



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 08:41 AM UTC

PDB ID : 8SDJ / pdb_00008sdj
Title : Hydrophobic Interactions Drive the Tetrameric Assembly of the TRIM20 Coiled-Coil Domain
Authors : Lou, X.H.; Ma, B.B.; Zhuang, Y.; Li, X.C.
Deposited on : 2023-04-06
Resolution : 2.40 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
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

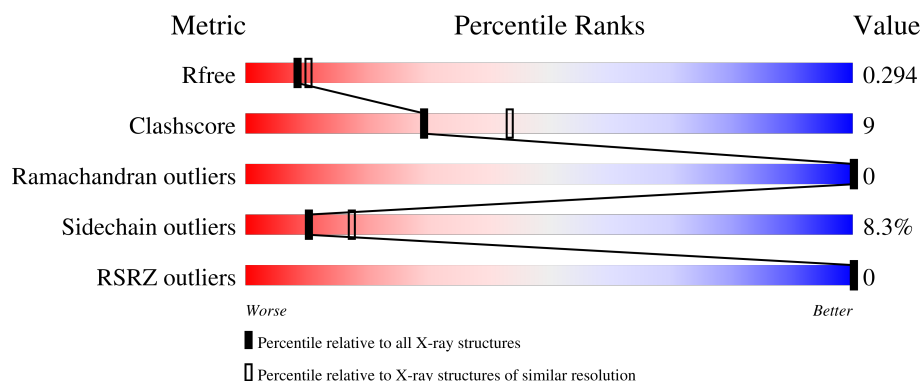
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

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	112	 70% 24% . .
1	B	112	 75% 22% .
1	C	112	 64% 33% . .
1	D	112	 75% 22% .

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 3722 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 Pyrin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	112	Total	C	N	O	S	0	3	0
			929	586	163	178	2			
1	B	112	Total	C	N	O	S	0	2	0
			923	582	163	176	2			
1	C	112	Total	C	N	O	S	0	4	0
			935	590	164	179	2			
1	D	112	Total	C	N	O	S	0	4	0
			935	590	164	179	2			

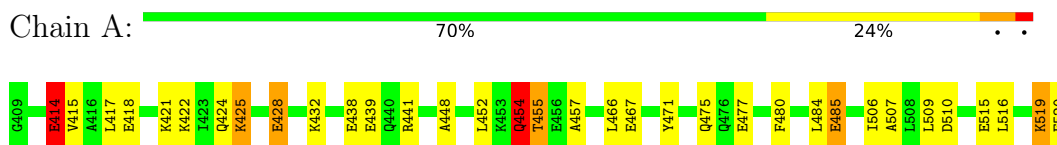
There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	409	GLY	-	expression tag	UNP O15553
A	410	PRO	-	expression tag	UNP O15553
A	411	SER	-	expression tag	UNP O15553
A	412	GLY	-	expression tag	UNP O15553
A	413	GLY	-	expression tag	UNP O15553
B	409	GLY	-	expression tag	UNP O15553
B	410	PRO	-	expression tag	UNP O15553
B	411	SER	-	expression tag	UNP O15553
B	412	GLY	-	expression tag	UNP O15553
B	413	GLY	-	expression tag	UNP O15553
C	409	GLY	-	expression tag	UNP O15553
C	410	PRO	-	expression tag	UNP O15553
C	411	SER	-	expression tag	UNP O15553
C	412	GLY	-	expression tag	UNP O15553
C	413	GLY	-	expression tag	UNP O15553
D	409	GLY	-	expression tag	UNP O15553
D	410	PRO	-	expression tag	UNP O15553
D	411	SER	-	expression tag	UNP O15553
D	412	GLY	-	expression tag	UNP O15553
D	413	GLY	-	expression tag	UNP O15553

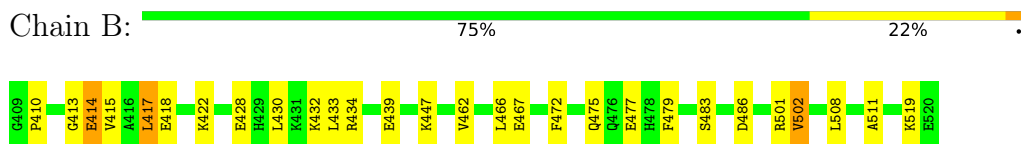
3 Residue-property plots

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.

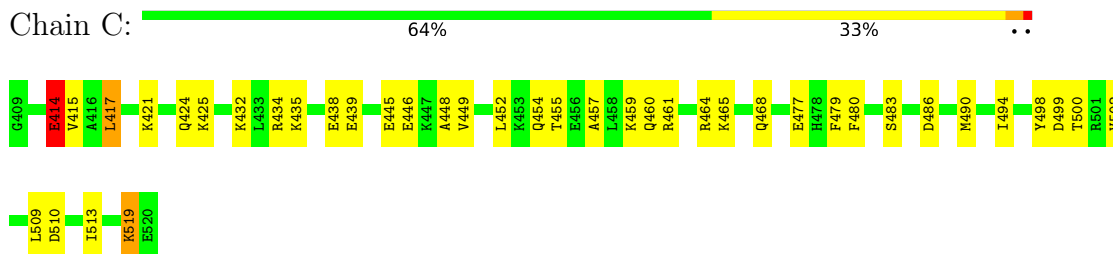
- Molecule 1: Pyrin



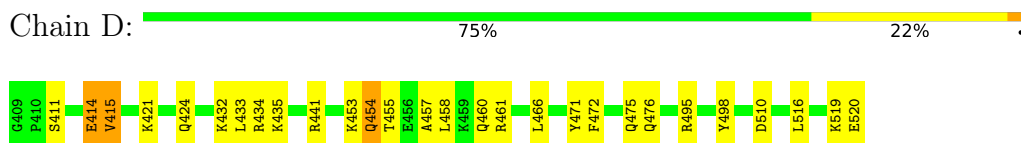
- Molecule 1: Pyrin



- Molecule 1: Pyrin



- Molecule 1: Pyrin



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	38.60Å 38.83Å 164.30Å 90.00° 89.94° 90.00°	Depositor
Resolution (Å)	9.00 – 2.40 9.00 – 2.40	Depositor EDS
% Data completeness (in resolution range)	95.1 (9.00-2.40) 95.5 (9.00-2.40)	Depositor EDS
R_{merge}	0.03	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	3.51 (at 2.39Å)	Xtriage
Refinement program	REFMAC 5.8.0267	Depositor
R, R_{free}	0.259 , 0.294 0.259 , 0.294	Depositor DCC
R_{free} test set	838 reflections (4.30%)	wwPDB-VP
Wilson B-factor (Å ²)	49.4	Xtriage
Anisotropy	0.955	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.28 , 48.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.52$, $\langle L^2 \rangle = 0.36$	Xtriage
Estimated twinning fraction	0.477 for k,h,-l 0.476 for -k,-h,-l 0.480 for h,-k,-l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	3722	wwPDB-VP
Average B, all atoms (Å ²)	75.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 11.01% 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

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	0.59	0/946	1.34	5/1260 (0.4%)
1	B	0.58	0/937	1.36	4/1248 (0.3%)
1	C	0.61	0/955	1.36	3/1272 (0.2%)
1	D	0.60	0/955	1.33	4/1272 (0.3%)
All	All	0.59	0/3793	1.35	16/5052 (0.3%)

There are no bond length outliers.

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	414	GLU	CB-CG-CD	7.34	125.07	112.60
1	D	454	GLN	CA-C-N	6.68	129.56	120.54
1	D	454	GLN	C-N-CA	6.68	129.56	120.54
1	A	414	GLU	CB-CG-CD	6.02	122.83	112.60
1	B	410	PRO	N-CA-C	5.55	120.84	113.57
1	A	454	GLN	CB-CA-C	-5.54	101.95	110.81
1	C	414	GLU	CB-CG-CD	5.51	121.97	112.60
1	C	479	PHE	CA-CB-CG	5.50	119.30	113.80
1	D	495	ARG	CB-CG-CD	5.49	123.92	111.30
1	B	479	PHE	CA-CB-CG	5.44	119.24	113.80
1	A	485	GLU	N-CA-C	-5.22	105.48	111.07
1	B	414	GLU	CB-CG-CD	5.22	121.47	112.60
1	A	439	GLU	CB-CG-CD	5.14	121.33	112.60
1	A	519	LYS	CB-CA-C	5.03	119.24	110.79
1	C	459	LYS	N-CA-C	-5.02	105.72	111.14
1	B	439	GLU	CB-CG-CD	5.02	121.13	112.60

There are no chirality outliers.

There are no planarity outliers.

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	929	0	946	23	0
1	B	923	0	940	15	0
1	C	935	0	954	26	0
1	D	935	0	954	17	0
All	All	3722	0	3794	65	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 9.

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:C:434:ARG:O	1:C:438:GLU:HG3	1.92	0.69
1:A:516:LEU:O	1:A:520:GLU:HB3	1.97	0.63
1:A:421:LYS:O	1:A:424[A]:GLN:HG2	2.00	0.62
1:D:411:SER:O	1:D:415:VAL:HG13	2.02	0.60
1:A:471:TYR:OH	1:A:475:GLN:NE2	2.34	0.60
1:A:424[A]:GLN:HG3	1:A:425:LYS:N	2.17	0.58
1:A:466:LEU:HD13	1:B:477:GLU:HB2	1.86	0.58
1:A:480:PHE:HZ	1:C:480:PHE:CE1	2.23	0.55
1:C:414:GLU:OE2	1:C:417:LEU:HD22	2.05	0.55
1:A:441:ARG:HG3	1:B:502:VAL:CG1	2.36	0.55
1:C:510:ASP:OD2	1:D:434:ARG:NH2	2.40	0.54
1:D:432:LYS:O	1:D:435:LYS:N	2.41	0.54
1:A:414:GLU:OE2	1:A:417:LEU:HD22	2.08	0.53
1:B:413:GLY:O	1:B:417:LEU:HB2	2.09	0.53
1:D:471:TYR:OH	1:D:475:GLN:NE2	2.41	0.52
1:D:516:LEU:O	1:D:520:GLU:HB3	2.10	0.51
1:B:472:PHE:HZ	1:C:465:LYS:HD2	1.76	0.51
1:C:421:LYS:O	1:C:424[B]:GLN:HG2	2.10	0.51
1:A:441:ARG:HG3	1:B:502:VAL:HG11	1.93	0.51
1:B:472:PHE:CZ	1:C:465:LYS:HD2	2.45	0.51
1:C:510:ASP:OD1	1:D:434:ARG:NE	2.40	0.51
1:D:411:SER:O	1:D:415:VAL:CG1	2.58	0.51
1:C:424[B]:GLN:HG3	1:C:425:LYS:N	2.27	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:418:GLU:O	1:B:422:LYS:HB2	2.13	0.49
1:B:501:ARG:NH2	1:C:439:GLU:OE1	2.47	0.48
1:C:448:ALA:O	1:C:452:LEU:HG	2.14	0.48
1:C:519:LYS:HB3	1:C:519:LYS:HE3	1.67	0.47
1:A:506:ILE:O	1:A:509:LEU:N	2.43	0.47
1:C:502:VAL:CG1	1:D:441:ARG:HG3	2.45	0.47
1:A:428:GLU:O	1:A:432:LYS:HG3	2.15	0.46
1:A:516:LEU:N	1:A:516:LEU:HD23	2.29	0.46
1:C:432:LYS:O	1:C:435:LYS:N	2.48	0.46
1:D:454:GLN:O	1:D:457:ALA:HB3	2.16	0.46
1:B:508:LEU:O	1:B:511:ALA:HB3	2.16	0.46
1:D:421:LYS:O	1:D:424[A]:GLN:HB3	2.16	0.46
1:B:428:GLU:O	1:B:432:LYS:HG2	2.16	0.45
1:D:472:PHE:O	1:D:476:GLN:HG2	2.17	0.45
1:A:414:GLU:O	1:A:418:GLU:HG2	2.17	0.45
1:C:445:GLU:O	1:C:449:VAL:HG23	2.17	0.44
1:C:499:ASP:O	1:C:500:THR:C	2.60	0.44
1:C:460:GLN:O	1:C:461:ARG:C	2.60	0.44
1:A:424[A]:GLN:CG	1:A:425:LYS:N	2.79	0.43
1:A:448:ALA:O	1:A:452:LEU:HG	2.18	0.43
1:B:483:SER:O	1:B:486:ASP:HB2	2.17	0.43
1:D:432:LYS:O	1:D:433:LEU:C	2.60	0.43
1:C:477:GLU:HB2	1:D:466:LEU:HD13	1.99	0.43
1:A:510:ASP:OD1	1:B:434:ARG:NE	2.52	0.43
1:C:465:LYS:O	1:C:468[A]:GLN:HB3	2.19	0.43
1:A:515[A]:GLU:HG2	1:A:516:LEU:HD23	2.01	0.42
1:B:430:LEU:O	1:B:433:LEU:HB2	2.20	0.42
1:C:509:LEU:O	1:C:513:ILE:HG12	2.18	0.42
1:A:477:GLU:HB2	1:B:466:LEU:HD13	2.01	0.42
1:D:460:GLN:O	1:D:461:ARG:C	2.62	0.42
1:C:480:PHE:HZ	1:D:458:LEU:HD22	1.86	0.41
1:C:454:GLN:O	1:C:457:ALA:HB3	2.19	0.41
1:C:490[A]:MET:HE2	1:C:494:ILE:HD11	2.01	0.41
1:A:484:LEU:O	1:A:485:GLU:C	2.61	0.41
1:A:454:GLN:O	1:A:457:ALA:HB3	2.21	0.41
1:A:506:ILE:O	1:A:507:ALA:C	2.64	0.41
1:D:433:LEU:HD23	1:D:433:LEU:HA	1.91	0.41
1:C:434:ARG:NE	1:D:510:ASP:OD1	2.54	0.40
1:A:452:LEU:O	1:A:455:THR:HB	2.21	0.40
1:A:441:ARG:HG3	1:B:502:VAL:HG12	2.03	0.40
1:C:445:GLU:O	1:C:446:GLU:C	2.63	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:483:SER:O	1:C:486:ASP:HB2	2.21	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	113/112 (101%)	105 (93%)	8 (7%)	0	100	100
1	B	112/112 (100%)	108 (96%)	4 (4%)	0	100	100
1	C	114/112 (102%)	103 (90%)	11 (10%)	0	100	100
1	D	114/112 (102%)	106 (93%)	8 (7%)	0	100	100
All	All	453/448 (101%)	422 (93%)	31 (7%)	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	99/96 (103%)	89 (90%)	10 (10%)	7	11
1	B	98/96 (102%)	89 (91%)	9 (9%)	8	14
1	C	100/96 (104%)	93 (93%)	7 (7%)	14	24
1	D	100/96 (104%)	94 (94%)	6 (6%)	17	31

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
All	All	397/384 (103%)	365 (92%)	32 (8%)	10	18

All (32) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	414	GLU
1	A	415	VAL
1	A	422	LYS
1	A	425	LYS
1	A	428	GLU
1	A	438	GLU
1	A	454	GLN
1	A	455	THR
1	A	467	GLU
1	A	519	LYS
1	B	414	GLU
1	B	415	VAL
1	B	417	LEU
1	B	447	LYS
1	B	462	VAL
1	B	467	GLU
1	B	475	GLN
1	B	502	VAL
1	B	519	LYS
1	C	414	GLU
1	C	415	VAL
1	C	417	LEU
1	C	455	THR
1	C	464	ARG
1	C	498	TYR
1	C	519	LYS
1	D	414	GLU
1	D	415	VAL
1	D	453	LYS
1	D	455	THR
1	D	498	TYR
1	D	519	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	426	GLN
1	A	429	HIS
1	A	440	GLN
1	A	463	GLN
1	A	475	GLN
1	A	476	GLN
1	B	463	GLN
1	B	475	GLN
1	B	476	GLN
1	C	440	GLN
1	C	454	GLN
1	C	476	GLN
1	D	429	HIS
1	D	440	GLN
1	D	475	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 oligosaccharides 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 [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	112/112 (100%)	-1.38	0 100 100	35, 73, 101, 137	3 (2%)
1	B	112/112 (100%)	-1.35	0 100 100	33, 74, 103, 114	2 (1%)
1	C	112/112 (100%)	-1.38	0 100 100	34, 73, 103, 121	4 (3%)
1	D	112/112 (100%)	-1.37	0 100 100	40, 74, 98, 115	4 (3%)
All	All	448/448 (100%)	-1.37	0 100 100	33, 74, 103, 137	13 (2%)

There are no RSRZ outliers to report.

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 oligosaccharides 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.