



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 27, 2014 – 02:14 PM GMT

PDB ID : 4B8B
Title : N-Terminal domain of the yeast Not1
Authors : Basquin, J.; Conti, E.
Deposited on : 2012-08-26
Resolution : 2.80 Å(reported)

This is a full wwPDB validation 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/ValidationPDFNotes.html>

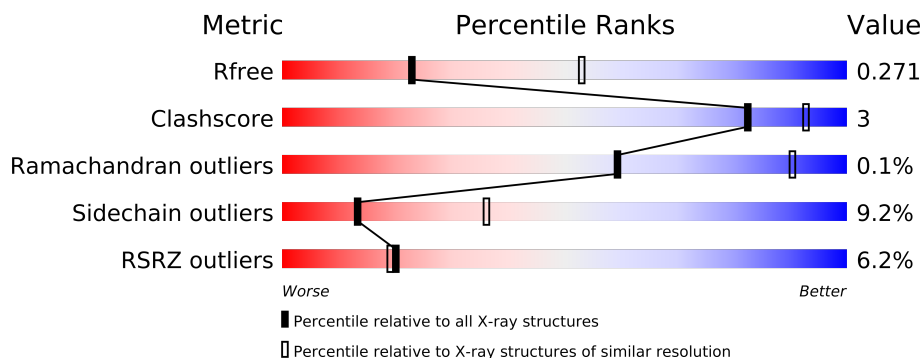
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.80 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}	66092	1799 (2.80-2.80)
Clashscore	79885	2295 (2.80-2.80)
Ramachandran outliers	78287	2252 (2.80-2.80)
Sidechain outliers	78261	2254 (2.80-2.80)
RSRZ outliers	66119	1802 (2.80-2.80)

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. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	603	
1	B	603	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
2	AU	A	1751	-	X
2	AU	A	1757	-	X
2	AU	B	1751	-	X
2	AU	B	1752	-	X

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 8410 atoms, of which 0 are hydrogen and 0 are deuterium.

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 GENERAL NEGATIVE REGULATOR OF TRANSCRIPTION SUBUNIT 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	528	Total	C	N	O	S	0	0	0
			4179	2705	680	776	18			
1	B	529	Total	C	N	O	S	0	0	0
			4202	2716	687	781	18			

- Molecule 2 is GOLD ION (three-letter code: AU) (formula: Au).

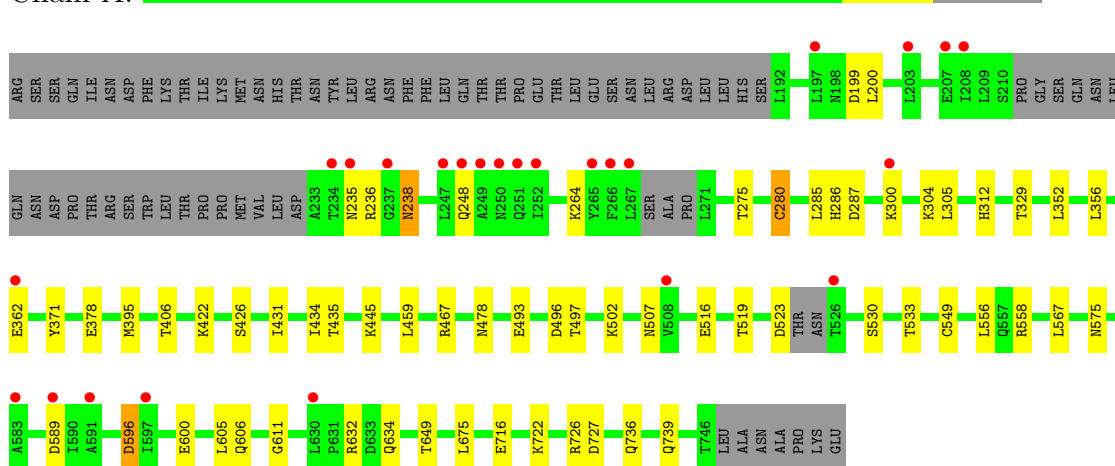
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	14	Total	Au	0	0
			14	14		
2	A	15	Total	Au	0	0
			15	15		

3 Residue-property plots

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

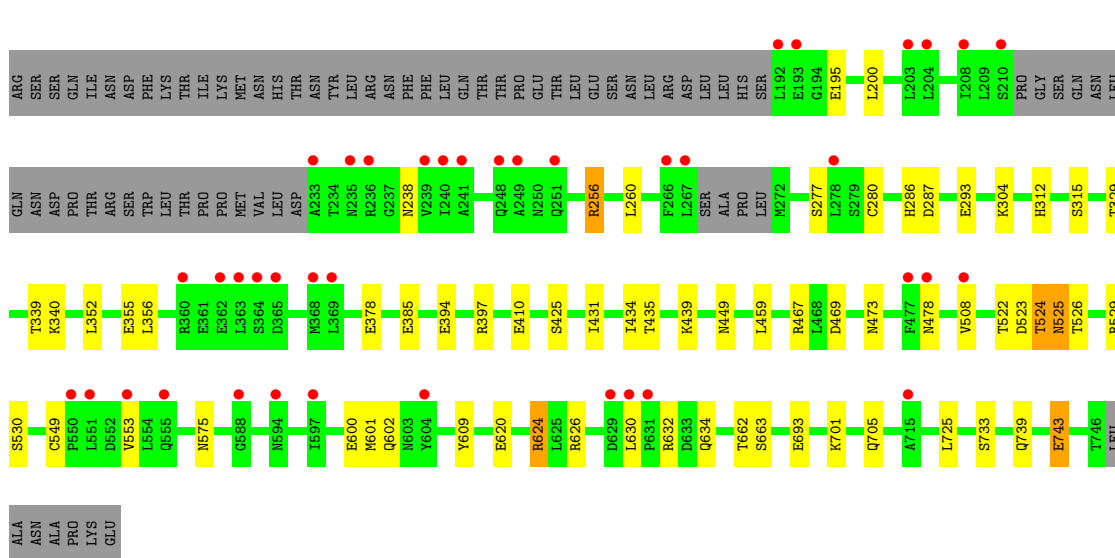
• Molecule 1: GENERAL NEGATIVE REGULATOR OF TRANSCRIPTION SUBUNIT 1

Chain A:



• Molecule 1: GENERAL NEGATIVE REGULATOR OF TRANSCRIPTION SUBUNIT 1

Chain B:



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	55.10Å 164.51Å 86.14Å 90.00° 100.05° 90.00°	Depositor
Resolution (Å)	46.05 – 2.80 46.05 – 2.80	Depositor EDS
% Data completeness (in resolution range)	99.7 (46.05-2.80) 99.8 (46.05-2.80)	Depositor EDS
R_{merge}	0.05	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.36 (at 2.81Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.238 , 0.276 0.235 , 0.271	Depositor DCC
R_{free} test set	1855 reflections (5.01%)	DCC
Wilson B-factor (Å ²)	61.4	Xtriage
Anisotropy	0.607	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 32.0	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Outliers	1 of 37058 reflections (0.003%)	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	8410	wwPDB-VP
Average B, all atoms (Å ²)	59.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.52% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

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	0.47	0/4257	0.64	0/5768
1	B	0.45	0/4281	0.63	0/5800
All	All	0.46	0/8538	0.64	0/11568

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

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	264	LYS	Peptide

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4179	0	0	10	0
1	B	4202	0	0	16	0
2	A	15	0	0	0	0
2	B	14	0	0	0	0
All	All	8410	0	0	26	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 3.

All (26) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:575:ASN:ND2	1:B:634:GLN:OE1	2.10	0.83
1:A:600:GLU:OE1	1:A:632:ARG:NH2	2.29	0.65
1:A:286:HIS:ND1	1:A:287:ASP:OD1	2.29	0.65
1:B:340:LYS:NZ	1:B:385:GLU:OE2	2.32	0.62
1:B:304:LYS:NZ	1:B:355:GLU:OE2	2.33	0.61
1:A:575:ASN:ND2	1:A:634:GLN:OE1	2.37	0.58
1:A:312:HIS:NE2	1:A:378:GLU:OE1	2.37	0.58
1:A:434:ILE:O	1:A:467:ARG:NH1	2.40	0.55
1:A:502:LYS:O	1:A:507:ASN:ND2	2.41	0.54
1:B:522:THR:N	1:B:525:ASN:OD1	2.42	0.53
1:A:596:ASP:OD1	1:A:596:ASP:N	2.41	0.52
1:B:739:GLN:NE2	1:B:743:GLU:OE1	2.43	0.52
1:B:701:LYS:NZ	1:B:705:GLN:OE1	2.44	0.51
1:A:726:ARG:NE	1:A:727:ASP:OD1	2.43	0.51
1:B:312:HIS:NE2	1:B:378:GLU:OE1	2.44	0.51
1:B:620:GLU:OE2	1:B:624:ARG:NH2	2.44	0.51
1:B:394:GLU:OE1	1:B:397:ARG:NH1	2.44	0.51
1:B:609:TYR:OH	1:B:662:THR:OG1	2.29	0.51
1:B:434:ILE:O	1:B:467:ARG:NH2	2.45	0.50
1:B:600:GLU:OE1	1:B:632:ARG:NH2	2.45	0.49
1:B:469:ASP:O	1:B:473:ASN:ND2	2.45	0.49
1:A:516:GLU:O	1:A:519:THR:OG1	2.31	0.47
1:B:195:GLU:OE2	1:B:256:ARG:NE	2.50	0.45
1:B:286:HIS:ND1	1:B:287:ASP:OD1	2.53	0.42
1:B:524:THR:O	1:B:524:THR:OG1	2.39	0.41
1:A:238:ASN:OD1	1:A:280:CYS:SG	2.79	0.41

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone ⓘ

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	520/603 (86%)	500 (96%)	19 (4%)	1 (0%)	56	88
1	B	523/603 (87%)	501 (96%)	22 (4%)	0	100	100
All	All	1043/1206 (86%)	1001 (96%)	41 (4%)	1 (0%)	59	90

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	611	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	461/544 (85%)	415 (90%)	46 (10%)	11	30
1	B	466/544 (86%)	427 (92%)	39 (8%)	16	41
All	All	927/1088 (85%)	842 (91%)	85 (9%)	13	36

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	199	ASP
1	A	200	LEU
1	A	235	ASN
1	A	236	ARG
1	A	238	ASN
1	A	248	GLN
1	A	275	THR
1	A	280	CYS

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Mol	Chain	Res	Type
1	A	285	LEU
1	A	300	LYS
1	A	304	LYS
1	A	305	LEU
1	A	329	THR
1	A	352	LEU
1	A	356	LEU
1	A	362	GLU
1	A	371	TYR
1	A	395	MET
1	A	406	THR
1	A	422	LYS
1	A	426	SER
1	A	431	ILE
1	A	435	THR
1	A	445	LYS
1	A	459	LEU
1	A	478	ASN
1	A	493	GLU
1	A	496	ASP
1	A	497	THR
1	A	523	ASP
1	A	530	SER
1	A	533	THR
1	A	549	CYS
1	A	556	LEU
1	A	558	ARG
1	A	567	LEU
1	A	589	ASP
1	A	596	ASP
1	A	605	LEU
1	A	606	GLN
1	A	649	THR
1	A	675	LEU
1	A	716	GLU
1	A	722	LYS
1	A	736	GLN
1	A	739	GLN
1	B	200	LEU
1	B	238	ASN
1	B	256	ARG
1	B	260	LEU

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Mol	Chain	Res	Type
1	B	277	SER
1	B	280	CYS
1	B	293	GLU
1	B	315	SER
1	B	329	THR
1	B	339	THR
1	B	352	LEU
1	B	356	LEU
1	B	410	GLU
1	B	425	SER
1	B	431	ILE
1	B	435	THR
1	B	439	LYS
1	B	449	ASN
1	B	459	LEU
1	B	478	ASN
1	B	508	VAL
1	B	523	ASP
1	B	524	THR
1	B	525	ASN
1	B	526	THR
1	B	529	ARG
1	B	530	SER
1	B	549	CYS
1	B	553	VAL
1	B	601	MET
1	B	602	GLN
1	B	624	ARG
1	B	626	ARG
1	B	630	LEU
1	B	663	SER
1	B	693	GLU
1	B	725	LEU
1	B	733	SER
1	B	743	GLU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

5.3.3 RNA ⓘ

There are no RNA chains in this entry.

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

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 29 ligands modelled in this entry, 29 are 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.

5.7 Other polymers ⓘ

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	528/603 (87%)	0.25	25 (4%)	30 30	28, 54, 98, 145	0
1	B	529/603 (87%)	0.32	40 (7%)	14 12	35, 54, 102, 169	0
All	All	1057/1206 (87%)	0.29	65 (6%)	20 20	28, 54, 101, 169	0

All (65) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	266	PHE	6.7
1	B	553	VAL	5.1
1	A	248	GLN	5.1
1	A	267	LEU	4.8
1	B	267	LEU	4.4
1	B	362	GLU	4.1
1	A	591	ALA	4.0
1	A	197	LEU	4.0
1	A	247	LEU	4.0
1	A	266	PHE	4.0
1	B	631	PRO	3.9
1	B	363	LEU	3.7
1	B	235	ASN	3.7
1	A	251	GLN	3.5
1	B	233	ALA	3.5
1	A	362	GLU	3.5
1	B	630	LEU	3.5
1	B	208	ILE	3.4
1	A	207	GLU	3.2
1	A	234	THR	3.2
1	B	364	SER	3.0
1	A	252	ILE	3.0
1	B	508	VAL	3.0
1	A	630	LEU	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	235	ASN	2.9
1	B	594	ASN	2.9
1	B	249	ALA	2.9
1	B	248	GLN	2.9
1	A	508	VAL	2.9
1	B	241	ALA	2.8
1	A	237	GLY	2.7
1	B	555	GLN	2.7
1	B	210	SER	2.7
1	B	365	ASP	2.7
1	A	249	ALA	2.6
1	A	589	ASP	2.5
1	B	368	MET	2.5
1	A	265	TYR	2.4
1	A	250	ASN	2.4
1	B	278	LEU	2.4
1	B	369	LEU	2.4
1	A	300	LYS	2.4
1	B	192	LEU	2.4
1	B	204	LEU	2.3
1	B	604	TYR	2.3
1	B	588	GLY	2.3
1	B	597	ILE	2.3
1	B	478	ASN	2.3
1	B	239	VAL	2.3
1	B	240	ILE	2.2
1	A	526	THR	2.2
1	A	203	LEU	2.2
1	B	193	GLU	2.1
1	B	251	GLN	2.1
1	B	203	LEU	2.1
1	B	551	LEU	2.1
1	B	715	ALA	2.1
1	B	550	PRO	2.1
1	B	236	ARG	2.1
1	B	360	ARG	2.1
1	B	629	ASP	2.1
1	A	583	ALA	2.1
1	A	597	ILE	2.0
1	A	208	ILE	2.0
1	B	477	PHE	2.0

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

There are no non-standard protein/DNA/RNA residues in this entry.

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

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	RSR	LLDF	B-factors(Å ²)	Q<0.9
2	AU	B	1752	1/1	0.70	17.73	38,38,38,38	1
2	AU	B	1751	1/1	0.43	9.12	156,156,156,156	1
2	AU	A	1751	1/1	0.41	3.56	217,217,217,217	1
2	AU	A	1757	1/1	0.21	2.06	120,120,120,120	1
2	AU	A	1750	1/1	0.41	1.16	100,100,100,100	1
2	AU	A	1755	1/1	0.26	0.83	103,103,103,103	1
2	AU	B	1750	1/1	0.21	0.61	127,127,127,127	1
2	AU	B	1753	1/1	0.16	0.38	93,93,93,93	1
2	AU	A	1752	1/1	0.21	0.36	71,71,71,71	1
2	AU	B	1756	1/1	0.25	0.10	154,154,154,154	1
2	AU	A	1756	1/1	0.22	-0.03	115,115,115,115	1
2	AU	A	1802	1/1	0.22	-0.28	147,147,147,147	1
2	AU	B	1754	1/1	0.24	-0.41	120,120,120,120	1
2	AU	A	1748	1/1	0.06	-1.47	77,77,77,77	1
2	AU	A	1803	1/1	0.13	-1.58	138,138,138,138	1
2	AU	A	1749	1/1	0.11	-2.07	5,5,5,5	1
2	AU	B	1755	1/1	0.13	-2.09	139,139,139,139	1
2	AU	B	1749	1/1	0.13	-2.09	1,1,1,1	1
2	AU	B	1748	1/1	0.09	-2.25	67,67,67,67	1
2	AU	B	1747	1/1	0.12	-2.26	63,63,63,63	1
2	AU	A	1753	1/1	0.11	-2.59	71,71,71,71	1
2	AU	B	1802	1/1	0.10	-2.65	82,82,82,82	1
2	AU	B	1803	1/1	0.19	-3.39	118,118,118,118	1
2	AU	A	1754	1/1	0.10	-3.56	101,101,101,101	1
2	AU	A	1747	1/1	0.09	-3.78	66,66,66,66	1

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Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(\AA^2)	Q<0.9
2	AU	B	1801	1/1	0.24	-	180,180,180,180	1
2	AU	B	1800	1/1	0.76	-	543,543,543,543	0
2	AU	A	1801	1/1	0.07	-	127,127,127,127	1
2	AU	A	1800	1/1	0.04	-	76,76,76,76	0

6.5 Other polymers ⓘ

There are no such residues in this entry.