



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 26, 2021 – 06:03 pm BST

PDB ID : 6YXO
Title : Structure of the N-terminal module of the human SWI/SNF-subunit BAF155/SMARCC1
Authors : Allen, M.D.; Bycroft, M.; Zinzalla, G.
Deposited on : 2020-05-03
Resolution : 2.00 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 : 1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.23.2
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0267
CCP4 : 7.1.010 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.23.2

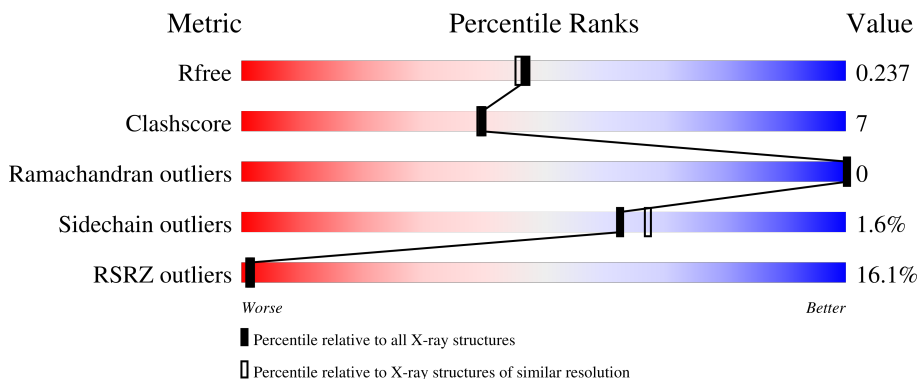
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.00 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}	130704	8085 (2.00-2.00)
Clashscore	141614	9178 (2.00-2.00)
Ramachandran outliers	138981	9054 (2.00-2.00)
Sidechain outliers	138945	9053 (2.00-2.00)
RSRZ outliers	127900	7900 (2.00-2.00)

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	276	 14% 81% 16% ..
1	B	276	 16% 83% 14% .

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 4819 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 SWI/SNF complex subunit SMARCC1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	N	O	S	Se			
1	A	270	2241	1438	390	404	3	6	0	0	0
1	B	270	2241	1438	390	404	3	6	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	27	SER	-	expression tag	UNP Q92922
B	27	SER	-	expression tag	UNP Q92922

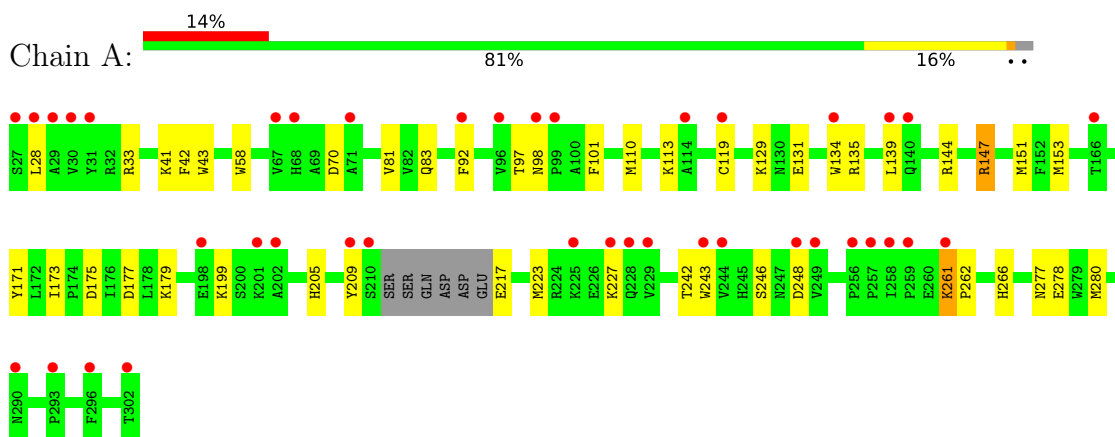
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
2	A	176	176	176	0	0
2	B	161	161	161	0	0

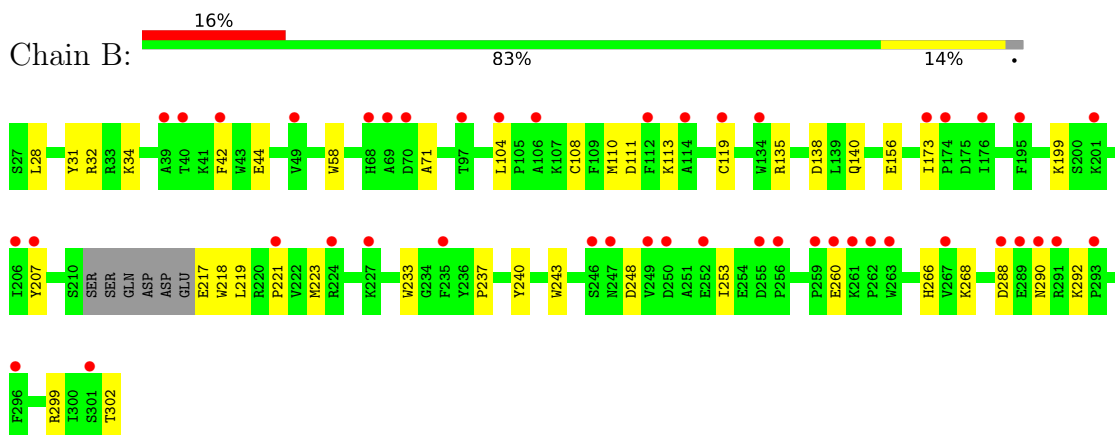
3 Residue-property plots [i](#)

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: SWI/SNF complex subunit SMARCC1



- Molecule 1: SWI/SNF complex subunit SMARCC1



4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	43.81Å 136.81Å 56.04Å 90.00° 110.52° 90.00°	Depositor
Resolution (Å)	49.01 – 2.00 49.00 – 2.00	Depositor EDS
% Data completeness (in resolution range)	99.5 (49.01-2.00) 99.5 (49.00-2.00)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.02 (at 2.00Å)	Xtrriage
Refinement program	PHENIX (1.14_3260: ???)	Depositor
R, R_{free}	0.197 , 0.238 0.197 , 0.237	Depositor DCC
R_{free} test set	2121 reflections (5.12%)	wwPDB-VP
Wilson B-factor (Å ²)	38.0	Xtrriage
Anisotropy	0.163	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	(Not available) , (Not available)	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtrriage
Estimated twinning fraction	0.033 for h,-k,-h-l	Xtrriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	4819	wwPDB-VP
Average B, all atoms (Å ²)	43.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.33% 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](#)

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	0.30	0/2300	0.44	0/3107
1	B	0.29	0/2300	0.43	0/3107
All	All	0.29	0/4600	0.44	0/6214

There are no bond length outliers.

There are no bond angle outliers.

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	2241	0	2192	40	0
1	B	2241	0	2192	28	0
2	A	176	0	0	9	3
2	B	161	0	0	6	2
All	All	4819	0	4384	65	4

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 7.

All (65) 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:261:LYS:NZ	2:A:402:HOH:O	1.91	1.02

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:175:ASP:OD1	2:A:403:HOH:O	1.93	0.85
1:B:108:CYS:SG	2:B:422:HOH:O	2.42	0.76
1:B:173:ILE:O	2:B:401:HOH:O	2.04	0.76
1:A:131:GLU:OE1	2:A:404:HOH:O	2.03	0.75
1:A:134:TRP:HZ3	1:A:151:MSE:HE3	1.57	0.70
1:A:135:ARG:O	2:A:405:HOH:O	2.10	0.69
1:A:70:ASP:OD2	2:A:406:HOH:O	2.11	0.67
1:B:71:ALA:O	2:B:403:HOH:O	2.13	0.67
1:A:217:GLU:N	2:A:408:HOH:O	2.28	0.66
1:B:140:GLN:O	2:B:402:HOH:O	2.12	0.66
1:A:97:THR:HA	2:A:401:HOH:O	2.01	0.61
1:B:266:HIS:CE1	1:B:268:LYS:HB2	2.37	0.59
1:A:113:LYS:NZ	2:A:407:HOH:O	2.21	0.59
1:A:153:MSE:HE1	1:B:31:TYR:CZ	2.39	0.58
1:A:153:MSE:HE1	1:B:31:TYR:CE2	2.39	0.57
1:A:209:TYR:HB2	1:A:266:HIS:HB2	1.85	0.57
1:B:44:GLU:OE2	2:B:404:HOH:O	2.18	0.57
1:A:42:PHE:CE2	1:A:110:MSE:HE1	2.40	0.57
1:A:134:TRP:HZ3	1:A:151:MSE:CE	2.17	0.57
1:A:129:LYS:HG3	1:A:134:TRP:HB2	1.87	0.56
1:B:290:ASN:HB2	1:B:292:LYS:HE3	1.88	0.56
1:A:171:TYR:HE2	1:A:173:ILE:HD13	1.72	0.55
1:B:218:TRP:CE2	1:B:299:ARG:HD3	2.43	0.53
1:A:98:ASN:N	2:A:401:HOH:O	1.91	0.52
1:A:134:TRP:CZ3	1:A:151:MSE:HE3	2.41	0.52
1:B:266:HIS:HE1	1:B:268:LYS:HB2	1.76	0.50
1:A:147:ARG:NE	1:B:248:ASP:OD1	2.43	0.50
1:B:28:LEU:HD23	1:B:219:LEU:HD21	1.94	0.50
1:B:237:PRO:HG2	1:B:240:TYR:CD1	2.47	0.49
1:B:104:LEU:HD21	1:B:156:GLU:HB2	1.94	0.49
1:A:223:MSE:HE3	1:A:243:TRP:CH2	2.47	0.49
1:B:42:PHE:CZ	1:B:110:MSE:HE1	2.47	0.48
1:B:32:ARG:HG3	1:B:233:TRP:CD1	2.48	0.48
1:A:261:LYS:HE3	1:A:261:LYS:HB3	1.69	0.48
1:B:219:LEU:HD23	1:B:302:THR:HG22	1.97	0.47
1:A:41:LYS:HA	1:A:41:LYS:HD2	1.47	0.47
1:B:207:TYR:OH	2:B:405:HOH:O	2.20	0.46
1:A:227:LYS:O	1:A:246:SER:N	2.35	0.46
1:A:278:GLU:O	1:A:280:MSE:HE2	2.16	0.46
1:A:33:ARG:HG3	1:A:242:THR:OG1	2.16	0.46
1:A:173:ILE:HG22	1:A:175:ASP:H	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:43:TRP:CH2	1:A:81:VAL:HG11	2.52	0.45
1:A:58:TRP:CE3	1:A:119:CYS:HB3	2.51	0.45
1:A:28:LEU:HD11	1:A:248:ASP:HB3	1.99	0.45
1:A:199:LYS:HB3	1:A:205:HIS:CE1	2.51	0.45
1:B:288:ASP:OD1	1:B:292:LYS:HB2	2.16	0.45
1:B:217:GLU:N	1:B:217:GLU:OE2	2.51	0.44
1:B:111:ASP:OD1	1:B:113:LYS:HG2	2.18	0.44
1:B:218:TRP:CE3	1:B:299:ARG:HB3	2.53	0.43
1:B:221:PRO:HB2	1:B:253:ILE:HG13	2.01	0.43
1:B:223:MSE:HE2	1:B:243:TRP:CH2	2.53	0.43
1:B:237:PRO:HG2	1:B:240:TYR:HD1	1.83	0.42
1:A:83:GLN:HB3	1:A:139:LEU:HD12	2.02	0.42
1:A:205:HIS:CE1	1:A:262:PRO:HG3	2.55	0.42
1:A:92:PHE:CE1	1:A:101:PHE:HB3	2.55	0.42
1:A:134:TRP:CZ2	1:A:144:ARG:HD3	2.54	0.42
1:A:223:MSE:HE3	1:A:243:TRP:CZ2	2.55	0.41
1:A:261:LYS:HA	1:A:262:PRO:HA	1.83	0.41
1:B:58:TRP:CZ3	1:B:119:CYS:HB3	2.56	0.41
1:A:42:PHE:HE2	1:A:110:MSE:HE1	1.83	0.41
1:B:34:LYS:HB2	1:B:34:LYS:HE2	1.86	0.41
1:A:134:TRP:HZ2	1:A:147:ARG:HB3	1.85	0.41
1:A:171:TYR:CD2	1:A:199:LYS:HG2	2.56	0.40
1:A:92:PHE:HB3	1:A:277:ASN:ND2	2.36	0.40

All (4) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:536:HOH:O	2:A:537:HOH:O[1_556]	1.70	0.50
2:A:566:HOH:O	2:B:530:HOH:O[1_455]	1.81	0.39
2:B:434:HOH:O	2:B:524:HOH:O[1_655]	2.09	0.11
2:A:547:HOH:O	2:A:562:HOH:O[1_556]	2.10	0.10

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	266/276 (96%)	262 (98%)	4 (2%)	0	100	100
1	B	266/276 (96%)	259 (97%)	7 (3%)	0	100	100
All	All	532/552 (96%)	521 (98%)	11 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	244/244 (100%)	240 (98%)	4 (2%)	62	67
1	B	244/244 (100%)	240 (98%)	4 (2%)	62	67
All	All	488/488 (100%)	480 (98%)	8 (2%)	62	67

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	147	ARG
1	A	177	ASP
1	A	179	LYS
1	A	261	LYS
1	B	135	ARG
1	B	138	ASP
1	B	199	LYS
1	B	260	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	247	ASN
1	B	247	ASN

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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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	264/276 (95%)	1.21	40 (15%) 2 1	28, 41, 65, 77	0
1	B	264/276 (95%)	1.20	45 (17%) 1 1	26, 40, 65, 88	0
All	All	528/552 (95%)	1.21	85 (16%) 1 1	26, 41, 65, 88	0

All (85) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	210	SER	8.6
1	B	261	LYS	6.5
1	A	31	TYR	6.5
1	B	250	ASP	5.9
1	A	258	ILE	5.7
1	A	257	PRO	5.5
1	A	30	VAL	5.2
1	A	296	PHE	4.8
1	A	248	ASP	4.6
1	B	224	ARG	4.6
1	B	249	VAL	4.6
1	B	97	THR	4.5
1	A	29	ALA	4.2
1	B	114	ALA	4.1
1	A	249	VAL	3.9
1	B	227	LYS	3.9
1	B	259	PRO	3.9
1	A	28	LEU	3.7
1	B	255	ASP	3.7
1	B	173	ILE	3.7
1	A	225	LYS	3.4
1	A	259	PRO	3.3
1	B	290	ASN	3.3
1	B	68	HIS	3.3

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Mol	Chain	Res	Type	RSRZ
1	B	289	GLU	3.2
1	A	228	GLN	3.2
1	B	293	PRO	3.1
1	A	140	GLN	3.1
1	B	296	PHE	3.0
1	A	114	ALA	3.0
1	B	69	ALA	3.0
1	A	202	ALA	2.9
1	B	206	ILE	2.9
1	B	39	ALA	2.9
1	B	301	SER	2.9
1	B	288	ASP	2.8
1	A	201	LYS	2.8
1	A	96	VAL	2.8
1	B	106	ALA	2.8
1	B	291	ARG	2.8
1	A	256	PRO	2.8
1	B	262	PRO	2.7
1	A	209	TYR	2.7
1	B	176	ILE	2.6
1	B	263	TRP	2.6
1	B	70	ASP	2.6
1	B	112	PHE	2.6
1	A	229	VAL	2.6
1	B	246	SER	2.6
1	A	134	TRP	2.6
1	B	119	CYS	2.6
1	A	68	HIS	2.5
1	B	201	LYS	2.5
1	A	99	PRO	2.5
1	A	244	VAL	2.5
1	B	134	TRP	2.4
1	B	260	GLU	2.4
1	A	98	ASN	2.4
1	A	139	LEU	2.4
1	A	293	PRO	2.4
1	B	221	PRO	2.4
1	B	174	PRO	2.4
1	B	40	THR	2.3
1	A	290	ASN	2.3
1	A	166	THR	2.3
1	B	247	ASN	2.3

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Mol	Chain	Res	Type	RSRZ
1	A	27	SER	2.3
1	A	71	ALA	2.3
1	B	42	PHE	2.2
1	B	195	PHE	2.2
1	B	267	VAL	2.2
1	A	302	THR	2.2
1	B	256	PRO	2.2
1	A	261	LYS	2.2
1	A	227	LYS	2.1
1	B	207	TYR	2.1
1	A	243	TRP	2.1
1	B	235	PHE	2.1
1	B	252	GLU	2.1
1	A	198	GLU	2.1
1	A	67	VAL	2.0
1	B	49	VAL	2.0
1	A	119	CYS	2.0
1	B	104	LEU	2.0
1	A	92	PHE	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 monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.