



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 10, 2017 – 04:17 PM EST

PDB ID : 4R6E  
Title : Human artd1 (parp1) - catalytic domain in complex with inhibitor niraparib  
Authors : Karlberg, T.; Thorsell, A.G.; Brock, J.; Schuler, H.  
Deposited on : 2014-08-25  
Resolution : 2.20 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](mailto: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.

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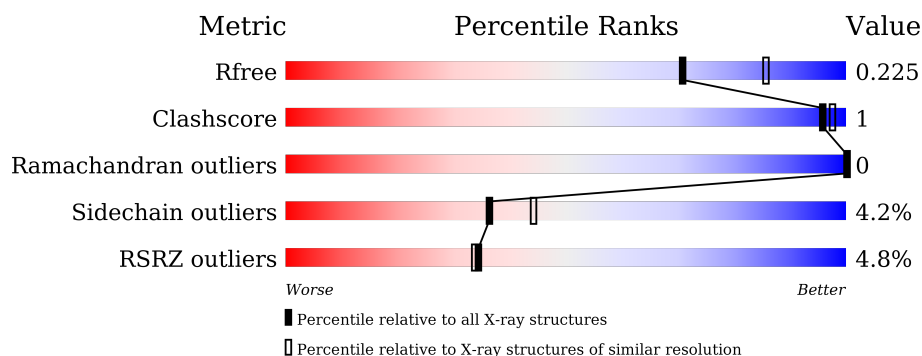
The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 1.7.1 (RC1), CSD as537be (2016)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20028442  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
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-20028442

**i**

## X-RAY DIFFRACTION

A.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	91344	3774 (2.20-2.20)
Clashscore	102246	4477 (2.20-2.20)
Ramachandran outliers	100387	4404 (2.20-2.20)
Sidechain outliers	100360	4405 (2.20-2.20)
RSRZ outliers	91569	3781 (2.20-2.20)

Mol	Chain	Length	Quality of chain
1	A	358	<div> <div>4%</div> <div>91%</div> <div>7%</div> </div>
1	B	358	<div> <div>2%</div> <div>91%</div> <div>6%</div> </div>
1	C	358	<div> <div>4%</div> <div>90%</div> <div>8%</div> </div>
1	D	358	<div> <div>9%</div> <div>89%</div> <div>8%</div> </div>

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	SO4	C	1102	-	-	-	X
3	SO4	D	1102	-	-	-	X
4	GOL	A	1103	-	-	-	X
4	GOL	C	1103	-	-	-	X

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 11285 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 Poly [ADP-ribose] polymerase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	350	Total	C	N	O	S	0	0	0
			2752	1751	465	524	12			
1	B	350	Total	C	N	O	S	0	0	0
			2751	1750	465	525	11			
1	C	350	Total	C	N	O	S	0	1	0
			2759	1756	467	524	12			
1	D	348	Total	C	N	O	S	0	0	0
			2735	1740	462	522	11			

There are 36 discrepancies between the modelled and reference sequences:

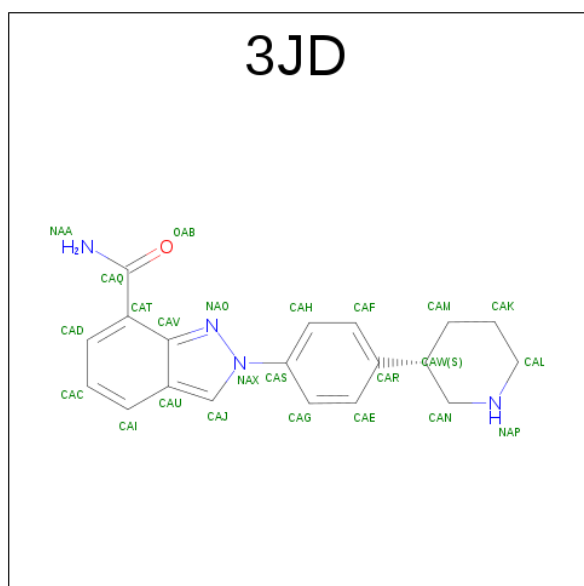
Chain	Residue	Modelled	Actual	Comment	Reference
A	661	MET	-	INITIATING METHIONINE	UNP P09874
A	762	ALA	VAL	VARIANT	UNP P09874
A	1012	ALA	-	EXPRESSION TAG	UNP P09874
A	1013	HIS	-	EXPRESSION TAG	UNP P09874
A	1014	HIS	-	EXPRESSION TAG	UNP P09874
A	1015	HIS	-	EXPRESSION TAG	UNP P09874
A	1016	HIS	-	EXPRESSION TAG	UNP P09874
A	1017	HIS	-	EXPRESSION TAG	UNP P09874
A	1018	HIS	-	EXPRESSION TAG	UNP P09874
B	661	MET	-	INITIATING METHIONINE	UNP P09874
B	762	ALA	VAL	VARIANT	UNP P09874
B	1012	ALA	-	EXPRESSION TAG	UNP P09874
B	1013	HIS	-	EXPRESSION TAG	UNP P09874
B	1014	HIS	-	EXPRESSION TAG	UNP P09874
B	1015	HIS	-	EXPRESSION TAG	UNP P09874
B	1016	HIS	-	EXPRESSION TAG	UNP P09874
B	1017	HIS	-	EXPRESSION TAG	UNP P09874
B	1018	HIS	-	EXPRESSION TAG	UNP P09874
C	661	MET	-	INITIATING METHIONINE	UNP P09874
C	762	ALA	VAL	VARIANT	UNP P09874
C	1012	ALA	-	EXPRESSION TAG	UNP P09874

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Chain	Residue	Modelled	Actual	Comment	Reference
C	1013	HIS	-	EXPRESSION TAG	UNP P09874
C	1014	HIS	-	EXPRESSION TAG	UNP P09874
C	1015	HIS	-	EXPRESSION TAG	UNP P09874
C	1016	HIS	-	EXPRESSION TAG	UNP P09874
C	1017	HIS	-	EXPRESSION TAG	UNP P09874
C	1018	HIS	-	EXPRESSION TAG	UNP P09874
D	661	MET	-	INITIATING METHIONINE	UNP P09874
D	762	ALA	VAL	VARIANT	UNP P09874
D	1012	ALA	-	EXPRESSION TAG	UNP P09874
D	1013	HIS	-	EXPRESSION TAG	UNP P09874
D	1014	HIS	-	EXPRESSION TAG	UNP P09874
D	1015	HIS	-	EXPRESSION TAG	UNP P09874
D	1016	HIS	-	EXPRESSION TAG	UNP P09874
D	1017	HIS	-	EXPRESSION TAG	UNP P09874
D	1018	HIS	-	EXPRESSION TAG	UNP P09874

- Molecule 2 is 2-{4-[(3S)-PIPERIDIN-3-YL]PHENYL}-2H-INDAZOLE-7-CARBOXAMIDE (three-letter code: 3JD) (formula: C<sub>19</sub>H<sub>20</sub>N<sub>4</sub>O).



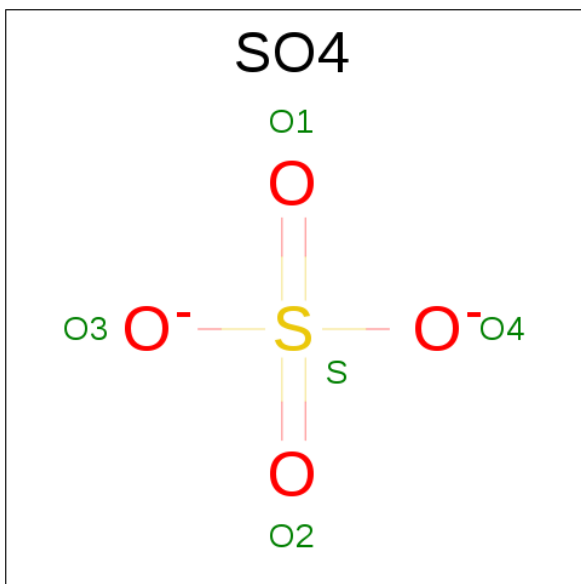
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			24	19	4	1		
2	B	1	Total	C	N	O	0	0
			24	19	4	1		
2	C	1	Total	C	N	O	0	0
			24	19	4	1		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	D	1	Total	C	N	O	0	0
			24	19	4	1		

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O<sub>4</sub>S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	S	0	0
			5	4	1		
3	B	1	Total	O	S	0	0
			5	4	1		
3	C	1	Total	O	S	0	0
			5	4	1		
3	D	1	Total	O	S	0	0
			5	4	1		

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
4	A	1	Total	C	O	0	0
			6	3	3		
4	B	1	Total	C	O	0	0
			6	3	3		
4	C	1	Total	C	O	0	0
			6	3	3		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	51	Total	O	0	0
			51	51		
5	B	41	Total	O	0	0
			41	41		
5	C	54	Total	O	0	0
			54	54		
5	D	8	Total	O	0	0
			8	8		



- Molecule 1: Poly [ADP-ribose] polymerase 1







## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	104.40Å 108.63Å 142.20Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	86.30 – 2.20 86.32 – 2.20	Depositor EDS
% Data completeness (in resolution range)	100.0 (86.30-2.20) 100.0 (86.32-2.20)	Depositor EDS
$R_{merge}$	0.09	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.79 (at 2.20Å)	Xtriage
Refinement program	BUSTER 2.11.5	Depositor
R, $R_{free}$	0.202 , 0.218 0.208 , 0.225	Depositor DCC
$R_{free}$ test set	4123 reflections (5.25%)	DCC
Wilson B-factor (Å <sup>2</sup> )	40.4	Xtriage
Anisotropy	0.220	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 43.8	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.021 for k,h,-l	Xtriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	11285	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.15% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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: GOL, SO4, 3JD

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	0.50	0/2804	0.63	0/3783
1	B	0.50	0/2803	0.63	0/3783
1	C	0.49	0/2815	0.62	0/3798
1	D	0.46	0/2787	0.62	0/3762
All	All	0.49	0/11209	0.63	0/15126

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	2752	0	2792	10	0
1	B	2751	0	2791	5	0
1	C	2759	0	2800	12	0
1	D	2735	0	2770	9	0
2	A	24	0	20	0	0
2	B	24	0	20	0	0
2	C	24	0	20	0	0
2	D	24	0	20	0	0
3	A	5	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	B	5	0	0	0	0
3	C	5	0	0	0	0
3	D	5	0	0	0	0
4	A	6	0	8	0	0
4	B	6	0	8	0	0
4	C	6	0	8	0	0
5	A	51	0	0	0	0
5	B	41	0	0	0	0
5	C	54	0	0	0	0
5	D	8	0	0	0	0
All	All	11285	0	11257	33	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 1.

All (33) 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:913:GLY:HA2	1:C:913:GLY:CA	2.30	0.61
1:B:841:ARG:HD2	1:B:873:LEU:O	2.01	0.60
1:C:918:LEU:HD22	1:C:1002:LEU:HD21	1.83	0.60
1:C:841:ARG:HD2	1:C:873:LEU:O	2.02	0.60
1:A:913:GLY:HA2	1:C:913:GLY:HA2	1.84	0.60
1:A:913:GLY:CA	1:C:913:GLY:HA2	2.34	0.58
1:A:841:ARG:HD2	1:A:873:LEU:O	2.03	0.57
1:D:841:ARG:HD2	1:D:873:LEU:O	2.04	0.57
1:A:918:LEU:HD22	1:A:1002:LEU:HD21	1.87	0.57
1:B:918:LEU:HD22	1:B:1002:LEU:HD21	1.88	0.55
1:D:918:LEU:HD22	1:D:1002:LEU:HD21	1.89	0.54
1:D:938:ILE:HD13	1:D:948:VAL:HG21	1.91	0.51
1:B:834:ILE:HD11	1:B:1006:LYS:HB2	1.92	0.51
1:C:821:THR:HB	1:C:900:MET:HA	1.94	0.49
1:A:696:MET:HE3	1:A:740:ILE:HA	1.94	0.49
1:C:834:ILE:HD11	1:C:1006:LYS:HB2	1.94	0.49
1:A:834:ILE:HD11	1:A:1006:LYS:HB2	1.94	0.49
1:D:834:ILE:HD11	1:D:1006:LYS:HB2	1.96	0.47
1:D:696:MET:CE	1:D:701:LEU:HA	2.44	0.47
1:B:821:THR:HB	1:B:900:MET:HA	1.96	0.47
1:C:686:MET:CE	1:C:698:LEU:HD13	2.44	0.47
1:A:821:THR:HB	1:A:900:MET:HA	1.95	0.47
1:D:821:THR:HB	1:D:900:MET:HA	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:676:ILE:HD11	1:A:797:LEU:HD11	1.97	0.47
1:D:696:MET:HE1	1:D:701:LEU:HA	1.97	0.47
1:D:676:ILE:HD11	1:D:797:LEU:HD11	1.95	0.47
1:B:676:ILE:HD11	1:B:797:LEU:HD11	1.98	0.44
1:C:676:ILE:HD11	1:C:797:LEU:HD11	2.00	0.44
1:C:686:MET:HE1	1:C:698:LEU:HB2	1.98	0.44
1:C:708:ALA:HB3	1:C:739:LEU:HD21	1.99	0.44
1:A:828:ALA:O	1:A:1010:LYS:HG2	2.19	0.42
1:D:696:MET:HE2	1:D:701:LEU:HD23	2.01	0.41
1:C:872:ILE:HG21	1:C:920:LEU:HD11	2.03	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	348/358 (97%)	341 (98%)	7 (2%)	0	100	100
1	B	348/358 (97%)	342 (98%)	6 (2%)	0	100	100
1	C	349/358 (98%)	344 (99%)	5 (1%)	0	100	100
1	D	346/358 (97%)	341 (99%)	5 (1%)	0	100	100
All	All	1391/1432 (97%)	1368 (98%)	23 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 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	307/314 (98%)	296 (96%)	11 (4%)	42	52
1	B	307/314 (98%)	294 (96%)	13 (4%)	36	44
1	C	308/314 (98%)	297 (96%)	11 (4%)	42	52
1	D	305/314 (97%)	289 (95%)	16 (5%)	29	33
All	All	1227/1256 (98%)	1176 (96%)	51 (4%)	36	44

All (51) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	704	ARG
1	A	705	GLN
1	A	733	SER
1	A	783	ASP
1	A	795	GLU
1	A	817	TYR
1	A	825	THR
1	A	911	SER
1	A	912	GLN
1	A	961	ASN
1	A	985	LEU
1	B	694	GLN
1	B	705	GLN
1	B	727	SER
1	B	783	ASP
1	B	795	GLU
1	B	809	GLU
1	B	817	TYR
1	B	825	THR
1	B	912	GLN
1	B	961	ASN
1	B	971	LEU
1	B	980	ASN
1	B	985	LEU
1	C	705	GLN
1	C	727	SER
1	C	747	LYS
1	C	783	ASP
1	C	795	GLU
1	C	805	ASP

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Mol	Chain	Res	Type
1	C	817	TYR
1	C	825	THR
1	C	912	GLN
1	C	961	ASN
1	C	980	ASN
1	D	694	GLN
1	D	705	GLN
1	D	718	GLN
1	D	747	LYS
1	D	754	ASN
1	D	756	ASP
1	D	783	ASP
1	D	795	GLU
1	D	805	ASP
1	D	809	GLU
1	D	817	TYR
1	D	825	THR
1	D	912	GLN
1	D	961	ASN
1	D	980	ASN
1	D	985	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	912	GLN
1	A	998	ASN
1	B	912	GLN
1	B	998	ASN
1	C	694	GLN
1	C	912	GLN
1	C	961	ASN
1	C	998	ASN
1	D	742	HIS
1	D	820	ASN
1	D	826	HIS
1	D	912	GLN
1	D	998	ASN

### 5.3.3 RNA ⓘ

There are no RNA molecules 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 ⓘ

11 ligands 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	3JD	A	1101	-	25,27,27	2.71	11 (44%)	26,38,38	2.06	7 (26%)
3	SO4	A	1102	-	4,4,4	0.51	0	6,6,6	0.32	0
4	GOL	A	1103	-	5,5,5	0.17	0	5,5,5	0.35	0
2	3JD	B	1101	-	25,27,27	2.89	12 (48%)	26,38,38	1.74	6 (23%)
3	SO4	B	1102	-	4,4,4	0.38	0	6,6,6	0.28	0
4	GOL	B	1103	-	5,5,5	0.16	0	5,5,5	0.33	0
2	3JD	C	1101	-	25,27,27	3.16	15 (60%)	26,38,38	1.27	3 (11%)
3	SO4	C	1102	-	4,4,4	0.40	0	6,6,6	0.29	0
4	GOL	C	1103	-	5,5,5	0.16	0	5,5,5	0.26	0
2	3JD	D	1101	-	25,27,27	3.24	13 (52%)	26,38,38	1.59	4 (15%)
3	SO4	D	1102	-	4,4,4	0.09	0	6,6,6	0.13	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
2	3JD	A	1101	-	-	0/12/20/20	0/4/4/4
3	SO4	A	1102	-	-	0/0/0/0	0/0/0/0
4	GOL	A	1103	-	-	0/4/4/4	0/0/0/0
2	3JD	B	1101	-	-	0/12/20/20	0/4/4/4
3	SO4	B	1102	-	-	0/0/0/0	0/0/0/0
4	GOL	B	1103	-	-	0/4/4/4	0/0/0/0
2	3JD	C	1101	-	-	0/12/20/20	0/4/4/4
3	SO4	C	1102	-	-	0/0/0/0	0/0/0/0
4	GOL	C	1103	-	-	0/4/4/4	0/0/0/0
2	3JD	D	1101	-	-	0/12/20/20	0/4/4/4
3	SO4	D	1102	-	-	0/0/0/0	0/0/0/0

All (51) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	1101	3JD	NAO-NAX	-9.21	1.22	1.39
2	C	1101	3JD	NAO-NAX	-9.08	1.22	1.39
2	B	1101	3JD	NAO-NAX	-8.61	1.23	1.39
2	A	1101	3JD	NAO-NAX	-6.29	1.27	1.39
2	D	1101	3JD	CAT-CAQ	-5.19	1.42	1.50
2	A	1101	3JD	CAT-CAQ	-4.10	1.44	1.50
2	C	1101	3JD	CAR-CAW	-3.84	1.45	1.52
2	C	1101	3JD	CAS-NAX	-3.77	1.36	1.44
2	D	1101	3JD	CAR-CAW	-3.75	1.45	1.52
2	D	1101	3JD	CAS-NAX	-3.65	1.36	1.44
2	B	1101	3JD	CAR-CAW	-3.52	1.45	1.52
2	C	1101	3JD	CAJ-CAU	-3.44	1.33	1.40
2	B	1101	3JD	CAJ-CAU	-3.32	1.34	1.40
2	C	1101	3JD	CAT-CAV	-3.30	1.37	1.43
2	B	1101	3JD	CAT-CAQ	-3.10	1.45	1.50
2	C	1101	3JD	CAT-CAQ	-3.05	1.45	1.50
2	A	1101	3JD	CAS-NAX	-3.00	1.38	1.44
2	B	1101	3JD	CAT-CAV	-2.99	1.38	1.43
2	B	1101	3JD	CAS-NAX	-2.81	1.38	1.44
2	C	1101	3JD	CAI-CAU	-2.47	1.36	1.42
2	D	1101	3JD	CAT-CAV	-2.29	1.39	1.43
2	A	1101	3JD	CAR-CAW	-2.08	1.48	1.52
2	B	1101	3JD	CAM-CAW	2.18	1.59	1.53
2	C	1101	3JD	CAD-CAT	2.48	1.42	1.38
2	B	1101	3JD	CAH-CAS	2.54	1.43	1.38
2	D	1101	3JD	CAE-CAR	2.54	1.43	1.39
2	D	1101	3JD	CAE-CAG	2.82	1.44	1.38
2	D	1101	3JD	CAC-CAI	2.90	1.43	1.36

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	1101	3JD	CAF-CAR	3.01	1.43	1.39
2	C	1101	3JD	CAH-CAS	3.02	1.43	1.38
2	B	1101	3JD	CAE-CAG	3.09	1.44	1.38
2	A	1101	3JD	CAC-CAI	3.18	1.43	1.36
2	B	1101	3JD	CAC-CAD	3.28	1.45	1.38
2	A	1101	3JD	CAE-CAR	3.37	1.44	1.39
2	C	1101	3JD	CAC-CAD	3.39	1.45	1.38
2	D	1101	3JD	CAF-CAR	3.39	1.44	1.39
2	A	1101	3JD	CAE-CAG	3.40	1.45	1.38
2	B	1101	3JD	CAG-CAS	3.40	1.44	1.38
2	C	1101	3JD	CAC-CAI	3.46	1.44	1.36
2	A	1101	3JD	CAC-CAD	3.56	1.45	1.38
2	D	1101	3JD	CAH-CAS	3.62	1.45	1.38
2	D	1101	3JD	CAD-CAT	3.67	1.44	1.38
2	C	1101	3JD	CAJ-NAX	3.77	1.41	1.36
2	D	1101	3JD	CAC-CAD	3.79	1.46	1.38
2	A	1101	3JD	CAN-NAP	3.86	1.53	1.46
2	C	1101	3JD	CAE-CAR	3.88	1.45	1.39
2	A	1101	3JD	CAD-CAT	3.96	1.45	1.38
2	C	1101	3JD	CAG-CAS	4.06	1.45	1.38
2	B	1101	3JD	CAE-CAR	4.42	1.46	1.39
2	A	1101	3JD	CAG-CAS	4.49	1.46	1.38
2	D	1101	3JD	CAG-CAS	5.22	1.47	1.38

All (20) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1101	3JD	OAB-CAQ-NAA	-4.43	116.27	122.58
2	B	1101	3JD	OAB-CAQ-NAA	-4.13	116.70	122.58
2	D	1101	3JD	OAB-CAQ-NAA	-3.53	117.56	122.58
2	B	1101	3JD	CAG-CAS-CAH	-3.26	116.01	121.20
2	B	1101	3JD	CAD-CAT-CAV	-3.24	114.66	118.58
2	A	1101	3JD	CAG-CAS-CAH	-3.21	116.09	121.20
2	C	1101	3JD	CAK-CAM-CAW	-2.96	105.47	111.60
2	B	1101	3JD	CAG-CAE-CAR	-2.89	118.22	121.20
2	A	1101	3JD	CAD-CAT-CAV	-2.70	115.31	118.58
2	A	1101	3JD	CAC-CAI-CAU	-2.32	116.79	120.45
2	D	1101	3JD	CAG-CAS-CAH	-2.04	117.96	121.20
2	D	1101	3JD	CAF-CAH-CAS	2.03	121.35	119.23
2	C	1101	3JD	CAF-CAH-CAS	2.11	121.43	119.23
2	C	1101	3JD	CAT-CAQ-NAA	2.16	121.25	118.09
2	B	1101	3JD	CAF-CAH-CAS	2.26	121.59	119.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1101	3JD	CAT-CAQ-NAA	2.96	122.42	118.09
2	B	1101	3JD	CAE-CAG-CAS	3.15	122.51	119.23
2	A	1101	3JD	CAN-NAP-CAL	4.43	117.93	111.60
2	D	1101	3JD	CAM-CAW-CAR	4.87	123.43	112.84
2	A	1101	3JD	CAF-CAH-CAS	5.24	124.69	119.23

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	350/358 (97%)	-0.03	15 (4%) 39 38	24, 46, 88, 125	0
1	B	350/358 (97%)	-0.12	6 (1%) 73 72	26, 49, 86, 116	0
1	C	350/358 (97%)	0.01	14 (4%) 42 41	25, 49, 104, 126	0
1	D	348/358 (97%)	0.43	32 (9%) 11 10	35, 72, 137, 168	0
All	All	1398/1432 (97%)	0.07	67 (4%) 34 34	24, 52, 110, 168	0

All (67) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	783	ASP	7.5
1	A	661	MET	6.5
1	A	746	MET	5.9
1	A	782	SER	5.6
1	A	748	LYS	5.5
1	D	782	SER	5.5
1	D	785	SER	5.4
1	D	787	LYS	5.1
1	C	746	MET	4.7
1	D	696	MET	4.6
1	C	721	SER	4.5
1	A	783	ASP	4.5
1	A	749	PRO	4.5
1	A	785	SER	4.2
1	D	717	GLN	4.1
1	A	784	ASP	4.1
1	B	784	ASP	4.0
1	D	744	PHE	3.9
1	B	783	ASP	3.9
1	D	965	ASP	3.7
1	D	706	ILE	3.6

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Mol	Chain	Res	Type	RSRZ
1	D	746	MET	3.6
1	D	705	GLN	3.5
1	B	782	SER	3.5
1	D	728	GLN	3.4
1	C	745	GLY	3.3
1	C	964	LEU	3.3
1	D	732	LEU	3.2
1	C	718	GLN	3.1
1	D	701	LEU	3.1
1	D	693	LEU	3.1
1	B	980	ASN	3.0
1	C	661	MET	3.0
1	D	720	VAL	2.9
1	D	786	SER	2.9
1	B	937	HIS	2.9
1	D	833	VAL	2.9
1	D	721	SER	2.9
1	C	782	SER	2.8
1	D	959	SER	2.8
1	C	728	GLN	2.8
1	A	744	PHE	2.8
1	C	720	VAL	2.8
1	A	745	GLY	2.7
1	A	747	LYS	2.7
1	C	729	ILE	2.7
1	D	724	SER	2.7
1	D	739	LEU	2.7
1	A	914	ASP	2.6
1	C	786	SER	2.5
1	C	700	LYS	2.5
1	A	780	GLY	2.4
1	D	751	LEU	2.4
1	D	725	SER	2.3
1	D	779	ARG	2.3
1	C	722	GLN	2.3
1	D	703	LYS	2.3
1	D	736	PHE	2.3
1	D	788	ASP	2.3
1	D	722	GLN	2.1
1	B	938	ILE	2.1
1	D	824	THR	2.1
1	A	827	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
1	C	783	ASP	2.1
1	D	963	SER	2.1
1	A	980	ASN	2.0
1	D	830	ASP	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. 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, 95<sup>th</sup> 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( $\text{\AA}^2$ )	Q<0.9
3	SO4	D	1102	5/5	0.93	0.21	6.42	98,98,99,100	0
4	GOL	A	1103	6/6	0.92	0.17	4.36	33,50,58,63	0
4	GOL	C	1103	6/6	0.93	0.17	4.29	38,52,58,62	0
3	SO4	C	1102	5/5	0.94	0.15	2.45	19,33,34,36	5
3	SO4	B	1102	5/5	0.94	0.20	1.85	66,74,75,77	0
4	GOL	B	1103	6/6	0.94	0.13	0.65	35,57,62,65	0
3	SO4	A	1102	5/5	0.94	0.12	0.48	59,63,63,70	0
2	3JD	C	1101	24/24	0.98	0.10	-0.59	18,29,44,47	0
2	3JD	B	1101	24/24	0.98	0.10	-0.63	23,30,44,45	0
2	3JD	D	1101	24/24	0.97	0.10	-0.64	31,35,51,52	0
2	3JD	A	1101	24/24	0.96	0.11	-0.70	23,29,39,41	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.