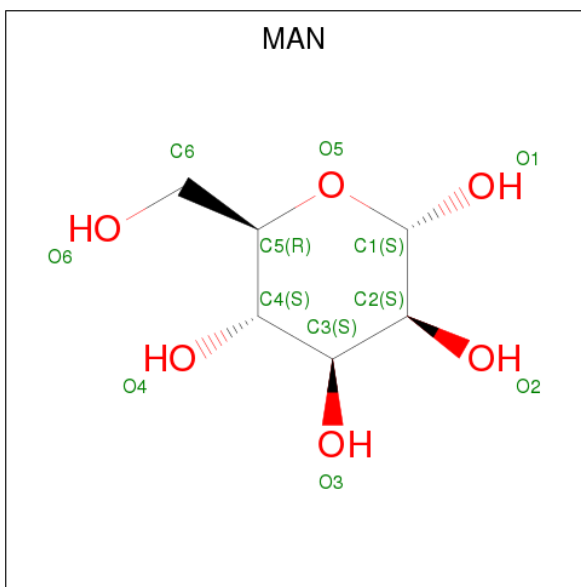
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		
2	A	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 3 is BETA-D-MANNOSE (three-letter code: BMA) (formula: C₆H₁₂O₆).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			11	6	5		
3	A	1	Total	C	O	0	0
			11	6	5		

- Molecule 4 is ALPHA-D-MANNOSE (three-letter code: MAN) (formula: C₆H₁₂O₆).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 11 6 5	0	0
4	A	1	Total C O 11 6 5	0	0
4	A	1	Total C O 11 6 5	0	0

- Molecule 5 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	2	Total Zn 2 2	0	0

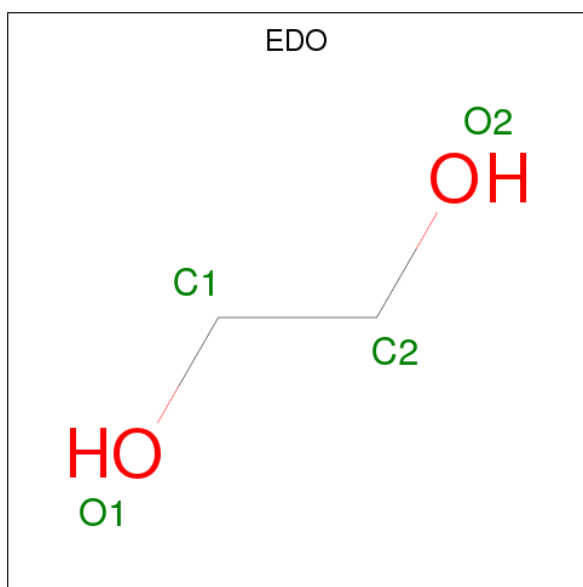
- Molecule 6 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total Ca 1 1	0	0

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

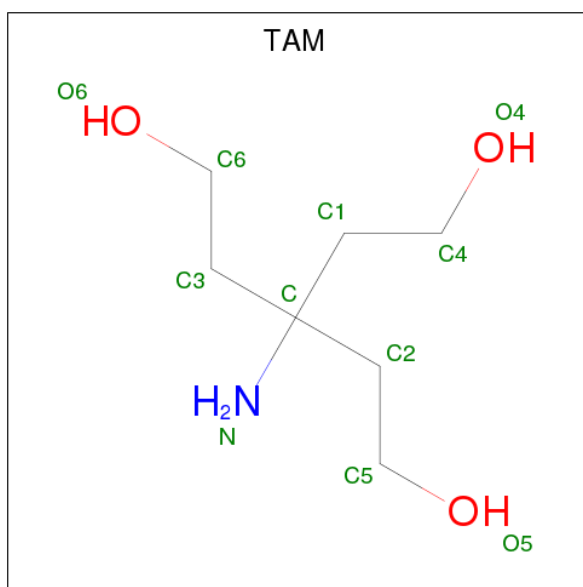
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	2	Total Cl 2 2	0	0

- Molecule 8 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



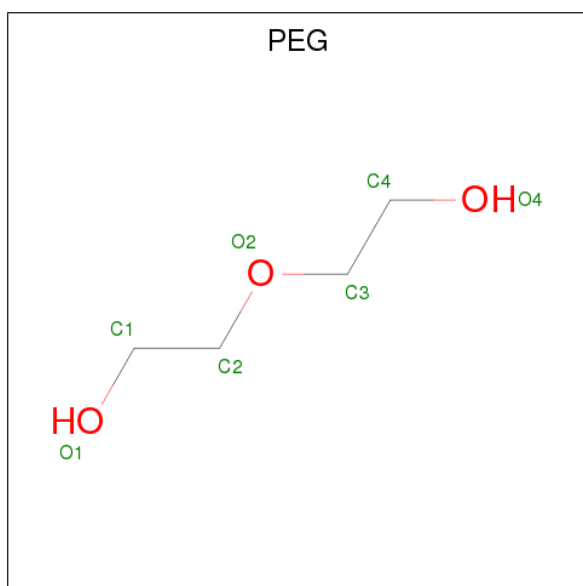
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	1	Total C O 4 2 2	0	0
8	A	1	Total C O 4 2 2	0	0
8	A	1	Total C O 4 2 2	0	0
8	A	1	Total C O 4 2 2	0	0
8	A	1	Total C O 4 2 2	0	0
8	A	1	Total C O 4 2 2	0	0

- Molecule 9 is TRIS(HYDROXYETHYL)AMINOMETHANE (three-letter code: TAM) (formula: C₇H₁₇NO₃).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf	
9	A	1	Total	C	N	O	0	0
			11	7	1	3		
9	A	1	Total	C	N	O	0	0
			11	7	1	3		

- Molecule 10 is DI(HYDROXYETHYL)ETHER (three-letter code: PEG) (formula: $C_4H_{10}O_3$).



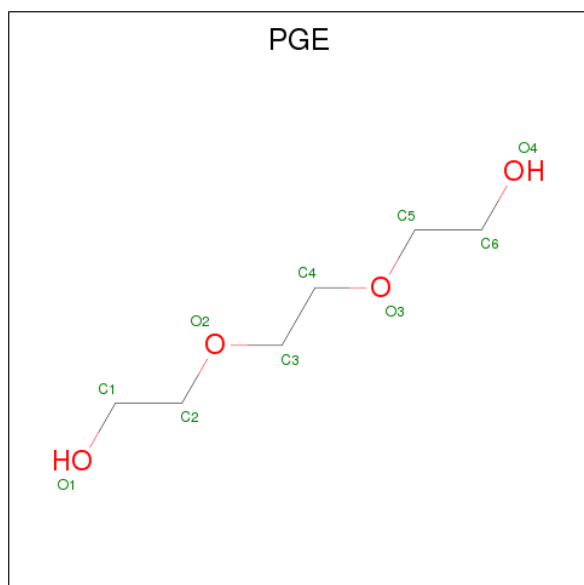
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	A	1	Total	C	O		
			7	4	3	0	0

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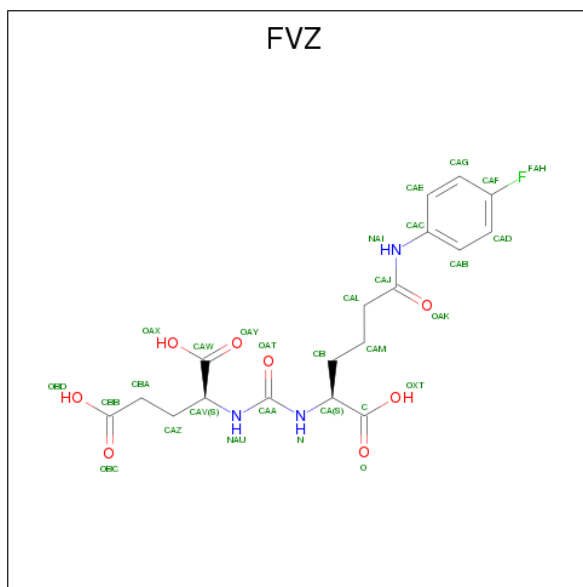
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
10	A	1	Total	C	O	0	0
			7	4	3		
10	A	1	Total	C	O	0	0
			7	4	3		

- Molecule 11 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: C₆H₁₄O₄).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
11	A	1	Total	C	O	0	0
			10	6	4		

- Molecule 12 is (2 {S})-2-[[[(2 {S})-6-[(4-fluorophenyl)amino]-1-oxidanyl-1,6-bis(oxidanylidene)hexan-2-yl]carbamoylamino]pentanedioic acid (three-letter code: FVZ) (formula: C₁₈H₂₂FN₃O₈).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	F	N	O		
12	A	1	30	18	1	3	8	0	0

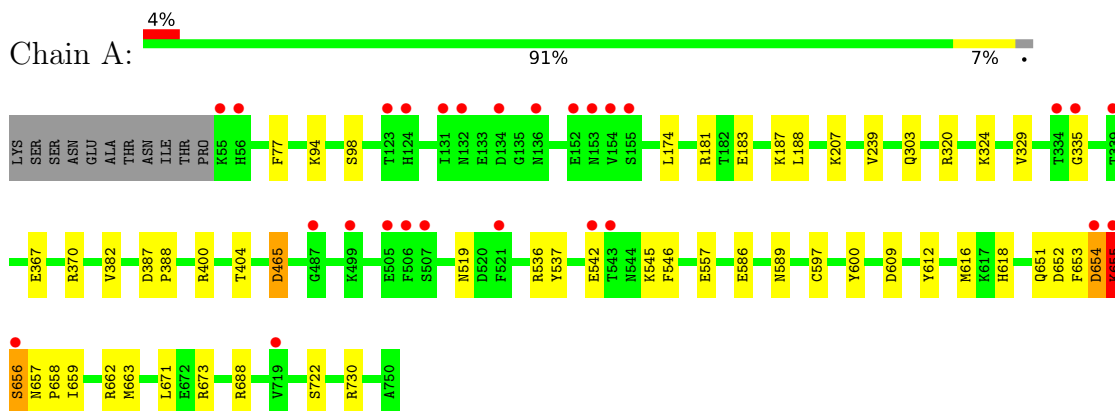
- Molecule 13 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
13	A	427	Total	O	0	0
			427	427		

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 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: Glutamate carboxypeptidase 2



4 Data and refinement statistics

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	102.26Å 131.38Å 159.87Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.26 – 1.81 47.26 – 1.81	Depositor EDS
% Data completeness (in resolution range)	98.7 (47.26-1.81) 98.7 (47.26-1.81)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.95 (at 1.81Å)	Xtrriage
Refinement program	REFMAC 5.8.0135	Depositor
R, R_{free}	0.150 , 0.178 0.164 , 0.186	Depositor DCC
R_{free} test set	2099 reflections (2.18%)	wwPDB-VP
Wilson B-factor (Å ²)	28.7	Xtrriage
Anisotropy	0.569	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 59.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	6760	wwPDB-VP
Average B, all atoms (Å ²)	44.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.67% 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: ZN, BMA, NAG, CL, CA, EDO, PGE, FVZ, TAM, PEG, MAN

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	0.87	2/6238 (0.0%)	0.83	7/8433 (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
1	A	0	1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	183	GLU	CD-OE1	6.95	1.33	1.25
1	A	557	GLU	CB-CG	-5.59	1.41	1.52

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	370	ARG	NE-CZ-NH1	6.84	123.72	120.30
1	A	465	ASP	CB-CG-OD1	6.53	124.17	118.30
1	A	730	ARG	NE-CZ-NH1	5.52	123.06	120.30
1	A	77	PHE	CB-CG-CD1	5.44	124.61	120.80
1	A	536	ARG	NE-CZ-NH1	5.26	122.93	120.30
1	A	370	ARG	NE-CZ-NH2	-5.10	117.75	120.30
1	A	609	ASP	CB-CG-OD1	5.06	122.86	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	654[A]	ASP	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	6012	0	5843	46	0
2	A	154	0	137	0	0
3	A	22	0	17	0	0
4	A	33	0	30	0	0
5	A	2	0	0	0	0
6	A	1	0	0	0	0
7	A	2	0	0	0	0
8	A	24	0	36	0	0
9	A	22	0	34	1	0
10	A	21	0	30	0	0
11	A	10	0	13	0	0
12	A	30	0	0	0	0
13	A	427	0	0	3	0
All	All	6760	0	6140	47	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.

All (47) 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:655[B]:LYS:CD	1:A:656[B]:SER:H	1.18	1.55
1:A:655[B]:LYS:HD2	1:A:656[B]:SER:N	1.04	1.35
1:A:655[B]:LYS:HD2	1:A:656[B]:SER:CA	1.83	1.06
1:A:654[B]:ASP:O	1:A:655[B]:LYS:CB	1.95	1.05
1:A:654[B]:ASP:O	1:A:655[B]:LYS:HB3	1.24	1.04
1:A:655[B]:LYS:CD	1:A:656[B]:SER:HB3	1.87	1.03
1:A:653[A]:PHE:O	1:A:654[A]:ASP:O	1.87	0.92
1:A:655[B]:LYS:HE2	1:A:656[B]:SER:OG	1.69	0.91
1:A:655[B]:LYS:CD	1:A:656[B]:SER:CB	2.50	0.90
1:A:655[B]:LYS:HD3	1:A:656[B]:SER:HB3	1.57	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:655[B]:LYS:HD2	1:A:656[B]:SER:CB	2.11	0.80
1:A:207[A]:LYS:HD3	1:A:546:PHE:HB3	1.64	0.79
1:A:655[B]:LYS:CG	1:A:656[B]:SER:H	1.95	0.75
1:A:652[A]:ASP:O	1:A:654[A]:ASP:N	2.24	0.71
1:A:655[B]:LYS:CD	1:A:656[B]:SER:N	1.98	0.71
1:A:652[A]:ASP:C	1:A:654[A]:ASP:H	1.93	0.71
1:A:655[B]:LYS:CE	1:A:656[B]:SER:CB	2.68	0.71
1:A:655[B]:LYS:CE	1:A:656[B]:SER:HB3	2.24	0.67
1:A:207[A]:LYS:HE2	1:A:546:PHE:CG	2.30	0.66
1:A:651[B]:GLN:NE2	1:A:652[B]:ASP:OD1	2.29	0.65
1:A:597[B]:CYS:SG	1:A:671:LEU:CD2	2.85	0.64
1:A:597[B]:CYS:SG	1:A:671:LEU:HD22	2.37	0.63
1:A:652[A]:ASP:C	1:A:654[A]:ASP:N	2.50	0.63
1:A:655[B]:LYS:CE	1:A:656[B]:SER:OG	2.45	0.63
1:A:181:ARG:HD3	1:A:207[B]:LYS:HG2	1.81	0.62
1:A:654[B]:ASP:OD1	1:A:655[B]:LYS:HG3	2.00	0.62
1:A:655[B]:LYS:HE2	1:A:656[B]:SER:CB	2.31	0.60
1:A:400:ARG:O	1:A:404:THR:HG23	2.01	0.59
1:A:207[A]:LYS:HE2	1:A:546:PHE:CD2	2.39	0.58
1:A:654[B]:ASP:O	1:A:655[B]:LYS:CG	2.51	0.57
1:A:618:HIS:HD2	13:A:1104:HOH:O	1.87	0.57
1:A:688[B]:ARG:NH1	13:A:902:HOH:O	1.92	0.54
1:A:207[B]:LYS:HG3	1:A:207[B]:LYS:O	2.10	0.52
1:A:367:GLU:OE1	1:A:662[A]:ARG:NH1	2.41	0.52
1:A:652[A]:ASP:O	1:A:653[A]:PHE:C	2.45	0.51
1:A:659[B]:ILE:O	1:A:663[B]:MET:HG3	2.12	0.49
1:A:320[B]:ARG:HH11	1:A:320[B]:ARG:HB3	1.78	0.49
1:A:320[B]:ARG:NH1	1:A:320[B]:ARG:HB3	2.28	0.48
1:A:656[B]:SER:O	1:A:658[B]:PRO:HD3	2.14	0.48
9:A:827:TAM:C4	13:A:909:HOH:O	2.62	0.47
1:A:659[A]:ILE:HD13	1:A:659[A]:ILE:N	2.30	0.47
1:A:655[B]:LYS:C	1:A:657[B]:ASN:H	2.18	0.46
1:A:586[A]:GLU:HA	1:A:586[A]:GLU:OE1	2.19	0.42
1:A:188:LEU:HD11	1:A:329:VAL:CG1	2.50	0.41
1:A:612:TYR:CZ	1:A:616[B]:MET:HG3	2.56	0.41
1:A:387:ASP:HA	1:A:388:PRO:HA	1.95	0.41
1:A:653[B]:PHE:CD1	1:A:654[B]:ASP:N	2.89	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	760/707 (108%)	730 (96%)	26 (3%)	4 (0%)	31 16

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	655[A]	LYS
1	A	655[B]	LYS
1	A	335	GLY
1	A	382	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	659/603 (109%)	633 (96%)	26 (4%)	35 18

All (26) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	94[A]	LYS
1	A	94[B]	LYS
1	A	98[A]	SER
1	A	98[B]	SER
1	A	98[C]	SER
1	A	174	LEU
1	A	187	LYS

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Mol	Chain	Res	Type
1	A	239[A]	VAL
1	A	239[B]	VAL
1	A	303	GLN
1	A	324	LYS
1	A	465	ASP
1	A	519	ASN
1	A	537	TYR
1	A	542	GLU
1	A	545	LYS
1	A	589[A]	ASN
1	A	589[B]	ASN
1	A	600	TYR
1	A	655[A]	LYS
1	A	655[B]	LYS
1	A	656[A]	SER
1	A	656[B]	SER
1	A	673	ARG
1	A	722[A]	SER
1	A	722[B]	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	475	HIS

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

Of 34 ligands modelled in this entry, 5 are monoatomic - leaving 29 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
2	NAG	A	801	1,2	14,14,15	0.46	0	17,19,21	1.34	2 (11%)
2	NAG	A	802	2	14,14,15	0.63	0	17,19,21	1.66	3 (17%)
2	NAG	A	803	1	14,14,15	0.77	0	17,19,21	2.17	6 (35%)
2	NAG	A	804	1,2	14,14,15	0.80	0	17,19,21	1.04	0
2	NAG	A	805	2	14,14,15	0.60	0	17,19,21	1.10	1 (5%)
2	NAG	A	806	1	14,14,15	0.68	0	17,19,21	2.02	6 (35%)
2	NAG	A	807	1	14,14,15	0.75	0	17,19,21	2.17	6 (35%)
2	NAG	A	808	1,2	14,14,15	0.74	0	17,19,21	1.29	3 (17%)
2	NAG	A	809	3,2	14,14,15	0.49	0	17,19,21	1.42	3 (17%)
3	BMA	A	810	2,4	11,11,12	0.75	0	15,15,17	1.40	3 (20%)
4	MAN	A	811	3	11,11,12	0.66	0	15,15,17	1.21	2 (13%)
2	NAG	A	812	1,2	14,14,15	0.57	0	17,19,21	1.41	2 (11%)
2	NAG	A	813	3,2	14,14,15	0.72	0	17,19,21	1.45	2 (11%)
3	BMA	A	814	2,4	11,11,12	0.86	0	15,15,17	1.09	1 (6%)
4	MAN	A	815	3	11,11,12	0.67	0	15,15,17	1.17	1 (6%)
4	MAN	A	816	3	11,11,12	0.75	0	15,15,17	1.38	3 (20%)
8	EDO	A	821	-	3,3,3	0.43	0	2,2,2	0.44	0
8	EDO	A	822	-	3,3,3	0.49	0	2,2,2	0.05	0
8	EDO	A	823	-	3,3,3	0.48	0	2,2,2	0.23	0
8	EDO	A	824	-	3,3,3	0.50	0	2,2,2	0.37	0
8	EDO	A	825	-	3,3,3	0.44	0	2,2,2	0.42	0
8	EDO	A	826	-	3,3,3	0.49	0	2,2,2	0.29	0
9	TAM	A	827	-	7,10,10	1.20	1 (14%)	9,12,12	1.93	2 (22%)
9	TAM	A	828	-	7,10,10	0.69	0	9,12,12	1.21	1 (11%)
10	PEG	A	829	-	6,6,6	0.46	0	5,5,5	0.48	0
10	PEG	A	830	-	6,6,6	0.57	0	5,5,5	0.33	0
10	PEG	A	831	-	6,6,6	0.51	0	5,5,5	0.29	0
11	PGE	A	832	-	9,9,9	1.07	0	8,8,8	2.72	4 (50%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
12	FVZ	A	833	5	21,30,30	2.12	6 (28%)	27,39,39	1.60	6 (22%)

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
2	NAG	A	801	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	802	2	-	0/6/23/26	0/1/1/1
2	NAG	A	803	1	-	0/6/23/26	0/1/1/1
2	NAG	A	804	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	805	2	-	0/6/23/26	0/1/1/1
2	NAG	A	806	1	-	0/6/23/26	0/1/1/1
2	NAG	A	807	1	-	0/6/23/26	0/1/1/1
2	NAG	A	808	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	809	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	810	2,4	-	0/2/19/22	0/1/1/1
4	MAN	A	811	3	-	0/2/19/22	0/1/1/1
2	NAG	A	812	1,2	-	0/6/23/26	0/1/1/1
2	NAG	A	813	3,2	-	0/6/23/26	0/1/1/1
3	BMA	A	814	2,4	-	0/2/19/22	0/1/1/1
4	MAN	A	815	3	-	0/2/19/22	0/1/1/1
4	MAN	A	816	3	-	0/2/19/22	0/1/1/1
8	EDO	A	821	-	-	0/1/1/1	0/0/0/0
8	EDO	A	822	-	-	0/1/1/1	0/0/0/0
8	EDO	A	823	-	-	0/1/1/1	0/0/0/0
8	EDO	A	824	-	-	0/1/1/1	0/0/0/0
8	EDO	A	825	-	-	0/1/1/1	0/0/0/0
8	EDO	A	826	-	-	0/1/1/1	0/0/0/0
9	TAM	A	827	-	-	0/12/12/12	0/0/0/0
9	TAM	A	828	-	-	0/12/12/12	0/0/0/0
10	PEG	A	829	-	-	0/4/4/4	0/0/0/0
10	PEG	A	830	-	-	0/4/4/4	0/0/0/0
10	PEG	A	831	-	-	0/4/4/4	0/0/0/0
11	PGE	A	832	-	-	0/7/7/7	0/0/0/0
12	FVZ	A	833	5	-	0/21/31/31	0/1/1/1

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	A	833	FVZ	CAC-NAI	-2.24	1.37	1.41

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
12	A	833	FVZ	CAD-CAF	2.01	1.41	1.37
12	A	833	FVZ	CA-N	2.32	1.49	1.46
9	A	827	TAM	C1-C4	2.33	1.56	1.52
12	A	833	FVZ	CAL-CAJ	3.65	1.58	1.51
12	A	833	FVZ	CAZ-CAV	4.48	1.59	1.53
12	A	833	FVZ	FAH-CAF	5.06	1.48	1.36

All (57) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
11	A	832	PGE	C5-O3-C4	-4.99	91.39	113.30
2	A	806	NAG	O5-C1-C2	-3.59	106.56	111.52
2	A	807	NAG	O5-C1-C2	-3.48	106.72	111.52
11	A	832	PGE	C3-O2-C2	-3.39	98.41	113.30
2	A	801	NAG	O5-C1-C2	-3.23	107.06	111.52
2	A	812	NAG	O5-C1-C2	-3.15	107.17	111.52
12	A	833	FVZ	CAD-CAF-CAG	-3.02	118.74	122.86
2	A	813	NAG	O4-C4-C5	-2.97	101.86	109.31
2	A	803	NAG	C1-C2-N2	-2.91	105.52	110.49
12	A	833	FVZ	CAZ-CAV-CAW	-2.85	107.89	112.11
2	A	807	NAG	C4-C3-C2	-2.65	107.13	111.02
11	A	832	PGE	O2-C2-C1	-2.60	98.44	110.10
4	A	811	MAN	O5-C1-C2	-2.52	106.86	110.78
11	A	832	PGE	O3-C4-C3	-2.48	98.92	110.37
4	A	816	MAN	O3-C3-C2	-2.46	105.46	110.04
3	A	814	BMA	C2-C3-C4	-2.41	106.68	110.87
2	A	809	NAG	O7-C7-N2	-2.37	117.47	121.94
12	A	833	FVZ	CAW-CAV-NAU	-2.33	107.33	112.39
2	A	808	NAG	O5-C1-C2	-2.32	108.32	111.52
4	A	816	MAN	O5-C5-C4	-2.30	105.24	110.83
2	A	809	NAG	C4-C3-C2	-2.29	107.66	111.02
2	A	808	NAG	O4-C4-C3	-2.26	105.07	110.34
2	A	806	NAG	O7-C7-C8	-2.20	118.10	122.07
2	A	807	NAG	C3-C4-C5	-2.17	106.37	110.24
2	A	802	NAG	O5-C1-C2	-2.08	108.65	111.52
12	A	833	FVZ	CB-CA-N	-2.03	107.22	110.19
2	A	806	NAG	C3-C4-C5	-2.03	106.61	110.24
2	A	807	NAG	O3-C3-C4	-2.02	105.63	110.34
3	A	810	BMA	O2-C2-C3	2.02	114.14	110.19
2	A	803	NAG	C4-C3-C2	2.06	114.03	111.02
12	A	833	FVZ	CAE-CAG-CAF	2.07	120.53	118.35
3	A	810	BMA	C3-C4-C5	2.09	113.99	110.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	805	NAG	O5-C5-C6	2.23	110.67	107.15
4	A	816	MAN	O5-C5-C6	2.32	110.82	107.15
2	A	813	NAG	C8-C7-N2	2.33	120.18	116.10
4	A	815	MAN	O3-C3-C2	2.33	114.37	110.04
2	A	802	NAG	C8-C7-N2	2.54	120.56	116.10
9	A	828	TAM	C3-C-C1	2.60	115.09	110.50
2	A	803	NAG	C3-C4-C5	2.60	114.89	110.24
2	A	801	NAG	O5-C5-C6	2.70	111.43	107.15
4	A	811	MAN	O5-C5-C6	2.78	111.55	107.15
2	A	803	NAG	C8-C7-N2	3.03	121.41	116.10
2	A	808	NAG	C2-N2-C7	3.08	127.43	122.94
2	A	806	NAG	O5-C5-C6	3.23	112.27	107.15
12	A	833	FVZ	CAZ-CAV-NAU	3.25	114.95	110.19
2	A	809	NAG	C8-C7-N2	3.35	121.97	116.10
2	A	803	NAG	C1-O5-C5	3.36	116.81	112.19
2	A	807	NAG	O5-C5-C6	3.37	112.47	107.15
9	A	827	TAM	O4-C4-C1	3.41	120.80	111.38
2	A	806	NAG	C8-C7-N2	3.43	122.11	116.10
2	A	812	NAG	C1-O5-C5	3.53	117.05	112.19
3	A	810	BMA	O5-C5-C6	3.69	112.99	107.15
9	A	827	TAM	C3-C-C1	4.04	117.62	110.50
2	A	806	NAG	C1-O5-C5	4.06	117.77	112.19
2	A	802	NAG	C2-N2-C7	4.13	128.97	122.94
2	A	803	NAG	O5-C5-C6	4.80	114.75	107.15
2	A	807	NAG	C1-O5-C5	5.40	119.61	112.19

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
9	A	827	TAM	1	0

5.7 Other polymers [\(i\)](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

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	696/707 (98%)	0.09	27 (3%) 39 34	29, 40, 61, 97	0

All (27) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	543	THR	6.1
1	A	155[A]	SER	4.9
1	A	719[A]	VAL	4.6
1	A	507	SER	3.8
1	A	153	ASN	3.6
1	A	505	GLU	3.3
1	A	335	GLY	3.3
1	A	134	ASP	3.3
1	A	55	LYS	3.2
1	A	506	PHE	3.2
1	A	154	VAL	3.1
1	A	654[A]	ASP	2.8
1	A	124	HIS	2.7
1	A	656[A]	SER	2.6
1	A	542	GLU	2.6
1	A	56	HIS	2.6
1	A	487	GLY	2.5
1	A	123	THR	2.5
1	A	499	LYS	2.4
1	A	136	ASN	2.4
1	A	334	THR	2.4
1	A	339	THR	2.3
1	A	152	GLU	2.2
1	A	521	PHE	2.2
1	A	131	ILE	2.1
1	A	132	ASN	2.1
1	A	655[A]	LYS	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. 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
10	PEG	A	830	7/7	0.47	0.27	83,85,92,93	0
8	EDO	A	825	4/4	0.48	0.23	83,86,89,92	0
9	TAM	A	827	11/11	0.56	0.25	52,76,81,82	0
8	EDO	A	822	4/4	0.59	0.25	77,84,85,90	0
8	EDO	A	823	4/4	0.60	0.19	80,80,80,83	0
9	TAM	A	828	11/11	0.65	0.17	66,70,76,79	0
2	NAG	A	803	14/15	0.67	0.27	65,75,89,92	0
2	NAG	A	806	14/15	0.71	0.28	83,90,93,94	0
4	MAN	A	811	11/12	0.71	0.30	82,86,88,89	0
8	EDO	A	824	4/4	0.74	0.31	86,90,93,96	0
4	MAN	A	816	11/12	0.77	0.20	63,74,78,78	0
2	NAG	A	802	14/15	0.77	0.31	57,67,73,78	0
10	PEG	A	831	7/7	0.78	0.15	83,86,87,90	0
8	EDO	A	826	4/4	0.78	0.21	90,91,92,93	0
2	NAG	A	807	14/15	0.80	0.17	48,67,74,75	0
2	NAG	A	805	14/15	0.81	0.33	70,76,82,89	0
3	BMA	A	810	11/12	0.82	0.26	80,89,93,93	0
2	NAG	A	804	14/15	0.84	0.18	56,57,61,66	0
10	PEG	A	829	7/7	0.86	0.15	65,67,70,72	0
2	NAG	A	809	14/15	0.90	0.15	57,64,75,75	0
2	NAG	A	812	14/15	0.90	0.10	36,40,49,58	0
8	EDO	A	821	4/4	0.90	0.40	61,71,72,80	0
2	NAG	A	813	14/15	0.91	0.14	49,52,58,66	0
4	MAN	A	815	11/12	0.93	0.09	51,56,59,60	0
2	NAG	A	808	14/15	0.93	0.10	47,49,54,58	0
3	BMA	A	814	11/12	0.93	0.10	49,52,56,60	0
2	NAG	A	801	14/15	0.94	0.17	47,56,63,65	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
11	PGE	A	832	10/10	0.94	0.24	19,27,28,31	10
12	FVZ	A	833	30/30	0.95	0.16	30,34,54,58	0
7	CL	A	834	1/1	0.98	0.19	43,43,43,43	0
6	CA	A	819	1/1	1.00	0.09	31,31,31,31	0
5	ZN	A	818	1/1	1.00	0.10	32,32,32,32	0
7	CL	A	820	1/1	1.00	0.17	34,34,34,34	0
5	ZN	A	817	1/1	1.00	0.08	33,33,33,33	0

6.5 Other polymers [i](#)

There are no such residues in this entry.