



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 07:40 AM GMT

PDB ID : 3BPR  
Title : Crystal structure of catalytic domain of the proto-oncogene tyrosine-protein kinase MER in complex with inhibitor C52  
Authors : Walker, J.R.; Huang, X.; Finerty Jr, P.J.; Weigelt, J.; Arrowsmith, C.H.; Edwards, A.M.; Bochkarev, A.; Dhe-Paganon, S.; Structural Genomics Consortium (SGC)  
Deposited on : 2007-12-19  
Resolution : 2.80 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 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
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) : trunk26865

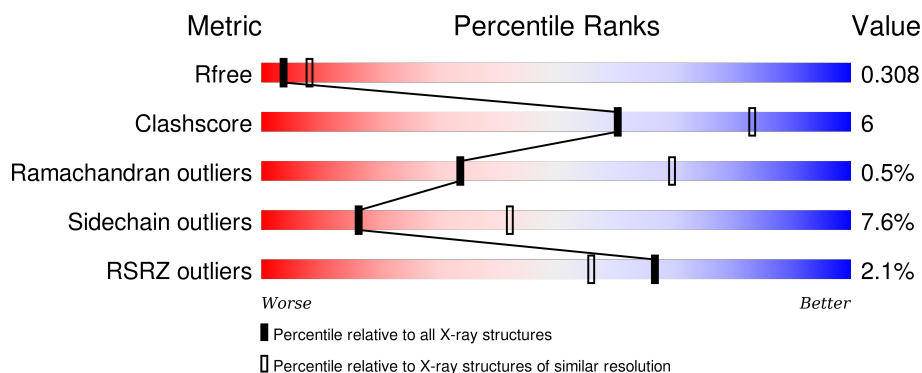
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 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))
$R_{free}$	91344	2393 (2.80-2.80)
Clashscore	102246	2827 (2.80-2.80)
Ramachandran outliers	100387	2782 (2.80-2.80)
Sidechain outliers	100360	2784 (2.80-2.80)
RSRZ outliers	91569	2404 (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  $\geq 3$ , 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	313	<div> <div>2%</div> <div>71% 11% • 17%</div> </div>
1	B	313	<div> <div>%</div> <div>66% 14% • 18%</div> </div>
1	C	313	<div> <div>2%</div> <div>69% 12% • 17%</div> </div>
1	D	313	<div> <div>2%</div> <div>66% 16% • 17%</div> </div>

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 8399 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 Proto-oncogene tyrosine-protein kinase MER.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	261	Total	C	N	O	S	0	2	0
			2027	1299	332	375	21			
1	B	256	Total	C	N	O	S	0	2	0
			2012	1289	336	368	19			
1	C	259	Total	C	N	O	S	0	4	0
			2073	1326	348	379	20			
1	D	259	Total	C	N	O	S	0	3	0
			2057	1316	345	376	20			

There are 72 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	552	MET	-	EXPRESSION TAG	UNP Q12866
A	553	GLY	-	EXPRESSION TAG	UNP Q12866
A	554	SER	-	EXPRESSION TAG	UNP Q12866
A	555	SER	-	EXPRESSION TAG	UNP Q12866
A	556	HIS	-	EXPRESSION TAG	UNP Q12866
A	557	HIS	-	EXPRESSION TAG	UNP Q12866
A	558	HIS	-	EXPRESSION TAG	UNP Q12866
A	559	HIS	-	EXPRESSION TAG	UNP Q12866
A	560	HIS	-	EXPRESSION TAG	UNP Q12866
A	561	HIS	-	EXPRESSION TAG	UNP Q12866
A	562	SER	-	EXPRESSION TAG	UNP Q12866
A	563	SER	-	EXPRESSION TAG	UNP Q12866
A	564	GLY	-	EXPRESSION TAG	UNP Q12866
A	565	LEU	-	EXPRESSION TAG	UNP Q12866
A	566	VAL	-	EXPRESSION TAG	UNP Q12866
A	567	PRO	-	EXPRESSION TAG	UNP Q12866
A	568	ARG	-	EXPRESSION TAG	UNP Q12866
A	569	GLY	-	EXPRESSION TAG	UNP Q12866
B	552	MET	-	EXPRESSION TAG	UNP Q12866
B	553	GLY	-	EXPRESSION TAG	UNP Q12866
B	554	SER	-	EXPRESSION TAG	UNP Q12866

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Chain	Residue	Modelled	Actual	Comment	Reference
B	555	SER	-	EXPRESSION TAG	UNP Q12866
B	556	HIS	-	EXPRESSION TAG	UNP Q12866
B	557	HIS	-	EXPRESSION TAG	UNP Q12866
B	558	HIS	-	EXPRESSION TAG	UNP Q12866
B	559	HIS	-	EXPRESSION TAG	UNP Q12866
B	560	HIS	-	EXPRESSION TAG	UNP Q12866
B	561	HIS	-	EXPRESSION TAG	UNP Q12866
B	562	SER	-	EXPRESSION TAG	UNP Q12866
B	563	SER	-	EXPRESSION TAG	UNP Q12866
B	564	GLY	-	EXPRESSION TAG	UNP Q12866
B	565	LEU	-	EXPRESSION TAG	UNP Q12866
B	566	VAL	-	EXPRESSION TAG	UNP Q12866
B	567	PRO	-	EXPRESSION TAG	UNP Q12866
B	568	ARG	-	EXPRESSION TAG	UNP Q12866
B	569	GLY	-	EXPRESSION TAG	UNP Q12866
C	552	MET	-	EXPRESSION TAG	UNP Q12866
C	553	GLY	-	EXPRESSION TAG	UNP Q12866
C	554	SER	-	EXPRESSION TAG	UNP Q12866
C	555	SER	-	EXPRESSION TAG	UNP Q12866
C	556	HIS	-	EXPRESSION TAG	UNP Q12866
C	557	HIS	-	EXPRESSION TAG	UNP Q12866
C	558	HIS	-	EXPRESSION TAG	UNP Q12866
C	559	HIS	-	EXPRESSION TAG	UNP Q12866
C	560	HIS	-	EXPRESSION TAG	UNP Q12866
C	561	HIS	-	EXPRESSION TAG	UNP Q12866
C	562	SER	-	EXPRESSION TAG	UNP Q12866
C	563	SER	-	EXPRESSION TAG	UNP Q12866
C	564	GLY	-	EXPRESSION TAG	UNP Q12866
C	565	LEU	-	EXPRESSION TAG	UNP Q12866
C	566	VAL	-	EXPRESSION TAG	UNP Q12866
C	567	PRO	-	EXPRESSION TAG	UNP Q12866
C	568	ARG	-	EXPRESSION TAG	UNP Q12866
C	569	GLY	-	EXPRESSION TAG	UNP Q12866
D	552	MET	-	EXPRESSION TAG	UNP Q12866
D	553	GLY	-	EXPRESSION TAG	UNP Q12866
D	554	SER	-	EXPRESSION TAG	UNP Q12866
D	555	SER	-	EXPRESSION TAG	UNP Q12866
D	556	HIS	-	EXPRESSION TAG	UNP Q12866
D	557	HIS	-	EXPRESSION TAG	UNP Q12866
D	558	HIS	-	EXPRESSION TAG	UNP Q12866
D	559	HIS	-	EXPRESSION TAG	UNP Q12866
D	560	HIS	-	EXPRESSION TAG	UNP Q12866

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Chain	Residue	Modelled	Actual	Comment	Reference
D	561	HIS	-	EXPRESSION TAG	UNP Q12866
D	562	SER	-	EXPRESSION TAG	UNP Q12866
D	563	SER	-	EXPRESSION TAG	UNP Q12866
D	564	GLY	-	EXPRESSION TAG	UNP Q12866
D	565	LEU	-	EXPRESSION TAG	UNP Q12866
D	566	VAL	-	EXPRESSION TAG	UNP Q12866
D	567	PRO	-	EXPRESSION TAG	UNP Q12866
D	568	ARG	-	EXPRESSION TAG	UNP Q12866
D	569	GLY	-	EXPRESSION TAG	UNP Q12866

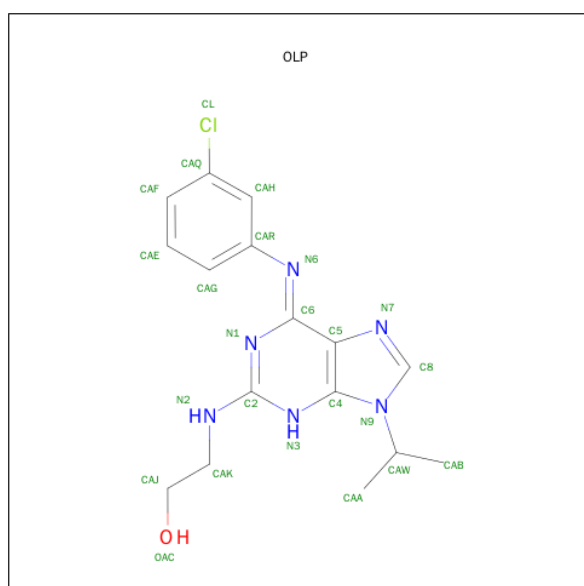
- Molecule 2 is SODIUM ION (three-letter code: NA) (formula: Na).

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

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	D	1	Total Cl 1 1	0	0
3	C	1	Total Cl 1 1	0	0

- Molecule 4 is 2-(2-HYDROXYETHYLAMINO)-6-(3-CHLOROANILINO)-9-ISOPROPYL PURINE (three-letter code: OLP) (formula: C<sub>16</sub>H<sub>19</sub>ClN<sub>6</sub>O).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	Cl	N	O	0	0
			24	16	1	6	1		
4	B	1	Total	C	Cl	N	O	0	0
			24	16	1	6	1		
4	C	1	Total	C	Cl	N	O	0	0
			24	16	1	6	1		
4	D	1	Total	C	Cl	N	O	0	0
			24	16	1	6	1		

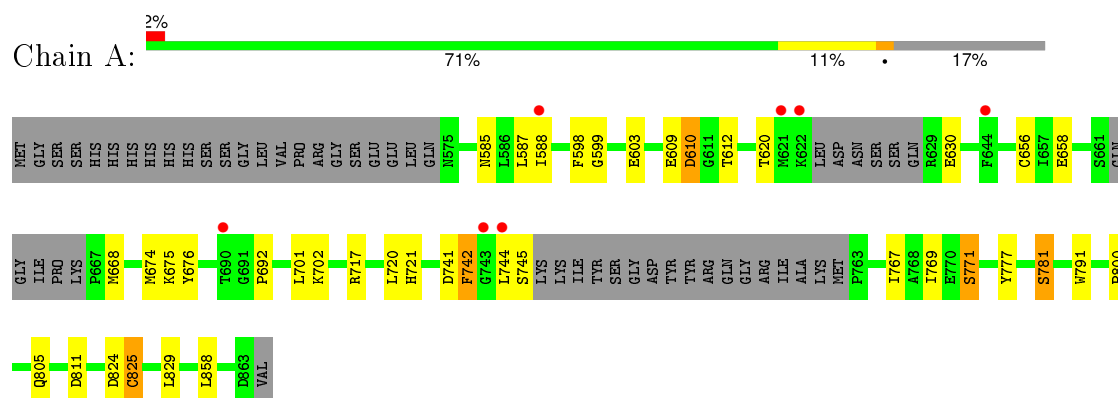
- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	39	Total	O	0	0
			39	39		
5	B	31	Total	O	0	0
			31	31		
5	C	32	Total	O	0	0
			32	32		
5	D	29	Total	O	0	0
			29	29		

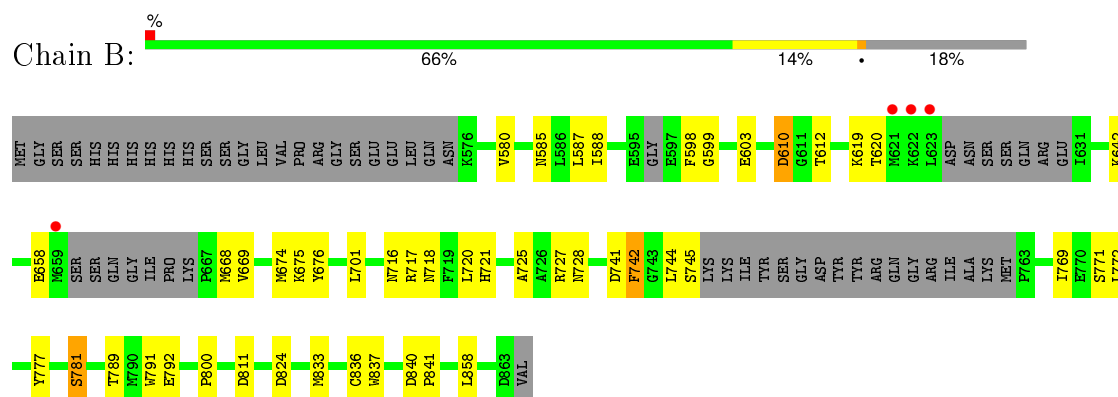
### 3 Residue-property plots [i](#)

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

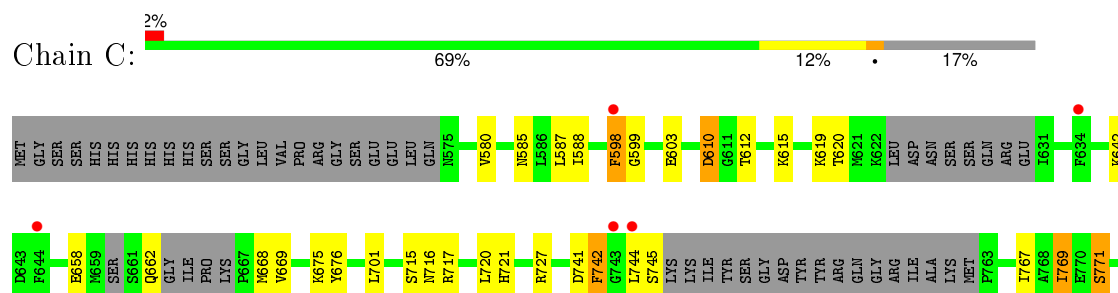
- Molecule 1: Proto-oncogene tyrosine-protein kinase MER



- Molecule 1: Proto-oncogene tyrosine-protein kinase MER

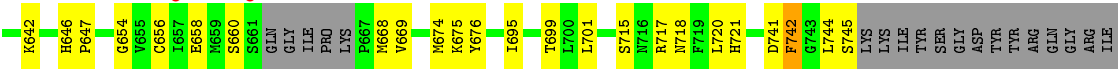
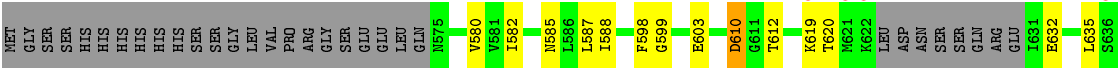


- Molecule 1: Proto-oncogene tyrosine-protein kinase MER





● Molecule 1: Proto-oncogene tyrosine-protein kinase MER





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	70.00 Å 91.70 Å 120.75 Å 90.00° 94.06° 90.00°	Depositor
Resolution (Å)	47.30 – 2.80 47.29 – 2.80	Depositor EDS
% Data completeness (in resolution range)	98.7 (47.30-2.80) 80.0 (47.29-2.80)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.15	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.90 (at 2.81 Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, $R_{free}$	0.274 , 0.301 0.279 , 0.308	Depositor DCC
$R_{free}$ test set	1889 reflections (5.35%)	DCC
Wilson B-factor (Å <sup>2</sup> )	55.4	Xtriage
Anisotropy	0.067	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	(Not available) , (Not available)	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtriage
Outliers	1 of 37227 reflections (0.003%)	Xtriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	8399	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 45.20 % of the origin peak, indicating pseudo translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo translational symmetry is equal to 1.3674e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<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, 0.375 respectively for untwinned datasets, and 0.333, 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: OLP, NA, CL

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	0.52	0/2068	0.62	0/2803
1	B	0.53	0/2052	0.63	0/2778
1	C	0.53	0/2114	0.62	0/2857
1	D	0.53	0/2098	0.63	0/2836
All	All	0.53	0/8332	0.62	0/11274

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	2027	0	1952	19	0
1	B	2012	0	1961	20	0
1	C	2073	0	2032	19	0
1	D	2057	0	2029	27	0
2	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	24	0	19	4	0
4	B	24	0	19	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	C	24	0	19	2	0
4	D	24	0	19	4	0
5	A	39	0	0	1	0
5	B	31	0	0	1	0
5	C	32	0	0	0	0
5	D	29	0	0	1	0
All	All	8399	0	8050	91	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 6.

All (91) 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:674:MET:O	4:A:900:OLP:HAG	1.78	0.84
1:D:674:MET:O	4:D:900:OLP:HAG	1.86	0.76
1:A:675:LYS:O	4:A:900:OLP:HAE	1.90	0.71
1:B:658:GLU:HG3	1:B:668:MET:HE1	1.73	0.71
1:A:658:GLU:HG3	1:A:668:MET:HE1	1.73	0.70
1:C:580:VAL:HG23	1:C:642:LYS:HD2	1.74	0.70
1:A:825[A]:CYS:SG	1:A:829:LEU:HD23	2.34	0.67
1:B:728:ASN:ND2	5:B:128:HOH:O	2.20	0.67
1:D:675:LYS:O	4:D:900:OLP:HAE	1.95	0.66
1:C:658:GLU:HG3	1:C:668:MET:HE1	1.80	0.63
1:D:620:THR:HG22	1:D:668:MET:HG2	1.81	0.62
1:D:658:GLU:HG3	1:D:668:MET:HE1	1.82	0.61
1:B:580:VAL:HG23	1:B:642:LYS:HD2	1.82	0.60
1:B:620:THR:HG22	1:B:668:MET:HG2	1.84	0.59
1:C:620:THR:HG22	1:C:668:MET:HG2	1.86	0.58
1:A:620:THR:HG22	1:A:668:MET:HG2	1.86	0.57
1:B:674:MET:O	4:B:900:OLP:HAG	2.04	0.56
4:D:900:OLP:N1	4:D:900:OLP:HAH	2.21	0.55
1:D:675:LYS:HE3	1:D:676:TYR:CZ	2.41	0.55
1:C:675:LYS:HE3	1:C:676:TYR:CZ	2.41	0.55
1:A:675:LYS:HE3	1:A:676:TYR:CZ	2.42	0.55
1:B:675:LYS:HE3	1:B:676:TYR:CZ	2.43	0.54
1:D:721:HIS:CE1	1:D:742:PHE:HA	2.42	0.54
1:D:587:LEU:O	1:D:588:ILE:HD13	2.09	0.53
1:A:777:TYR:CZ	1:A:781:SER:HB2	2.44	0.52
1:C:777:TYR:CZ	1:C:781:SER:HB2	2.43	0.52
1:C:587:LEU:O	1:C:588:ILE:HD13	2.10	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:777:TYR:CZ	1:D:781:SER:HB2	2.44	0.52
1:D:632:GLU:HA	1:D:635:LEU:HD12	1.92	0.51
1:C:610:ASP:HB3	1:C:612:THR:H	1.76	0.51
1:C:721:HIS:CE1	1:C:742:PHE:HA	2.45	0.51
1:C:599:GLY:HA3	1:C:620:THR:O	2.11	0.51
4:D:900:OLP:N1	4:D:900:OLP:CAH	2.74	0.50
1:B:777:TYR:CZ	1:B:781:SER:HB2	2.46	0.49
1:B:599:GLY:HA3	1:B:620:THR:O	2.12	0.49
1:D:660:SER:HB2	5:D:28:HOH:O	2.13	0.49
1:B:587:LEU:O	1:B:588:ILE:HD13	2.13	0.48
1:D:701:LEU:HB2	1:D:858:LEU:HD13	1.96	0.48
4:C:900:OLP:HAH	4:C:900:OLP:N1	2.29	0.48
1:A:599:GLY:HA3	1:A:620:THR:O	2.14	0.47
1:A:610:ASP:HB3	1:A:612:THR:H	1.79	0.47
1:D:791:TRP:CZ3	1:D:800:PRO:HA	2.50	0.47
1:B:791:TRP:CZ3	1:B:800:PRO:HA	2.50	0.47
1:A:587:LEU:O	1:A:588:ILE:HD13	2.15	0.47
1:D:582:ILE:HD11	1:D:654:GLY:HA3	1.97	0.47
1:B:701:LEU:HB2	1:B:858:LEU:HD13	1.97	0.46
1:D:656:CYS:HB3	1:D:668:MET:CE	2.45	0.46
1:D:828:GLU:CD	1:D:828:GLU:H	2.19	0.46
1:B:725:ALA:HB1	1:B:727[A]:ARG:NH1	2.31	0.46
4:A:900:OLP:HAH	4:A:900:OLP:N1	2.31	0.46
1:C:580:VAL:HA	1:C:642:LYS:NZ	2.30	0.45
1:D:599:GLY:HA3	1:D:620:THR:O	2.16	0.45
1:A:805:GLN:NE2	5:A:64:HOH:O	2.49	0.45
1:B:610:ASP:HB3	1:B:612:THR:H	1.81	0.45
1:C:619:LYS:HB2	1:C:669:VAL:CG2	2.47	0.45
1:B:789:THR:O	1:B:792:GLU:HB2	2.17	0.45
1:A:777:TYR:CE2	1:A:781:SER:HB2	2.52	0.44
1:B:840:ASP:OD1	1:B:841:PRO:HD2	2.17	0.44
1:D:619:LYS:HB2	1:D:669:VAL:CG2	2.47	0.44
1:C:619:LYS:HB2	1:C:669:VAL:HG22	1.99	0.44
1:D:610:ASP:HB3	1:D:612:THR:H	1.83	0.43
1:A:702:LYS:HD2	1:A:702:LYS:HA	1.87	0.43
1:C:833:MET:O	1:C:836:CYS:HB2	2.18	0.43
1:A:701:LEU:HB2	1:A:858:LEU:HD13	2.00	0.43
4:A:900:OLP:CAH	4:A:900:OLP:N1	2.80	0.42
1:A:791:TRP:CZ3	1:A:800:PRO:HA	2.54	0.42
1:C:767:ILE:CG2	1:C:771:SER:HB2	2.49	0.42
1:C:791:TRP:CZ3	1:C:800:PRO:HA	2.55	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:769:ILE:H	1:C:769:ILE:HG13	1.69	0.42
1:A:701:LEU:HD23	1:A:701:LEU:HA	1.84	0.42
1:B:619:LYS:HB2	1:B:669:VAL:CG2	2.49	0.42
1:D:695:ILE:CG2	1:D:699:THR:HB	2.50	0.42
1:B:721:HIS:CE1	1:B:742:PHE:HA	2.54	0.42
1:A:656:CYS:HB3	1:A:668:MET:CE	2.50	0.42
1:D:646:HIS:ND1	1:D:647:PRO:HD2	2.35	0.42
1:C:615:LYS:HA	1:C:615:LYS:HD2	1.86	0.42
1:D:769:ILE:HD12	1:D:770:GLU:OE1	2.20	0.41
1:D:619:LYS:HB2	1:D:669:VAL:HG22	2.02	0.41
1:C:701:LEU:HB2	1:C:858:LEU:HD13	2.02	0.41
1:A:767:ILE:CG2	1:A:771:SER:HB2	2.50	0.41
1:D:767:ILE:CG2	1:D:771:SER:HB2	2.51	0.41
1:A:721:HIS:CE1	1:A:742:PHE:HA	2.56	0.41
4:C:900:OLP:N1	4:C:900:OLP:CAH	2.84	0.41
1:D:580:VAL:HG23	1:D:642:LYS:HD2	2.02	0.41
1:B:833:MET:O	1:B:836:CYS:HB2	2.21	0.41
1:D:769:ILE:HD11	1:D:839:THR:O	2.21	0.40
1:B:675:LYS:O	4:B:900:OLP:HAE	2.21	0.40
1:D:777:TYR:CE2	1:D:781:SER:HB2	2.56	0.40
1:D:833:MET:O	1:D:836:CYS:HB2	2.21	0.40
1:B:716:ASN:C	1:B:718:ASN:H	2.25	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	255/313 (82%)	239 (94%)	14 (6%)	2 (1%)	24	58
1	B	248/313 (79%)	234 (94%)	13 (5%)	1 (0%)	39	74
1	C	253/313 (81%)	234 (92%)	18 (7%)	1 (0%)	39	74

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	254/313 (81%)	236 (93%)	17 (7%)	1 (0%)	39	74
All	All	1010/1252 (81%)	943 (93%)	62 (6%)	5 (0%)	34	69

All (5) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	598	PHE
1	B	598	PHE
1	D	598	PHE
1	C	598	PHE
1	A	692	PRO

### 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	214/280 (76%)	196 (92%)	18 (8%)	14	37
1	B	215/280 (77%)	199 (93%)	16 (7%)	17	43
1	C	224/280 (80%)	204 (91%)	20 (9%)	12	34
1	D	223/280 (80%)	208 (93%)	15 (7%)	20	50
All	All	876/1120 (78%)	807 (92%)	69 (8%)	16	40

All (69) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	585	ASN
1	A	603	GLU
1	A	609	GLU
1	A	610	ASP
1	A	630	GLU
1	A	717	ARG
1	A	720	LEU
1	A	741	ASP
1	A	742	PHE

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Mol	Chain	Res	Type
1	A	744	LEU
1	A	745	SER
1	A	769	ILE
1	A	771	SER
1	A	781	SER
1	A	811	ASP
1	A	824	ASP
1	A	825[A]	CYS
1	A	825[B]	CYS
1	B	585	ASN
1	B	603	GLU
1	B	610	ASP
1	B	717	ARG
1	B	720	LEU
1	B	741	ASP
1	B	742	PHE
1	B	744	LEU
1	B	745	SER
1	B	769	ILE
1	B	771	SER
1	B	772	LEU
1	B	781	SER
1	B	811	ASP
1	B	824	ASP
1	B	837	TRP
1	C	585	ASN
1	C	598	PHE
1	C	603	GLU
1	C	610	ASP
1	C	662	GLN
1	C	715	SER
1	C	717[A]	ARG
1	C	717[B]	ARG
1	C	720	LEU
1	C	727[A]	ARG
1	C	727[B]	ARG
1	C	741	ASP
1	C	742	PHE
1	C	744	LEU
1	C	745	SER
1	C	769	ILE
1	C	771	SER

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Mol	Chain	Res	Type
1	C	781	SER
1	C	811	ASP
1	C	824	ASP
1	D	585	ASN
1	D	603	GLU
1	D	610	ASP
1	D	715	SER
1	D	717	ARG
1	D	718	ASN
1	D	720	LEU
1	D	741	ASP
1	D	742	PHE
1	D	744	LEU
1	D	745	SER
1	D	769	ILE
1	D	781	SER
1	D	811	ASP
1	D	824	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	608	GLN
1	A	728	ASN
1	B	608	GLN
1	B	728	ASN
1	C	608	GLN
1	C	662	GLN
1	C	728	ASN
1	D	608	GLN
1	D	728	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 [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	OLP	A	900	-	20,26,26	3.90	4 (20%)	17,36,36	1.70	2 (11%)
4	OLP	B	900	-	20,26,26	3.88	4 (20%)	17,36,36	1.86	2 (11%)
4	OLP	C	900	-	20,26,26	3.69	4 (20%)	17,36,36	1.94	4 (23%)
4	OLP	D	900	-	20,26,26	3.87	5 (25%)	17,36,36	1.90	2 (11%)

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	OLP	A	900	-	-	0/8/12/12	0/2/3/3
4	OLP	B	900	-	-	0/8/12/12	0/2/3/3
4	OLP	C	900	-	-	0/8/12/12	0/2/3/3
4	OLP	D	900	-	-	0/8/12/12	0/2/3/3

All (17) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	900	OLP	C5-N7	-11.38	1.33	1.47
4	A	900	OLP	C4-N9	-11.34	1.32	1.47
4	A	900	OLP	C5-N7	-11.23	1.33	1.47
4	D	900	OLP	C5-N7	-11.15	1.33	1.47
4	D	900	OLP	C4-N9	-11.01	1.33	1.47
4	C	900	OLP	C5-N7	-10.95	1.33	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	B	900	OLP	C4-N9	-10.77	1.33	1.47
4	C	900	OLP	C4-N9	-10.43	1.33	1.47
4	B	900	OLP	C8-N9	-4.73	1.33	1.46
4	D	900	OLP	CAR-N6	-4.59	1.34	1.42
4	C	900	OLP	C8-N9	-4.56	1.33	1.46
4	A	900	OLP	C8-N9	-4.54	1.33	1.46
4	D	900	OLP	C8-N9	-4.36	1.34	1.46
4	B	900	OLP	CAR-N6	-4.19	1.35	1.42
4	A	900	OLP	CAR-N6	-3.93	1.35	1.42
4	C	900	OLP	CAR-N6	-3.46	1.36	1.42
4	D	900	OLP	CAQ-CL	-2.06	1.69	1.74

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	C	900	OLP	C4-N9-CAW	2.06	128.53	117.52
4	C	900	OLP	CAR-CAH-CAQ	2.84	120.91	119.07
4	C	900	OLP	C8-N9-C4	3.55	109.34	104.94
4	D	900	OLP	C8-N9-C4	3.82	109.67	104.94
4	A	900	OLP	C8-N9-C4	3.97	109.86	104.94
4	B	900	OLP	C8-N9-C4	4.45	110.46	104.94
4	A	900	OLP	C2-N3-C4	4.69	120.27	111.61
4	B	900	OLP	C2-N3-C4	5.40	121.59	111.61
4	D	900	OLP	C2-N3-C4	5.42	121.63	111.61
4	C	900	OLP	C2-N3-C4	5.77	122.27	111.61

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

4 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	900	OLP	4	0
4	B	900	OLP	2	0
4	C	900	OLP	2	0
4	D	900	OLP	4	0

## 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	261/313 (83%)	0.03	7 (2%) 58 45	41, 58, 90, 117	0
1	B	256/313 (81%)	0.05	4 (1%) 74 66	38, 56, 86, 109	0
1	C	259/313 (82%)	0.09	5 (1%) 70 59	35, 55, 83, 106	0
1	D	259/313 (82%)	0.09	6 (2%) 64 52	38, 56, 89, 133	0
All	All	1035/1252 (82%)	0.06	22 (2%) 67 56	35, 57, 88, 133	0

All (22) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	659	MET	3.4
1	A	690	THR	3.1
1	C	644	PHE	2.9
1	D	622	LYS	2.9
1	B	621	MET	2.8
1	A	621	MET	2.7
1	A	622	LYS	2.5
1	A	743	GLY	2.4
1	D	661	SER	2.3
1	C	743	GLY	2.3
1	D	619	LYS	2.3
1	D	636	SER	2.3
1	B	622	LYS	2.3
1	C	598	PHE	2.2
1	D	657	ILE	2.2
1	A	744	LEU	2.2
1	C	634	PHE	2.1
1	A	644	PHE	2.1
1	B	623	LEU	2.1
1	A	588	ILE	2.1
1	C	744	LEU	2.1
1	D	621	MET	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
4	OLP	C	900	24/24	0.92	0.21	0.11	47,52,56,59	0
4	OLP	B	900	24/24	0.95	0.21	-0.01	49,53,57,59	0
4	OLP	D	900	24/24	0.92	0.22	-0.02	44,52,58,62	0
4	OLP	A	900	24/24	0.95	0.20	-0.20	46,49,53,57	0
3	CL	C	133	1/1	0.99	0.18	-1.12	43,43,43,43	0
2	NA	B	1	1/1	0.96	0.11	-2.36	35,35,35,35	0
3	CL	D	134	1/1	0.97	0.13	-4.30	32,32,32,32	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.