



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 15, 2018 – 08:09 AM EDT

PDB ID : 6FKY
Title : Crystal structure of zebrafish Sirtuin 5 in complex with 3-(benzylthio)succiny
l-CPS1 peptide
Authors : Pannek, M.; Steegborn, C.
Deposited on : 2018-01-25
Resolution : 2.98 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

<http://wwpdb.org/validation/2016/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 : 1.7.2 (RC1), CSD as538be (2017)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20030736
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20030736

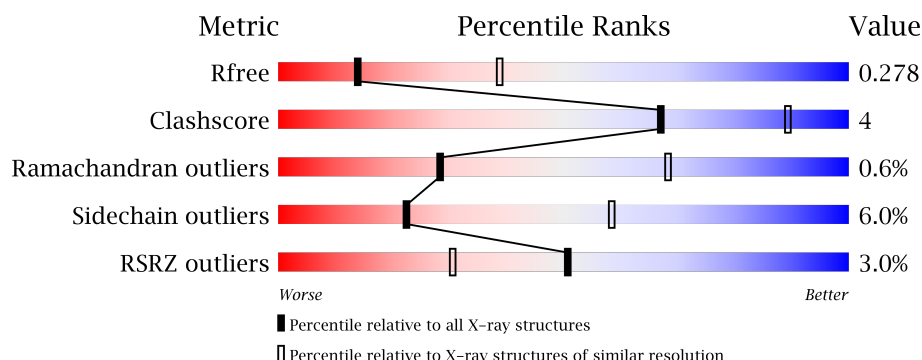
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.98 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}	100719	2168 (3.00-2.96)
Clashscore	112137	2535 (3.00-2.96)
Ramachandran outliers	110173	2451 (3.00-2.96)
Sidechain outliers	110143	2454 (3.00-2.96)
RSRZ outliers	101464	2192 (3.00-2.96)

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	284	<div> <div>0.0%</div> <div> <div></div> <div>80%</div> <div>11%</div> <div>8%</div> </div> </div>
1	B	284	<div> <div>4%</div> <div> <div></div> <div>83%</div> <div>9%</div> <div>6%</div> </div> </div>
2	C	8	<div> <div>13%</div> <div> <div></div> <div>25%</div> <div>75%</div> </div> </div>
2	I	8	<div> <div>13%</div> <div> <div></div> <div>38%</div> <div>50%</div> <div>13%</div> </div> </div>

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
6	EDO	B	404	-	-	-	X

2 Entry composition [i](#)

There are 9 unique types of molecules in this entry. The entry contains 4344 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 NAD-dependent protein deacylase sirtuin-5, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	262	Total	C	N	O	S	0	1	0
			2037	1286	367	369	15			
1	B	266	Total	C	N	O	S	0	0	0
			2064	1302	372	375	15			

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	22	GLY	-	expression tag	UNP Q6DHI5
A	23	ILE	-	expression tag	UNP Q6DHI5
A	24	ASP	-	expression tag	UNP Q6DHI5
A	25	PRO	-	expression tag	UNP Q6DHI5
A	26	PHE	-	expression tag	UNP Q6DHI5
A	27	THR	-	expression tag	UNP Q6DHI5
B	22	GLY	-	expression tag	UNP Q6DHI5
B	23	ILE	-	expression tag	UNP Q6DHI5
B	24	ASP	-	expression tag	UNP Q6DHI5
B	25	PRO	-	expression tag	UNP Q6DHI5
B	26	PHE	-	expression tag	UNP Q6DHI5
B	27	THR	-	expression tag	UNP Q6DHI5

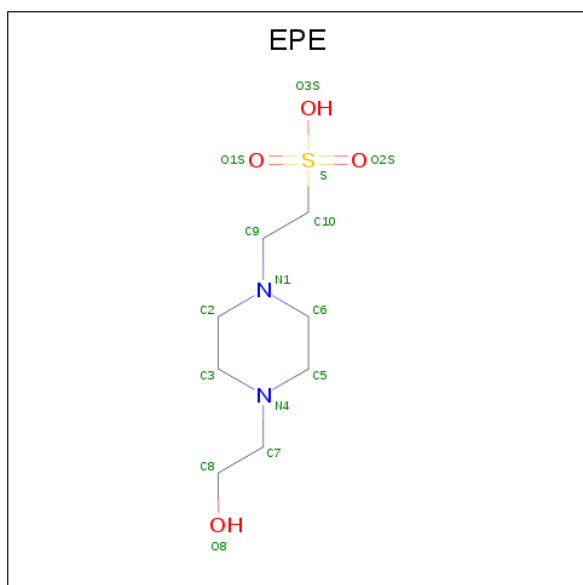
- Molecule 2 is a protein called 3(R)-(phenylthio)succinyl-CPS1 peptide.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
2	C	8	Total	C	N	O	0	8	0
			68	47	9	12			
2	I	8	Total	C	N	O	0	8	0
			68	47	9	12			

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total	Zn	0	0
			1	1		
3	A	1	Total	Zn	0	0
			1	1		

- Molecule 4 is 4-(2-HYDROXYETHYL)-1-PIPERAZINE ETHANESULFONIC ACID (three-letter code: EPE) (formula: C₈H₁₈N₂O₄S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	B	1	Total	C	N	O	S	0	0
			15	8	2	4	1		

- Molecule 5 is SODIUM ION (three-letter code: NA) (formula: Na).

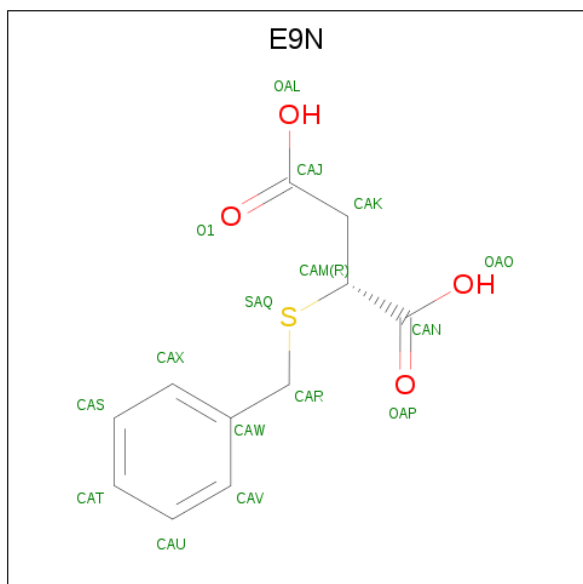
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	1	Total	Na	0	0
			1	1		

- Molecule 6 is 1,2-ETHANEDIOL (three-letter code: EDO) (formula: C₂H₆O₂).



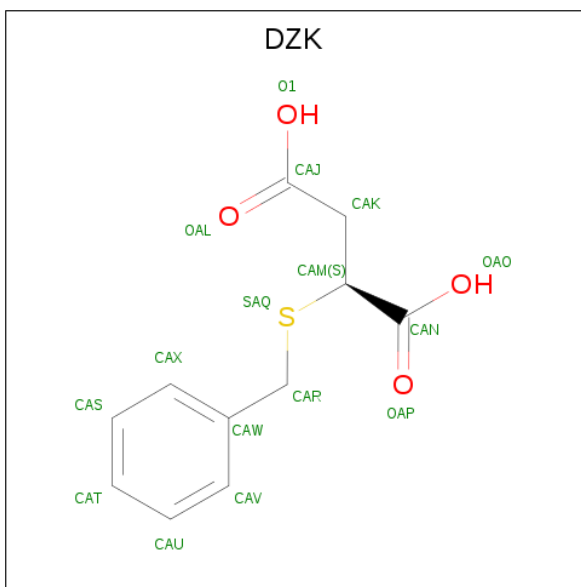
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	B	1	Total	C	O	0	0
			4	2	2		

- Molecule 7 is (2 {R})-2-(phenylmethylsulfanyl)butanedioic acid (three-letter code: E9N) (formula: $C_{11}H_{12}O_4S$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
7	C	1	Total	C	O	S	0	1
			15	11	3	1		

- Molecule 8 is (2 {S})-2-(phenylmethylsulfanyl)butanedioic acid (three-letter code: DZK) (formula: $C_{11}H_{12}O_4S$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
8	I	1	Total	C	O	S	0	1
			15	11	3	1		

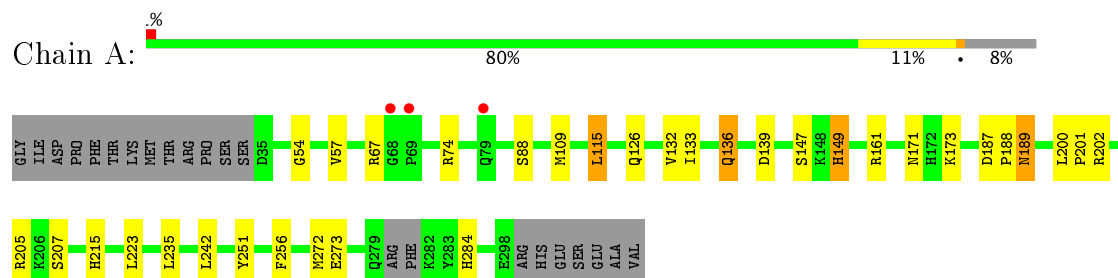
- Molecule 9 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
9	A	35	Total	O	0	0
			35	35		
9	B	20	Total	O	0	0
			20	20		

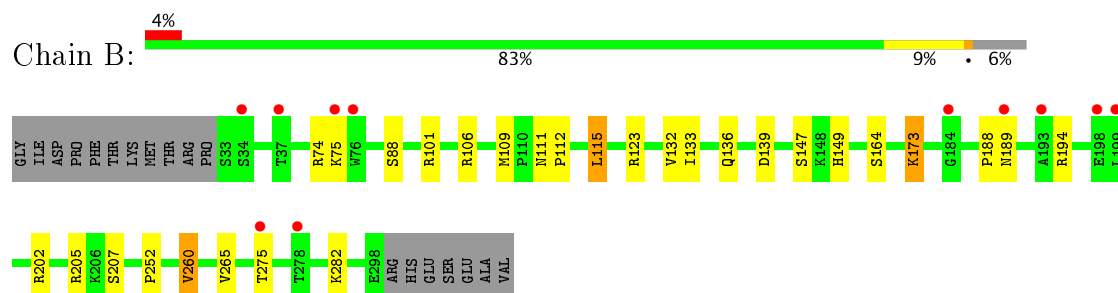
3 Residue-property plots [i](#)

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: NAD-dependent protein deacylase sirtuin-5, mitochondrial



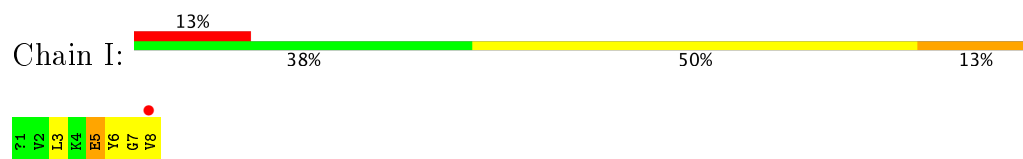
- Molecule 1: NAD-dependent protein deacylase sirtuin-5, mitochondrial



- Molecule 2: 3(R)-(phenylthio)succinyl-CPS1 peptide



- Molecule 2: 3(R)-(phenylthio)succinyl-CPS1 peptide



4 Data and refinement statistics

Property	Value	Source
Space group	P 65 2 2	Depositor
Cell constants a, b, c, α , β , γ	87.13Å 87.13Å 316.68Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	48.51 – 2.98 48.51 – 2.98	Depositor EDS
% Data completeness (in resolution range)	99.8 (48.51-2.98) 99.8 (48.51-2.98)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.19 (at 2.96Å)	Xtriage
Refinement program	REFMAC 5.8.0158	Depositor
R, R_{free}	0.198 , 0.275 0.203 , 0.278	Depositor DCC
R_{free} test set	773 reflections (5.26%)	DCC
Wilson B-factor (Å ²)	70.8	Xtriage
Anisotropy	0.136	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 63.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	4344	wwPDB-VP
Average B, all atoms (Å ²)	68.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.24% 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: ZN, NA, DZK, GZB, EDO, E9N, EPE

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	0.74	0/2094	0.95	4/2840 (0.1%)
1	B	0.70	0/2119	0.94	5/2874 (0.2%)
2	C	0.35	0/56	0.59	0/74
2	I	0.33	0/56	0.55	0/74
All	All	0.71	0/4325	0.94	9/5862 (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	202	ARG	NE-CZ-NH2	-7.24	116.68	120.30
1	B	123	ARG	NE-CZ-NH1	7.22	123.91	120.30
1	A	202	ARG	NE-CZ-NH1	6.76	123.68	120.30
1	A	67	ARG	NE-CZ-NH1	6.03	123.31	120.30
1	B	202	ARG	NE-CZ-NH2	-5.78	117.41	120.30
1	B	202	ARG	NE-CZ-NH1	5.27	122.94	120.30
1	B	101	ARG	NE-CZ-NH2	-5.18	117.71	120.30
1	B	205	ARG	NE-CZ-NH1	5.13	122.87	120.30
1	A	205	ARG	NE-CZ-NH1	5.11	122.86	120.30

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	2037	0	2002	16	0
1	B	2064	0	2028	7	0
2	C	68	0	56	7	0
2	I	68	0	55	7	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
4	B	15	0	18	0	0
5	B	1	0	0	0	0
6	B	4	0	6	0	0
7	C	15	0	0	2	0
8	I	15	0	0	1	0
9	A	35	0	0	0	0
9	B	20	0	0	0	0
All	All	4344	0	4165	38	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 (38) 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)
7:C:101[A]:E9N:SAQ	7:C:101[A]:E9N:OAL	1.93	1.25
1:A:189:ASN:HD22	1:A:189:ASN:H	1.26	0.83
1:A:115:LEU:HB3	1:B:109:MET:HE2	1.75	0.69
7:C:101[A]:E9N:CAR	7:C:101[A]:E9N:OAL	2.45	0.65
2:I:5[B]:GLU:CB	2:I:8[B]:VAL:HG23	2.31	0.60
2:C:4[A]:LYS:O	2:C:5[A]:GLU:HB2	2.03	0.58
1:A:132:VAL:HG12	1:A:149:HIS:CD2	2.39	0.58
1:A:74:ARG:HA	1:A:188:PRO:HA	1.85	0.58
1:A:109:MET:HE2	1:B:115:LEU:HB3	1.86	0.57
2:C:5[A]:GLU:HB3	2:C:8[A]:VAL:HG23	1.86	0.57
1:A:189:ASN:HD22	1:A:189:ASN:N	1.96	0.57
8:I:101[B]:DZK:SAQ	8:I:101[B]:DZK:OAL	2.63	0.56
1:B:132:VAL:HG12	1:B:149:HIS:CD2	2.40	0.56
2:C:3[A]:LEU:HD23	2:C:7[A]:GLY:CA	2.39	0.53
2:I:3[B]:LEU:HD23	2:I:7[B]:GLY:CA	2.40	0.51
2:I:5[B]:GLU:HB2	2:I:8[B]:VAL:HG23	1.91	0.51
1:A:54:GLY:HA2	1:A:136:GLN:HG2	1.93	0.50
1:B:74:ARG:HA	1:B:188:PRO:HA	1.94	0.49
2:C:7[A]:GLY:O	2:C:8[A]:VAL:C	2.53	0.47
2:I:3[B]:LEU:HD23	2:I:7[B]:GLY:HA3	1.96	0.47
1:A:235:LEU:HD13	1:A:256:PHE:HB3	1.94	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:5[A]:GLU:CB	2:C:8[A]:VAL:HG23	2.45	0.47
2:I:5[B]:GLU:HB3	2:I:8[B]:VAL:HG23	1.96	0.47
2:I:7[B]:GLY:O	2:I:8[B]:VAL:C	2.54	0.46
2:C:3[A]:LEU:HD23	2:C:7[A]:GLY:HA3	1.97	0.46
1:A:273:GLU:O	1:A:284:HIS:CE1	2.69	0.46
1:B:260:VAL:HG13	1:B:265:VAL:HB	1.98	0.44
1:B:111:ASN:HB2	1:B:112:PRO:HD2	2.01	0.43
2:I:5[B]:GLU:O	2:I:6[B]:TYR:HB2	2.18	0.43
1:A:161:ARG:NH1	1:A:215:HIS:ND1	2.67	0.43
1:A:133:ILE:HD12	1:A:133:ILE:N	2.34	0.42
1:A:187:ASP:OD1	1:A:189:ASN:ND2	2.52	0.42
1:B:133:ILE:HD12	1:B:133:ILE:N	2.34	0.42
1:A:223:LEU:HD21	1:A:251:TYR:OH	2.19	0.42
1:A:126:GLN:HE21	1:A:126:GLN:HA	1.84	0.42
1:A:171:ASN:OD1	1:A:171:ASN:C	2.59	0.41
2:C:5[A]:GLU:O	2:C:6[A]:TYR:HB2	2.21	0.41
1:A:200:LEU:HB3	1:A:201:PRO:CD	2.51	0.40

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	259/284 (91%)	245 (95%)	13 (5%)	1 (0%)	38	76
1	B	264/284 (93%)	248 (94%)	15 (6%)	1 (0%)	38	76
2	C	6/8 (75%)	5 (83%)	1 (17%)	0	100	100
2	I	6/8 (75%)	5 (83%)	0	1 (17%)	0	0
All	All	535/584 (92%)	503 (94%)	29 (5%)	3 (1%)	28	68

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	I	5[B]	GLU
1	A	173	LYS
1	B	173	LYS

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	218/237 (92%)	207 (95%)	11 (5%)	28	65
1	B	221/237 (93%)	205 (93%)	16 (7%)	17	49
2	C	6/6 (100%)	6 (100%)	0	100	100
2	I	6/6 (100%)	6 (100%)	0	100	100
All	All	451/486 (93%)	424 (94%)	27 (6%)	22	58

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	57	VAL
1	A	88	SER
1	A	115	LEU
1	A	136	GLN
1	A	139	ASP
1	A	147	SER
1	A	149	HIS
1	A	189	ASN
1	A	207	SER
1	A	242	LEU
1	A	272	MET
1	B	75	LYS
1	B	88	SER
1	B	106	ARG
1	B	115	LEU
1	B	136	GLN
1	B	139	ASP
1	B	147	SER
1	B	164	SER

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Mol	Chain	Res	Type
1	B	173	LYS
1	B	189	ASN
1	B	194	ARG
1	B	207	SER
1	B	252	PRO
1	B	260	VAL
1	B	275	THR
1	B	282	LYS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	126	GLN
1	A	189	ASN
1	B	154	HIS
1	B	189	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

2 non-standard protein/DNA/RNA residues are 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
2	GZB	C	1[A]	2	12,12,13	1.67	1 (8%)	14,14,16	1.09	1 (7%)
2	GZB	I	1[B]	2	12,12,13	1.66	1 (8%)	14,14,16	1.09	1 (7%)

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	GZB	C	1[A]	2	-	0/7/8/9	0/1/1/1
2	GZB	I	1[B]	2	-	0/7/8/9	0/1/1/1

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1[A]	GZB	CAG-CAE	-5.53	1.38	1.50
2	I	1[B]	GZB	CAG-CAE	-5.49	1.38	1.50

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	I	1[B]	GZB	C-CA-N	-2.11	104.35	112.83
2	C	1[A]	GZB	C-CA-N	-2.07	104.49	112.83

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 7 ligands modelled in this entry, 3 are monoatomic - leaving 4 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	$\# Z > 2$
4	EPE	B	402	-	15,15,15	1.79	1 (6%)	18,20,20	2.15	5 (27%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
6	EDO	B	404	-	3,3,3	0.52	0	2,2,2	0.33	0
7	E9N	C	101[A]	2	10,15,16	1.89	2 (20%)	10,18,20	1.10	1 (10%)
8	DZK	I	101[B]	2	11,15,16	1.48	1 (9%)	10,18,20	0.72	0

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
4	EPE	B	402	-	-	0/9/19/19	0/1/1/1
6	EDO	B	404	-	-	0/1/1/1	0/0/0/0
7	E9N	C	101[A]	2	-	0/8/12/13	0/1/1/1
8	DZK	I	101[B]	2	-	0/8/12/13	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	402	EPE	C10-S	-6.60	1.67	1.77
7	C	101[A]	E9N	CAR-CAW	-4.34	1.41	1.51
8	I	101[B]	DZK	CAR-CAW	-4.34	1.41	1.51
7	C	101[A]	E9N	OAL-CAJ	-3.46	1.23	1.42

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	B	402	EPE	O2S-S-O1S	-2.93	103.70	113.86
4	B	402	EPE	C7-N4-C3	-2.81	104.06	111.26
7	C	101[A]	E9N	OAL-CAJ-CAK	2.85	121.25	111.45
4	B	402	EPE	O3S-S-O1S	2.88	117.97	111.37
4	B	402	EPE	O2S-S-C10	3.98	110.21	106.79
4	B	402	EPE	O1S-S-C10	5.16	111.22	106.79

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	C	101[A]	E9N	2	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	I	101[B]	DZK	1	0

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	262/284 (92%)	-0.03	3 (1%) 80 61	39, 57, 92, 128	0
1	B	266/284 (93%)	0.17	11 (4%) 38 22	44, 69, 119, 137	1 (0%)
2	C	7/8 (87%)	0.55	1 (14%) 3 1	54, 60, 71, 85	7 (100%)
2	I	7/8 (87%)	0.61	1 (14%) 3 1	58, 66, 78, 90	7 (100%)
All	All	542/584 (92%)	0.09	16 (2%) 51 30	39, 62, 109, 137	15 (2%)

All (16) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	199	LEU	4.4
2	C	8[A]	VAL	3.9
2	I	8[B]	VAL	3.9
1	B	75	LYS	3.6
1	B	278	THR	3.5
1	B	34	SER	2.9
1	B	193	ALA	2.8
1	B	76	TRP	2.7
1	B	198	GLU	2.6
1	A	69	PRO	2.5
1	B	37	THR	2.2
1	A	79	GLN	2.2
1	B	184	GLY	2.1
1	B	189	ASN	2.1
1	A	68	GLY	2.1
1	B	275	THR	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. 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	RSCC	RSR	LLDF	B-factors(Å ²)	Q<0.9
2	GZB	I	1[B]	12/13	0.96	0.19	-	54,70,73,74	12
2	GZB	C	1[A]	12/13	0.96	0.19	-	51,67,69,71	12

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. 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	RSCC	RSR	LLDF	B-factors(Å ²)	Q<0.9
6	EDO	B	404	4/4	0.85	0.31	6.90	59,63,64,65	0
8	DZK	I	101[B]	15/16	0.83	0.32	1.79	72,97,118,120	15
7	E9N	C	101[A]	15/16	0.88	0.28	1.66	60,82,98,98	15
4	EPE	B	402	15/15	0.94	0.22	0.97	61,67,78,86	0
3	ZN	A	401	1/1	0.99	0.11	-0.55	51,51,51,51	0
3	ZN	B	401	1/1	0.96	0.09	-1.29	101,101,101,101	0
5	NA	B	403	1/1	0.95	0.26	-	64,64,64,64	0

6.5 Other polymers [i](#)

There are no such residues in this entry.