



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 31, 2016 – 07:08 PM GMT

PDB ID : 1E7H  
Title : HUMAN SERUM ALBUMIN COMPLEXED WITH HEXADECANOIC ACID (PALMITIC ACID)  
Authors : Bhattacharya, A.A.; Gruene, T.; Curry, S.  
Deposited on : 2000-08-29  
Resolution : 2.43 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

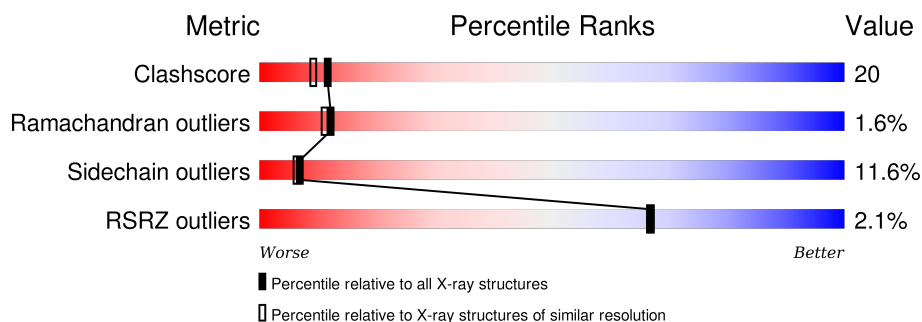
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*


The reported resolution of this entry is 2.43 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))
Clashscore	102246	1071 (2.46-2.42)
Ramachandran outliers	100387	1065 (2.46-2.42)
Sidechain outliers	100360	1065 (2.46-2.42)
RSRZ outliers	91569	1005 (2.46-2.42)

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	585	

## 2 Entry composition [i](#)

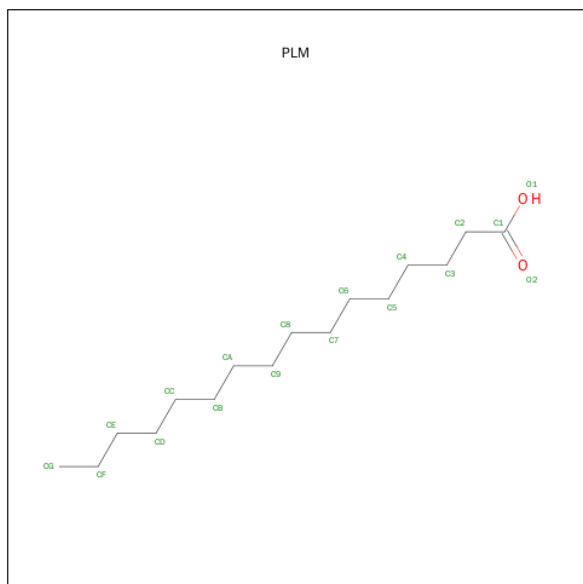
There are 3 unique types of molecules in this entry. The entry contains 4583 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 SERUM ALBUMIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	581	Total	C	N	O	S	0	0	0
			4443	2819	744	839	41			

- Molecule 2 is PALMITIC ACID (three-letter code: PLM) (formula: C<sub>16</sub>H<sub>32</sub>O<sub>2</sub>).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	C	O	0	0
			13	11	2		
2	A	1	Total	C	O	0	0
			18	16	2		
2	A	1	Total	C	O	0	0
			17	15	2		
2	A	1	Total	C	O	0	0
			18	16	2		
2	A	1	Total	C	O	0	0
			17	15	2		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 18 16 2	0	0
2	A	1	Total C 10 10	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	29	Total O 29 29	0	0



## 4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	190.09Å 38.75Å 95.87Å 90.00° 104.96° 90.00°	Depositor
Resolution (Å)	12.00 – 2.43 11.95 – 2.43	Depositor EDS
% Data completeness (in resolution range)	93.5 (12.00-2.43) 93.5 (11.95-2.43)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	0.05	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.13 (at 2.43Å)	Xtriage
Refinement program	X-PLOR 3.851	Depositor
R, $R_{free}$	0.214 , 0.272 0.225 , (Not available)	Depositor DCC
$R_{free}$ test set	No test flags present.	DCC
Wilson B-factor (Å <sup>2</sup> )	44.3	Xtriage
Anisotropy	0.332	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 61.3	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	1 of 24121 reflections (0.004%)	Xtriage
$F_o, F_c$ correlation	0.95	EDS
Total number of atoms	4583	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	51.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.52% 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, 0.375 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: PLM

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	0.36	0/4532	0.58	1/6148 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed( $^{\circ}$ )	Ideal( $^{\circ}$ )
1	A	313	LYS	N-CA-C	-6.31	93.97	111.00

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	4443	0	4193	180	0
2	A	111	0	179	10	0
3	A	29	0	0	2	0
All	All	4583	0	4372	181	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 20.

All (181) 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:114:ARG:NH1	1:A:116:VAL:HG12	1.89	0.87
1:A:151:ALA:HB3	1:A:152:PRO:HD3	1.60	0.81
1:A:479:GLU:HG2	1:A:483:ASN:HB2	1.63	0.81
1:A:267:ASN:HD22	1:A:267:ASN:N	1.82	0.78
1:A:540:THR:HG22	1:A:542:GLU:H	1.49	0.77
1:A:299:PRO:HB2	1:A:302:LEU:HD21	1.68	0.76
1:A:567:CYS:O	1:A:571:GLU:HB2	1.87	0.75
1:A:457:LEU:HD11	2:A:1004:PLM:H51	1.66	0.74
1:A:177:CYS:O	1:A:180:PRO:HD2	1.87	0.74
1:A:120:VAL:HG13	1:A:178:LEU:HD23	1.69	0.73
1:A:277:GLU:H	1:A:277:GLU:CD	1.92	0.72
1:A:415:VAL:HG12	1:A:418:VAL:HG23	1.71	0.72
1:A:311:GLU:O	1:A:367:HIS:HE1	1.73	0.70
1:A:348:ARG:HG3	1:A:482:VAL:HG13	1.72	0.70
1:A:453:LEU:HD21	2:A:1003:PLM:H81	1.73	0.69
1:A:576:VAL:O	1:A:580:GLN:HG3	1.92	0.69
1:A:452:TYR:O	1:A:455:VAL:HG23	1.93	0.68
1:A:550:ASP:HB3	1:A:575:LEU:HD11	1.75	0.68
1:A:267:ASN:ND2	1:A:267:ASN:N	2.40	0.68
1:A:408:LEU:CD2	1:A:526:GLN:HG2	2.23	0.67
1:A:383:GLU:HG3	1:A:384:PRO:N	2.10	0.66
1:A:383:GLU:HG3	1:A:384:PRO:HD3	1.79	0.65
1:A:513:ILE:HA	1:A:516:LEU:HD12	1.79	0.65
1:A:114:ARG:CG	1:A:114:ARG:HH11	2.10	0.64
1:A:401:TYR:CE1	1:A:522:GLN:HG2	2.33	0.63
1:A:383:GLU:HG3	1:A:384:PRO:CD	2.28	0.63
1:A:424:VAL:O	1:A:428:ARG:HG3	1.99	0.63
1:A:277:GLU:OE1	1:A:277:GLU:N	2.32	0.62
1:A:109:ASN:N	1:A:110:PRO:HD3	2.15	0.61
1:A:398:LEU:O	1:A:399:GLY:O	2.18	0.61
1:A:151:ALA:HB3	1:A:152:PRO:CD	2.30	0.60
1:A:485:ARG:HB3	1:A:486:PRO:HD3	1.84	0.59
1:A:516:LEU:HB3	1:A:520:GLU:HB2	1.84	0.59
1:A:426:VAL:HG23	1:A:427:SER:N	2.17	0.59
1:A:540:THR:HG22	1:A:541:LYS:N	2.19	0.58
2:A:1003:PLM:H82	2:A:1004:PLM:H22	1.86	0.58
1:A:519:LYS:O	1:A:523:ILE:HG12	2.04	0.58
1:A:59:ALA:HB3	1:A:62:CYS:SG	2.43	0.57
1:A:138:TYR:O	1:A:142:ILE:HG12	2.05	0.56
1:A:238:LEU:HD22	1:A:242:HIS:CD2	2.39	0.56
1:A:458:ASN:O	1:A:462:VAL:HG23	2.04	0.56
1:A:67:HIS:HD2	1:A:99:ASN:ND2	2.02	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:436:LYS:HG2	1:A:452:TYR:CZ	2.40	0.56
1:A:306:ALA:O	1:A:311:GLU:N	2.33	0.55
1:A:545:LYS:HA	1:A:548:MET:HE2	1.89	0.55
1:A:130:ASN:HD21	1:A:133:THR:HG21	1.71	0.55
1:A:20:LYS:HE3	1:A:47:THR:HG21	1.89	0.54
1:A:107:ASP:O	1:A:147:PRO:HG2	2.08	0.54
1:A:367:HIS:HA	1:A:370:TYR:CZ	2.43	0.54
1:A:307:ALA:O	1:A:312:SER:HB2	2.08	0.54
1:A:408:LEU:HD13	1:A:427:SER:HB2	1.90	0.53
1:A:420:THR:CG2	1:A:527:THR:HG23	2.39	0.53
1:A:218:ARG:HD2	3:A:2007:HOH:O	2.07	0.53
1:A:291:ALA:HA	2:A:1007:PLM:H72	1.90	0.53
1:A:233:LYS:HD2	1:A:263:TYR:CZ	2.44	0.53
1:A:462:VAL:O	1:A:465:GLU:HB3	2.09	0.52
1:A:558:CYS:SG	1:A:567:CYS:C	2.87	0.52
1:A:95:GLU:HB3	1:A:96:PRO:HD3	1.90	0.52
1:A:364:ALA:O	1:A:366:PRO:HD3	2.09	0.52
1:A:299:PRO:HB2	1:A:302:LEU:CD2	2.38	0.52
1:A:8:ALA:O	1:A:12:LYS:HG3	2.10	0.52
1:A:114:ARG:HH12	1:A:116:VAL:HA	1.74	0.51
1:A:420:THR:O	1:A:424:VAL:HG23	2.10	0.51
1:A:437:CYS:HA	1:A:440:HIS:HD2	1.74	0.51
1:A:5:SER:HB3	1:A:8:ALA:HB3	1.92	0.51
1:A:398:LEU:HB2	1:A:402:LYS:HB3	1.93	0.51
1:A:556:GLU:C	1:A:558:CYS:H	2.13	0.51
1:A:160:ARG:HH22	1:A:188:GLU:CD	2.15	0.50
1:A:165:PHE:O	1:A:169:CYS:HB2	2.11	0.50
1:A:35:PRO:O	1:A:38:ASP:HB2	2.12	0.50
1:A:408:LEU:HD21	1:A:526:GLN:HG2	1.93	0.50
1:A:27:PHE:CE1	1:A:74:LEU:HD12	2.46	0.50
1:A:383:GLU:OE2	1:A:485:ARG:NH1	2.42	0.50
1:A:32:GLN:OE1	1:A:110:PRO:HG2	2.12	0.50
1:A:234:LEU:O	1:A:238:LEU:HB2	2.12	0.50
1:A:366:PRO:O	1:A:369:CYS:N	2.44	0.50
1:A:155:LEU:HD23	1:A:284:LEU:HD21	1.93	0.50
1:A:66:LEU:HD22	2:A:1002:PLM:HD1	1.94	0.50
1:A:426:VAL:CG2	1:A:427:SER:N	2.74	0.49
1:A:81:ARG:NH2	1:A:89:ASP:OD1	2.41	0.49
1:A:475:LYS:HE2	1:A:479:GLU:OE1	2.12	0.49
1:A:420:THR:N	1:A:421:PRO:HD2	2.27	0.49
1:A:472:ARG:NH2	1:A:492:GLU:O	2.45	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:27:PHE:HE1	1:A:74:LEU:HD12	1.77	0.49
1:A:49:PHE:O	1:A:52:THR:HB	2.11	0.49
1:A:501:GLU:HA	1:A:501:GLU:OE1	2.11	0.49
1:A:114:ARG:HH12	1:A:116:VAL:HG12	1.73	0.49
1:A:225:LYS:HD2	1:A:297:GLU:O	2.13	0.49
1:A:548:MET:HG2	2:A:1005:PLM:H41	1.95	0.49
1:A:95:GLU:O	1:A:96:PRO:C	2.50	0.49
1:A:378:LYS:HB3	1:A:379:PRO:CD	2.42	0.49
1:A:130:ASN:HD21	1:A:133:THR:CG2	2.25	0.49
1:A:554:PHE:O	1:A:558:CYS:HB2	2.13	0.49
1:A:378:LYS:HB3	1:A:379:PRO:HD3	1.95	0.48
1:A:149:PHE:CD1	1:A:154:LEU:HB2	2.48	0.48
1:A:90:CYS:O	1:A:98:ARG:HG3	2.13	0.48
1:A:10:ARG:O	1:A:14:LEU:HB2	2.13	0.48
1:A:46:VAL:HG13	2:A:1002:PLM:HG3	1.95	0.48
1:A:114:ARG:CG	1:A:114:ARG:NH1	2.71	0.48
1:A:149:PHE:HD1	1:A:154:LEU:HB2	1.78	0.48
1:A:225:LYS:HG3	1:A:299:PRO:HG3	1.96	0.48
1:A:547:VAL:HG21	1:A:583:LEU:HD21	1.96	0.48
1:A:565:GLU:HG3	1:A:565:GLU:O	2.15	0.47
1:A:65:SER:O	1:A:69:LEU:HG	2.14	0.47
1:A:39:HIS:HD2	1:A:140:TYR:CE2	2.31	0.47
1:A:408:LEU:HD13	1:A:427:SER:CB	2.44	0.47
1:A:221:GLN:HG2	1:A:339:PRO:HA	1.97	0.47
1:A:224:PRO:O	1:A:336:ARG:NH1	2.48	0.47
1:A:114:ARG:HG3	1:A:114:ARG:NH1	2.29	0.47
1:A:24:LEU:HD23	1:A:139:LEU:HD23	1.96	0.47
1:A:563:ASP:CG	1:A:563:ASP:O	2.52	0.47
1:A:556:GLU:O	1:A:558:CYS:N	2.48	0.46
1:A:558:CYS:HB3	1:A:568:PHE:CE2	2.51	0.46
1:A:127:PHE:CE1	1:A:131:GLU:HG3	2.51	0.46
1:A:130:ASN:OD1	1:A:133:THR:HG23	2.15	0.46
1:A:479:GLU:HG3	1:A:480:SER:H	1.80	0.46
1:A:422:THR:O	1:A:426:VAL:HG13	2.16	0.46
1:A:413:LYS:HE3	1:A:537:PRO:O	2.16	0.46
1:A:137:LYS:O	1:A:141:GLU:HG2	2.16	0.46
1:A:436:LYS:HG2	1:A:452:TYR:OH	2.17	0.45
1:A:415:VAL:CG1	1:A:418:VAL:HG23	2.43	0.45
1:A:420:THR:HG21	1:A:527:THR:HG23	1.97	0.45
1:A:127:PHE:CE2	1:A:165:PHE:HB3	2.51	0.45
1:A:383:GLU:CG	1:A:384:PRO:HD3	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:168:CYS:C	1:A:170:GLN:H	2.20	0.45
1:A:312:SER:O	1:A:367:HIS:ND1	2.48	0.45
1:A:32:GLN:OE1	1:A:110:PRO:CG	2.65	0.45
1:A:305:LEU:CD2	1:A:333:GLU:HB3	2.47	0.45
1:A:116:VAL:O	1:A:116:VAL:HG23	2.17	0.45
1:A:13:ASP:HB3	1:A:283:LEU:HD22	1.98	0.45
1:A:151:ALA:CB	1:A:152:PRO:HD3	2.40	0.44
1:A:145:ARG:C	1:A:147:PRO:HD3	2.38	0.44
1:A:494:ASP:OD1	1:A:496:THR:HB	2.16	0.44
1:A:436:LYS:HG2	1:A:452:TYR:CE2	2.53	0.44
1:A:419:SER:OG	1:A:421:PRO:HD2	2.17	0.44
1:A:306:ALA:O	1:A:311:GLU:HB2	2.17	0.44
1:A:30:TYR:CD1	1:A:70:PHE:HZ	2.35	0.44
1:A:37:GLU:H	1:A:37:GLU:CD	2.21	0.44
1:A:446:MET:HB3	1:A:447:PRO:HD3	1.99	0.44
1:A:109:ASN:N	1:A:110:PRO:CD	2.81	0.44
1:A:455:VAL:O	1:A:459:GLN:HG3	2.18	0.43
1:A:264:ILE:CG2	1:A:275:LEU:HD21	2.48	0.43
1:A:114:ARG:HG2	1:A:114:ARG:HH11	1.83	0.43
1:A:348:ARG:HG3	1:A:482:VAL:CG1	2.44	0.43
1:A:153:GLU:HG3	1:A:153:GLU:O	2.19	0.43
1:A:464:HIS:HE1	1:A:470:SER:O	2.01	0.43
1:A:238:LEU:HD22	1:A:242:HIS:HD2	1.82	0.43
1:A:87:MET:CE	1:A:105:HIS:HB2	2.49	0.43
1:A:69:LEU:HB3	2:A:1002:PLM:HG1	2.00	0.43
1:A:373:VAL:HG12	1:A:374:PHE:CD1	2.53	0.43
1:A:485:ARG:HD2	1:A:485:ARG:C	2.38	0.42
1:A:556:GLU:C	1:A:558:CYS:N	2.71	0.42
1:A:127:PHE:CD2	1:A:165:PHE:HB3	2.54	0.42
1:A:483:ASN:C	1:A:486:PRO:HD2	2.40	0.42
1:A:398:LEU:HB2	1:A:402:LYS:CB	2.48	0.42
1:A:513:ILE:HD11	1:A:568:PHE:CZ	2.54	0.42
1:A:245:CYS:HA	1:A:253:CYS:HB2	2.01	0.42
1:A:483:ASN:O	1:A:486:PRO:HD2	2.19	0.42
1:A:522:GLN:O	1:A:526:GLN:HB2	2.19	0.42
1:A:507:PHE:CD1	2:A:1005:PLM:HB2	2.55	0.42
1:A:510:HIS:HB2	1:A:512:ASP:OD1	2.19	0.42
1:A:465:GLU:O	1:A:468:PRO:HD3	2.19	0.42
1:A:342:SER:HB3	1:A:446:MET:HG2	2.02	0.42
1:A:281:LYS:HB3	1:A:282:PRO:HD2	2.01	0.42
1:A:414:LYS:HE3	3:A:2016:HOH:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:381:VAL:O	1:A:384:PRO:HD2	2.19	0.42
1:A:26:ALA:O	1:A:30:TYR:HD1	2.03	0.42
1:A:373:VAL:HG12	1:A:374:PHE:HD1	1.85	0.41
1:A:120:VAL:HG21	1:A:175:ALA:HA	2.02	0.41
1:A:146:HIS:HB3	1:A:149:PHE:HB2	2.01	0.41
1:A:90:CYS:HA	1:A:93:LYS:HG3	2.01	0.41
1:A:39:HIS:CD2	1:A:140:TYR:HE2	2.38	0.41
1:A:382:GLU:HA	1:A:385:GLN:HB2	2.02	0.41
1:A:420:THR:HG22	1:A:527:THR:HG23	2.03	0.41
1:A:460:LEU:HD11	2:A:1004:PLM:HC2	2.02	0.41
1:A:120:VAL:HG21	1:A:179:LEU:HD12	2.02	0.41
1:A:550:ASP:HB3	1:A:575:LEU:CD1	2.48	0.41
1:A:107:ASP:HB3	1:A:110:PRO:HG3	2.03	0.41
1:A:442:GLU:HA	1:A:445:ARG:HD2	2.04	0.40
1:A:295:ASN:HD22	1:A:339:PRO:HB2	1.86	0.40
1:A:305:LEU:HD13	1:A:334:TYR:CD2	2.56	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	579/585 (99%)	520 (90%)	50 (9%)	9 (2%)	<b>12</b> <b>11</b>

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	399	GLY
1	A	110	PRO
1	A	118	PRO
1	A	303	PRO
1	A	367	HIS

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Mol	Chain	Res	Type
1	A	557	LYS
1	A	169	CYS
1	A	366	PRO
1	A	120	VAL

### 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	455/511 (89%)	402 (88%)	53 (12%)	<b>7</b> <b>6</b>

All (53) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	LEU
1	A	34	CYS
1	A	42	LEU
1	A	73	LYS
1	A	74	LEU
1	A	87	MET
1	A	93	LYS
1	A	97	GLU
1	A	109	ASN
1	A	114	ARG
1	A	132	GLU
1	A	133	THR
1	A	140	TYR
1	A	144	ARG
1	A	174	LYS
1	A	179	LEU
1	A	190	LYS
1	A	205	LYS
1	A	225	LYS
1	A	232	SER
1	A	238	LEU
1	A	257	ARG

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Mol	Chain	Res	Type
1	A	267	ASN
1	A	269	ASP
1	A	285	GLU
1	A	286	LYS
1	A	293	VAL
1	A	308	ASP
1	A	315	VAL
1	A	334	TYR
1	A	352	THR
1	A	373	VAL
1	A	380	LEU
1	A	382	GLU
1	A	383	GLU
1	A	388	ILE
1	A	390	GLN
1	A	398	LEU
1	A	430	LEU
1	A	446	MET
1	A	451	ASP
1	A	453	LEU
1	A	455	VAL
1	A	472	ARG
1	A	481	LEU
1	A	498	VAL
1	A	509	PHE
1	A	512	ASP
1	A	514	CYS
1	A	536	LYS
1	A	544	LEU
1	A	558	CYS
1	A	563	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	39	HIS
1	A	61	ASN
1	A	67	HIS
1	A	99	ASN
1	A	109	ASN
1	A	242	HIS
1	A	267	ASN

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Mol	Chain	Res	Type
1	A	268	GLN
1	A	367	HIS
1	A	440	HIS
1	A	580	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 carbohydrates in this entry.

### 5.6 Ligand geometry [i](#)

7 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	PLM	A	1001	-	9,12,17	0.25	0	9,12,17	0.86	1 (11%)
2	PLM	A	1002	-	14,17,17	0.28	0	14,17,17	0.75	1 (7%)
2	PLM	A	1003	-	13,16,17	0.29	0	13,16,17	0.74	0
2	PLM	A	1004	-	14,17,17	0.17	0	14,17,17	0.85	1 (7%)
2	PLM	A	1005	-	13,16,17	0.22	0	13,16,17	0.83	1 (7%)
2	PLM	A	1006	-	14,17,17	0.20	0	14,17,17	0.80	1 (7%)
2	PLM	A	1007	-	9,9,17	0.25	0	8,8,17	0.58	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	PLM	A	1001	-	-	0/8/10/15	0/0/0/0
2	PLM	A	1002	-	-	0/13/15/15	0/0/0/0
2	PLM	A	1003	-	-	0/12/14/15	0/0/0/0
2	PLM	A	1004	-	-	0/13/15/15	0/0/0/0
2	PLM	A	1005	-	-	0/12/14/15	0/0/0/0
2	PLM	A	1006	-	-	0/13/15/15	0/0/0/0
2	PLM	A	1007	-	-	0/7/7/15	0/0/0/0

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1004	PLM	C4-C3-C2	-2.34	104.02	113.90
2	A	1001	PLM	C4-C3-C2	-2.28	104.28	113.90
2	A	1005	PLM	C4-C3-C2	-2.22	104.49	113.90
2	A	1006	PLM	C4-C3-C2	-2.09	105.06	113.90
2	A	1002	PLM	C4-C3-C2	-2.05	105.21	113.90

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1002	PLM	3	0
2	A	1003	PLM	2	0
2	A	1004	PLM	3	0
2	A	1005	PLM	2	0
2	A	1007	PLM	1	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 [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, 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	581/585 (99%)	-0.13	12 (2%) 67 67	23, 49, 77, 100	0

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	3	HIS	3.6
1	A	172	ALA	3.4
1	A	566	THR	2.9
1	A	562	ASP	2.9
1	A	559	CYS	2.8
1	A	109	ASN	2.7
1	A	553	ALA	2.6
1	A	561	ALA	2.2
1	A	170	GLN	2.1
1	A	558	CYS	2.1
1	A	176	ALA	2.0
1	A	367	HIS	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(Å <sup>2</sup> )	Q<0.9
2	PLM	A	1006	18/18	0.85	0.20	1.86	37,46,89,90	0
2	PLM	A	1001	13/18	0.83	0.17	1.68	86,89,91,92	0
2	PLM	A	1005	17/18	0.90	0.15	1.01	37,41,57,58	0
2	PLM	A	1003	17/18	0.96	0.12	0.20	39,52,60,60	0
2	PLM	A	1002	18/18	0.91	0.12	-0.17	48,51,53,54	0
2	PLM	A	1004	18/18	0.94	0.12	-0.25	45,49,54,54	0
2	PLM	A	1007	10/18	0.90	0.13	-0.44	44,49,57,58	0

## 6.5 Other polymers ⓘ

There are no such residues in this entry.