Full wwPDB X-ray Structure Validation Report (i)

Oct 19, 2023 – 11:01 AM EDT

PDB ID	:	2I2Z
Title	:	Human serum albumin complexed with myristate and aspirin
Authors	:	Yang, F.; Bian, C.; Zhu, L.; Zhao, G.; Huang, Z.; Huang, M.
Deposited on	:	2006-08-17
Resolution	:	2.70 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

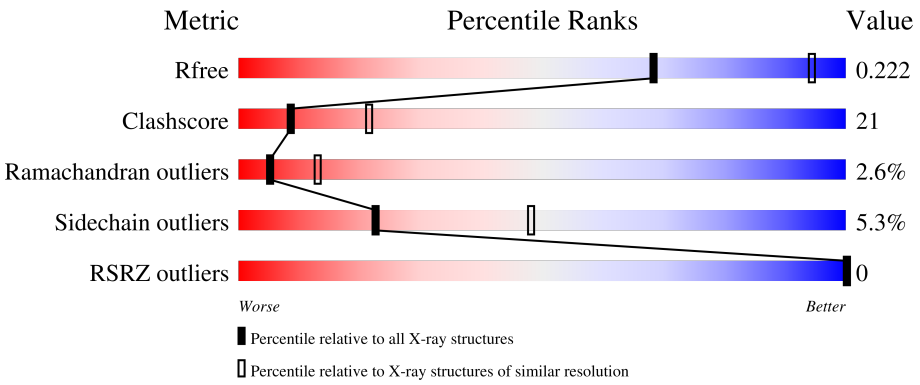
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 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}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=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	60% 35% 5% •

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 criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	SAL	A	1100	-	X	-	-

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 4723 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.

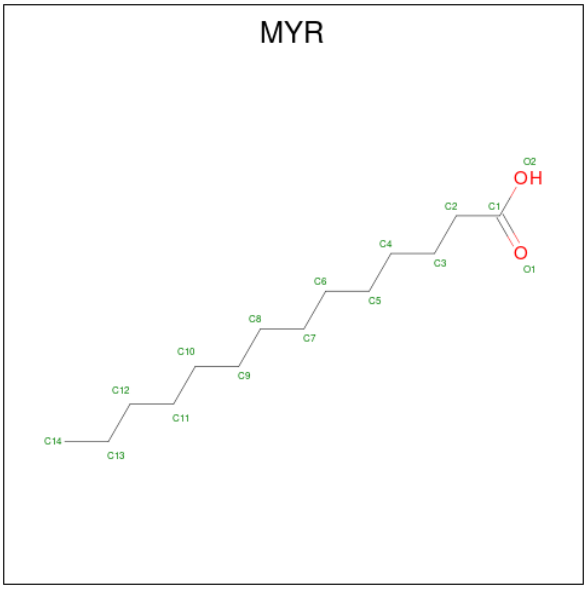
- Molecule 1 is a protein called Serum albumin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	582	4633	2925	783	884	41	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	199	ALY	LYS	modified residue	UNP P02768

- Molecule 2 is MYRISTIC ACID (three-letter code: MYR) (formula: $C_{14}H_{28}O_2$).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	A	1	16	14	2	0	0
2	A	1	16	14	2	0	0
2	A	1	16	14	2	0	0

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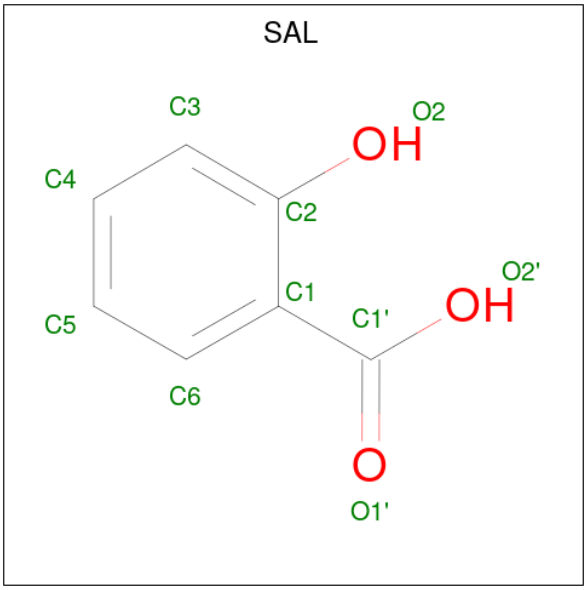
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
2	A	1	16	14	2	0	0
			Total	C	O		
2	A	1	16	14	2	0	0

- Molecule 3 is 2-HYDROXYBENZOIC ACID (three-letter code: SAL) (formula: $C_7H_6O_3$).



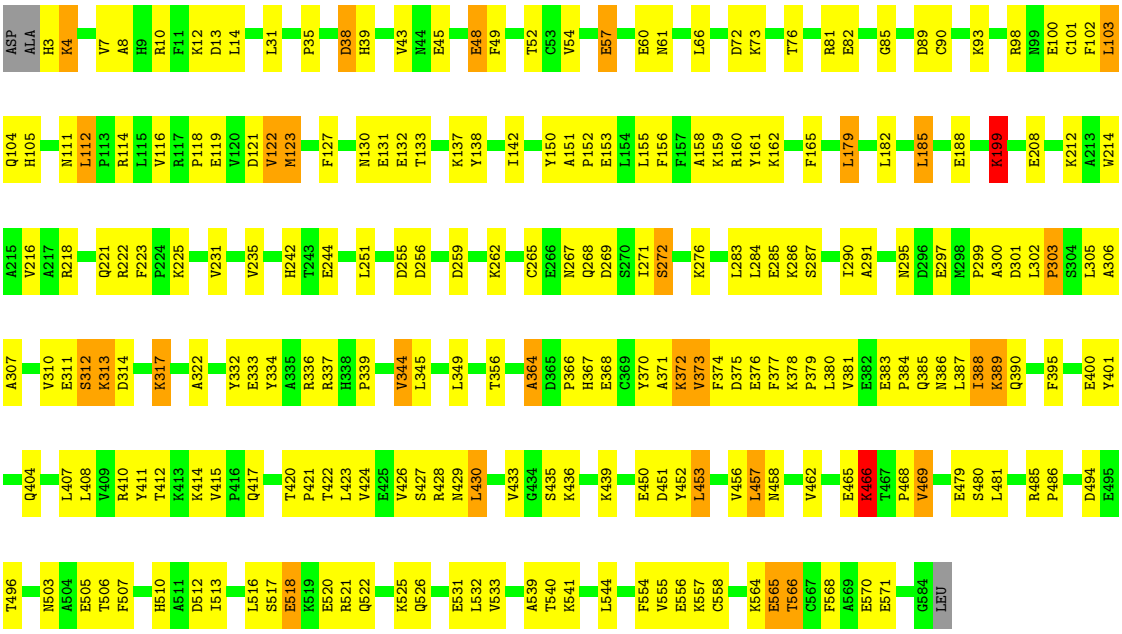
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
			Total	C	O		
3	A	1	10	7	3	0	0

3 Residue-property plots (i)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Serum albumin

Chain A: 60% 35% 5% •



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	188.41Å 38.94Å 96.02Å 90.00° 105.32° 90.00°	Depositor
Resolution (Å)	57.68 – 2.70 57.68 – 2.49	Depositor EDS
% Data completeness (in resolution range)	98.0 (57.68-2.70) 89.8 (57.68-2.49)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.06 (at 2.48Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.218 , 0.262 0.208 , 0.222	Depositor DCC
R_{free} test set	4905 reflections (21.09%)	wwPDB-VP
Wilson B-factor (Å^2)	51.4	Xtriage
Anisotropy	0.282	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 60.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	4723	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 5.11% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: ALY, MYR, SAL

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	0.40	0/4710	0.62	1/6352 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	566	THR	N-CA-C	-5.25	96.83	111.00

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	199	ALY	Mainchain

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	4633	0	4549	194	0
2	A	80	0	135	19	0
3	A	10	0	5	0	0
All	All	4723	0	4689	194	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 21.

All (194) 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:199:ALY:N	1:A:199:ALY:CA	1.74	1.48
1:A:199:ALY:CA	1:A:199:ALY:C	1.91	1.45
1:A:199:ALY:C	1:A:199:ALY:CB	2.09	1.30
1:A:424:VAL:O	1:A:428:ARG:HG3	1.79	0.81
1:A:3:HIS:O	1:A:4:LYS:HB2	1.79	0.80
1:A:368:GLU:HA	1:A:371:ALA:HB2	1.64	0.79
1:A:10:ARG:O	1:A:14:LEU:HB2	1.84	0.77
1:A:479:GLU:HG3	1:A:480:SER:H	1.48	0.76
1:A:123:MET:HE2	2:A:1001:MYR:H52	1.68	0.75
1:A:12:LYS:HE2	1:A:54:VAL:HG13	1.69	0.74
1:A:513:ILE:HA	1:A:516:LEU:HD12	1.69	0.73
1:A:466:LYS:O	1:A:468:PRO:HD3	1.89	0.72
1:A:100:GLU:O	1:A:104:GLN:HG3	1.90	0.71
1:A:372:LYS:HG3	1:A:375:ASP:OD2	1.90	0.71
1:A:118:PRO:HD2	1:A:123:MET:HE1	1.74	0.70
1:A:199:ALY:HH31	1:A:242:HIS:NE2	2.07	0.70
1:A:225:LYS:HE3	1:A:297:GLU:O	1.91	0.70
1:A:302:LEU:HB3	1:A:337:ARG:HH12	1.56	0.69
1:A:81:ARG:NH2	1:A:89:ASP:OD1	2.24	0.69
1:A:522:GLN:O	1:A:526:GLN:HG3	1.93	0.69
1:A:373:VAL:O	1:A:376:GLU:HB2	1.93	0.68
1:A:510:HIS:HB2	1:A:512:ASP:OD1	1.94	0.67
1:A:436:LYS:O	1:A:436:LYS:HD3	1.96	0.66
1:A:415:VAL:HG23	1:A:415:VAL:O	1.95	0.66
1:A:223:PHE:CD1	1:A:272:SER:HB2	2.31	0.65
1:A:388:ILE:HD13	2:A:1003:MYR:H81	1.77	0.65
1:A:479:GLU:HG3	1:A:480:SER:N	2.10	0.65
1:A:119:GLU:HB2	1:A:122:VAL:HG13	1.80	0.64
1:A:130:ASN:HD21	1:A:133:THR:HG23	1.62	0.64
1:A:72:ASP:O	1:A:76:THR:HG23	1.97	0.64
1:A:199:ALY:HZ	1:A:242:HIS:CE1	2.15	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:453:LEU:HD13	2:A:1003:MYR:H143	1.81	0.62
1:A:410:ARG:O	1:A:414:LYS:HG2	1.99	0.62
1:A:130:ASN:ND2	1:A:133:THR:HG23	2.15	0.61
1:A:312:SER:OG	1:A:367:HIS:HA	1.99	0.61
1:A:312:SER:HB2	1:A:367:HIS:ND1	2.15	0.61
1:A:101:CYS:O	1:A:105:HIS:HD2	1.82	0.61
1:A:311:GLU:O	1:A:313:LYS:N	2.30	0.60
1:A:10:ARG:HG3	1:A:66:LEU:HD11	1.83	0.60
1:A:381:VAL:O	1:A:385:GLN:HG3	2.01	0.60
1:A:558:CYS:HB3	1:A:568:PHE:CE1	2.37	0.60
1:A:45:GLU:OE2	1:A:73:LYS:HE2	2.03	0.59
1:A:426:VAL:HB	2:A:1004:MYR:C14	2.33	0.59
1:A:286:LYS:O	1:A:290:ILE:HG13	2.03	0.58
1:A:458:ASN:O	1:A:462:VAL:HG23	2.02	0.58
1:A:305:LEU:HD21	1:A:333:GLU:HB3	1.85	0.58
1:A:13:ASP:OD1	1:A:283:LEU:HD22	2.04	0.58
1:A:430:LEU:HD21	2:A:1004:MYR:H61	1.85	0.58
1:A:114:ARG:O	1:A:114:ARG:HG3	2.04	0.58
1:A:305:LEU:CD2	1:A:333:GLU:HB3	2.34	0.58
1:A:302:LEU:HD13	1:A:337:ARG:HH12	1.68	0.57
1:A:138:TYR:CB	2:A:1001:MYR:H101	2.34	0.57
1:A:10:ARG:HH22	1:A:255:ASP:CG	2.06	0.57
1:A:518:GLU:O	1:A:522:GLN:HG3	2.04	0.57
1:A:48:GLU:HA	1:A:48:GLU:OE1	2.04	0.57
1:A:312:SER:O	1:A:314:ASP:N	2.38	0.57
1:A:4:LYS:HB3	1:A:57:GLU:HG2	1.88	0.56
1:A:156:PHE:HE1	1:A:285:GLU:HG2	1.71	0.56
1:A:114:ARG:CZ	1:A:116:VAL:HG12	2.35	0.56
1:A:208:GLU:HG2	1:A:212:LYS:HE3	1.88	0.56
1:A:231:VAL:O	1:A:235:VAL:HG23	2.05	0.56
1:A:337:ARG:HG2	1:A:337:ARG:HH11	1.69	0.56
1:A:98:ARG:HG2	1:A:102:PHE:CE2	2.41	0.56
1:A:317:LYS:O	1:A:317:LYS:HD2	2.05	0.56
1:A:370:TYR:O	1:A:373:VAL:HG22	2.06	0.56
1:A:302:LEU:HD13	1:A:337:ARG:NH1	2.20	0.55
1:A:307:ALA:HA	1:A:311:GLU:OE2	2.07	0.55
1:A:426:VAL:HB	2:A:1004:MYR:H141	1.89	0.55
1:A:462:VAL:O	1:A:465:GLU:HB3	2.06	0.55
1:A:156:PHE:CE1	1:A:285:GLU:HG2	2.40	0.55
1:A:540:THR:HG22	1:A:541:LYS:N	2.21	0.55
1:A:364:ALA:O	1:A:366:PRO:HD3	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:389:LYS:HE3	1:A:389:LYS:H	1.71	0.55
1:A:401:TYR:O	1:A:404:GLN:HB2	2.07	0.55
1:A:423:LEU:HD23	2:A:1004:MYR:H132	1.89	0.55
1:A:503:ASN:OD1	1:A:505:GLU:HB2	2.06	0.55
1:A:138:TYR:O	1:A:142:ILE:HG12	2.08	0.54
1:A:395:PHE:CE2	1:A:435:SER:HB3	2.43	0.54
1:A:101:CYS:O	1:A:105:HIS:CD2	2.61	0.54
1:A:430:LEU:HD12	2:A:1003:MYR:H141	1.89	0.54
1:A:332:TYR:O	1:A:336:ARG:HG2	2.09	0.53
1:A:216:VAL:HG22	1:A:235:VAL:HG21	1.89	0.53
1:A:564:LYS:O	1:A:565:GLU:CB	2.56	0.53
1:A:259:ASP:O	1:A:262:LYS:HG2	2.09	0.52
1:A:138:TYR:HB3	2:A:1001:MYR:H101	1.90	0.52
1:A:150:TYR:O	1:A:153:GLU:HB3	2.09	0.52
1:A:404:GLN:HE21	1:A:428:ARG:HA	1.75	0.52
1:A:127:PHE:CE1	1:A:131:GLU:HG3	2.45	0.52
1:A:39:HIS:O	1:A:43:VAL:HG23	2.10	0.51
1:A:3:HIS:O	1:A:4:LYS:CB	2.56	0.51
1:A:513:ILE:HD11	1:A:555:VAL:HG13	1.92	0.51
1:A:564:LYS:O	1:A:565:GLU:HB2	2.11	0.51
1:A:130:ASN:HD21	1:A:133:THR:CG2	2.24	0.50
1:A:8:ALA:O	1:A:12:LYS:HG3	2.12	0.50
1:A:222:ARG:HG2	1:A:295:ASN:OD1	2.12	0.50
1:A:155:LEU:O	1:A:159:LYS:HG2	2.11	0.50
1:A:305:LEU:HD21	1:A:337:ARG:HE	1.77	0.50
1:A:417:GLN:HB3	1:A:469:VAL:CG1	2.42	0.49
1:A:151:ALA:HB3	1:A:152:PRO:HD3	1.94	0.49
1:A:554:PHE:HE2	1:A:571:GLU:HB2	1.77	0.49
1:A:521:ARG:O	1:A:525:LYS:HG3	2.13	0.49
1:A:156:PHE:HZ	1:A:284:LEU:O	1.96	0.48
1:A:383:GLU:HB3	1:A:384:PRO:CD	2.43	0.48
1:A:566:THR:O	1:A:570:GLU:HG2	2.12	0.48
1:A:133:THR:O	1:A:137:LYS:HB2	2.11	0.48
1:A:223:PHE:HD1	1:A:272:SER:HB2	1.77	0.48
1:A:333:GLU:OE1	1:A:333:GLU:HA	2.14	0.48
1:A:436:LYS:HE3	1:A:452:TYR:OH	2.14	0.48
1:A:558:CYS:HB3	1:A:568:PHE:CD1	2.49	0.48
1:A:556:GLU:O	1:A:558:CYS:N	2.46	0.47
1:A:35:PRO:HG2	1:A:38:ASP:OD1	2.13	0.47
1:A:118:PRO:HD2	1:A:123:MET:CE	2.41	0.47
1:A:130:ASN:ND2	1:A:133:THR:CG2	2.78	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:302:LEU:HB3	1:A:337:ARG:NH1	2.24	0.47
1:A:131:GLU:OE2	1:A:162:LYS:HE3	2.14	0.47
1:A:540:THR:HG22	1:A:541:LYS:H	1.78	0.47
1:A:31:LEU:N	1:A:31:LEU:HD12	2.30	0.47
1:A:518:GLU:HA	1:A:518:GLU:OE1	2.14	0.47
1:A:160:ARG:NH1	1:A:188:GLU:OE2	2.43	0.46
1:A:158:ALA:HA	2:A:1001:MYR:H132	1.96	0.46
1:A:429:ASN:O	1:A:433:VAL:HG23	2.16	0.46
1:A:345:LEU:O	1:A:349:LEU:HG	2.15	0.46
1:A:570:GLU:HG3	1:A:571:GLU:N	2.30	0.46
1:A:485:ARG:HB3	1:A:486:PRO:HD3	1.98	0.46
1:A:165:PHE:HE2	2:A:1001:MYR:H82	1.81	0.46
1:A:222:ARG:NH2	1:A:291:ALA:O	2.42	0.46
1:A:395:PHE:CZ	1:A:435:SER:HB3	2.52	0.45
1:A:222:ARG:CG	1:A:295:ASN:OD1	2.64	0.45
1:A:81:ARG:O	1:A:85:GLY:HA2	2.16	0.45
1:A:111:ASN:O	1:A:112:LEU:O	2.35	0.45
1:A:423:LEU:HA	2:A:1004:MYR:H141	1.97	0.45
1:A:411:TYR:CE2	1:A:430:LEU:HD23	2.52	0.45
1:A:452:TYR:O	1:A:456:VAL:HG23	2.17	0.45
1:A:179:LEU:HD12	1:A:179:LEU:HA	1.77	0.44
1:A:356:THR:HG21	1:A:373:VAL:HG13	1.99	0.44
1:A:494:ASP:OD1	1:A:496:THR:HB	2.16	0.44
1:A:539:ALA:CB	1:A:544:LEU:HD13	2.47	0.44
1:A:214:TRP:CZ2	1:A:218:ARG:NH1	2.86	0.44
1:A:412:THR:HG21	1:A:533:VAL:HB	2.00	0.43
1:A:221:GLN:CG	1:A:339:PRO:HA	2.48	0.43
1:A:408:LEU:HD13	1:A:427:SER:CB	2.48	0.43
1:A:420:THR:N	1:A:421:PRO:HD2	2.33	0.43
1:A:267:ASN:N	1:A:267:ASN:ND2	2.67	0.43
1:A:453:LEU:HD13	2:A:1003:MYR:C14	2.48	0.43
1:A:161:TYR:HE1	1:A:182:LEU:HD22	1.83	0.43
1:A:305:LEU:CD2	1:A:337:ARG:HE	2.32	0.43
1:A:423:LEU:HD23	2:A:1004:MYR:C13	2.49	0.43
1:A:161:TYR:CZ	1:A:185:LEU:HB3	2.53	0.43
1:A:378:LYS:HB3	1:A:379:PRO:CD	2.49	0.43
1:A:386:ASN:O	1:A:390:GLN:HB2	2.19	0.43
1:A:556:GLU:C	1:A:558:CYS:N	2.72	0.43
1:A:439:LYS:HA	1:A:439:LYS:HD3	1.65	0.42
1:A:31:LEU:N	1:A:31:LEU:CD1	2.81	0.42
1:A:185:LEU:HD12	1:A:185:LEU:HA	1.87	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:244:GLU:OE1	1:A:256:ASP:CG	2.57	0.42
1:A:271:ILE:HG22	1:A:272:SER:H	1.83	0.42
1:A:299:PRO:C	1:A:301:ASP:H	2.22	0.42
1:A:114:ARG:NE	1:A:116:VAL:HG12	2.34	0.42
1:A:302:LEU:HA	1:A:303:PRO:HD3	1.70	0.42
1:A:161:TYR:CD1	1:A:185:LEU:HD23	2.55	0.42
1:A:306:ALA:HA	1:A:310:VAL:HG23	2.01	0.42
1:A:265:CYS:O	1:A:268:GLN:HB2	2.20	0.42
1:A:344:VAL:HG22	1:A:450:GLU:OE2	2.19	0.42
1:A:267:ASN:N	1:A:267:ASN:HD22	2.16	0.42
1:A:312:SER:CB	1:A:370:TYR:OH	2.68	0.42
1:A:378:LYS:HB3	1:A:379:PRO:HD3	2.01	0.42
1:A:400:GLU:O	1:A:404:GLN:HG3	2.19	0.41
1:A:507:PHE:CD1	2:A:1005:MYR:H102	2.55	0.41
1:A:299:PRO:O	1:A:300:ALA:HB3	2.20	0.41
1:A:417:GLN:HB3	1:A:469:VAL:HG12	2.00	0.41
1:A:66:LEU:HB3	1:A:251:LEU:HD11	2.01	0.41
1:A:374:PHE:HA	1:A:377:PHE:CD2	2.55	0.41
1:A:103:LEU:HD12	1:A:103:LEU:HA	1.89	0.41
1:A:337:ARG:HH11	1:A:337:ARG:CG	2.34	0.41
1:A:532:LEU:HD12	1:A:532:LEU:O	2.20	0.41
1:A:407:LEU:HD13	1:A:430:LEU:HB3	2.01	0.41
1:A:570:GLU:HG3	1:A:571:GLU:H	1.86	0.41
1:A:13:ASP:OD1	1:A:283:LEU:CD2	2.69	0.41
1:A:114:ARG:NH2	1:A:116:VAL:HG12	2.36	0.41
1:A:244:GLU:OE1	1:A:256:ASP:OD2	2.38	0.41
1:A:49:PHE:O	1:A:52:THR:HB	2.20	0.41
1:A:90:CYS:O	1:A:93:LYS:HG2	2.21	0.41
1:A:422:THR:O	1:A:426:VAL:HG23	2.21	0.41
1:A:481:LEU:HD23	1:A:481:LEU:C	2.41	0.41
1:A:506:THR:CG2	1:A:531:GLU:HG3	2.51	0.41
1:A:138:TYR:HB2	2:A:1001:MYR:H101	2.01	0.41
1:A:287:SER:HG	2:A:1002:MYR:C1	2.34	0.41
1:A:312:SER:CB	1:A:367:HIS:ND1	2.84	0.41
1:A:517:SER:OG	1:A:520:GLU:HG2	2.21	0.41
1:A:373:VAL:O	1:A:376:GLU:N	2.51	0.40
1:A:387:LEU:HD23	1:A:387:LEU:HA	1.82	0.40
1:A:395:PHE:CD1	1:A:395:PHE:C	2.94	0.40
1:A:457:LEU:HD11	2:A:1004:MYR:H51	2.03	0.40
1:A:182:LEU:HD23	1:A:182:LEU:HA	1.89	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%)	532 (92%)	32 (6%)	15 (3%)	5 13

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	4	LYS
1	A	112	LEU
1	A	272	SER
1	A	312	SER
1	A	364	ALA
1	A	565	GLU
1	A	276	LYS
1	A	466	LYS
1	A	557	LYS
1	A	61	ASN
1	A	313	LYS
1	A	388	ILE
1	A	303	PRO
1	A	322	ALA
1	A	469	VAL

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	508/510 (100%)	481 (95%)	27 (5%)	22 48

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

Mol	Chain	Res	Type
1	A	7	VAL
1	A	38	ASP
1	A	48	GLU
1	A	57	GLU
1	A	60	GLU
1	A	82	GLU
1	A	103	LEU
1	A	121	ASP
1	A	122	VAL
1	A	123	MET
1	A	132	GLU
1	A	179	LEU
1	A	185	LEU
1	A	269	ASP
1	A	317	LYS
1	A	334	TYR
1	A	344	VAL
1	A	372	LYS
1	A	373	VAL
1	A	380	LEU
1	A	389	LYS
1	A	430	LEU
1	A	451	ASP
1	A	453	LEU
1	A	457	LEU
1	A	466	LYS
1	A	518	GLU

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

Mol	Chain	Res	Type
1	A	9	HIS
1	A	39	HIS
1	A	105	HIS
1	A	130	ASN
1	A	170	GLN
1	A	242	HIS
1	A	267	ASN
1	A	268	GLN
1	A	318	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is 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	$\#\|Z\| > 2$
1	ALY	A	199	1	10,11,12	11.84	4 (40%)	7,12,14	2.44	2 (28%)

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
1	ALY	A	199	1	-	0/9/10/12	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	199	ALY	CB-CA	-34.86	1.07	1.53
1	A	199	ALY	O-C	9.93	1.59	1.19
1	A	199	ALY	CA-N	8.65	1.74	1.48
1	A	199	ALY	CH3-CH	2.09	1.54	1.50

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	199	ALY	CD-CG-CB	-4.51	97.67	113.62
1	A	199	ALY	CD-CE-NZ	-4.13	100.39	112.21

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 5 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	199	ALY	5	0

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

6 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	$\#\|Z\| > 2$
3	SAL	A	1100	-	10,10,10	3.46	8 (80%)	13,13,13	2.10	5 (38%)
2	MYR	A	1005	-	15,15,15	0.56	0	15,15,15	0.54	0
2	MYR	A	1001	-	15,15,15	0.51	0	15,15,15	0.57	0
2	MYR	A	1002	-	15,15,15	0.34	0	15,15,15	0.57	0
2	MYR	A	1004	-	15,15,15	0.39	0	15,15,15	0.52	0
2	MYR	A	1003	-	15,15,15	0.44	0	15,15,15	0.54	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
3	SAL	A	1100	-	-	0/4/4/4	0/1/1/1
2	MYR	A	1005	-	-	7/13/13/13	-
2	MYR	A	1001	-	-	4/13/13/13	-
2	MYR	A	1002	-	-	6/13/13/13	-
2	MYR	A	1004	-	-	5/13/13/13	-

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	MYR	A	1003	-	-	6/13/13/13	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1100	SAL	C5-C6	5.61	1.50	1.38
3	A	1100	SAL	C3-C2	5.39	1.49	1.39
3	A	1100	SAL	C1-C2	3.79	1.46	1.40
3	A	1100	SAL	C6-C1	3.68	1.45	1.39
3	A	1100	SAL	O1'-C1'	3.17	1.32	1.22
3	A	1100	SAL	C5-C4	3.14	1.46	1.38
3	A	1100	SAL	C4-C3	2.57	1.44	1.38
3	A	1100	SAL	O2-C2	2.18	1.40	1.36

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1100	SAL	C3-C2-C1	3.78	123.95	119.89
3	A	1100	SAL	O2'-C1'-O1'	-3.67	115.21	123.35
3	A	1100	SAL	C2-C1-C1'	3.66	123.93	120.03
3	A	1100	SAL	C6-C1-C2	-2.15	115.46	118.15
3	A	1100	SAL	O2'-C1'-C1	2.07	121.26	115.31

There are no chirality outliers.

All (28) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1004	MYR	C9-C10-C11-C12
2	A	1005	MYR	C9-C10-C11-C12
2	A	1005	MYR	C4-C5-C6-C7
2	A	1001	MYR	C4-C5-C6-C7
2	A	1002	MYR	C7-C8-C9-C10
2	A	1004	MYR	C5-C6-C7-C8
2	A	1001	MYR	C5-C6-C7-C8
2	A	1005	MYR	C11-C10-C9-C8
2	A	1005	MYR	C5-C6-C7-C8
2	A	1003	MYR	C11-C10-C9-C8
2	A	1005	MYR	C7-C8-C9-C10
2	A	1001	MYR	C11-C10-C9-C8
2	A	1005	MYR	C1-C2-C3-C4
2	A	1005	MYR	C6-C7-C8-C9

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Mol	Chain	Res	Type	Atoms
2	A	1002	MYR	C4-C5-C6-C7
2	A	1001	MYR	C7-C8-C9-C10
2	A	1002	MYR	C3-C4-C5-C6
2	A	1002	MYR	C11-C10-C9-C8
2	A	1003	MYR	C5-C6-C7-C8
2	A	1003	MYR	O2-C1-C2-C3
2	A	1003	MYR	O1-C1-C2-C3
2	A	1004	MYR	C4-C5-C6-C7
2	A	1004	MYR	O1-C1-C2-C3
2	A	1004	MYR	O2-C1-C2-C3
2	A	1003	MYR	C9-C10-C11-C12
2	A	1002	MYR	O2-C1-C2-C3
2	A	1003	MYR	C3-C4-C5-C6
2	A	1002	MYR	O1-C1-C2-C3

There are no ring outliers.

5 monomers are involved in 19 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1005	MYR	1	0
2	A	1001	MYR	6	0
2	A	1002	MYR	1	0
2	A	1004	MYR	7	0
2	A	1003	MYR	4	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	198:LEU	C	199:ALY	N	1.19

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	581/585 (99%)	-0.40	0 100 100	33, 63, 112, 167	0

There are no RSRZ outliers to report.

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. 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	B-factors(Å^2)	Q<0.9
1	ALY	A	199	12/13	0.80	0.28	23,23,23,23	0

6.3 Carbohydrates (i)

There are no monosaccharides 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. 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	B-factors(Å^2)	Q<0.9
2	MYR	A	1004	16/16	0.79	0.33	63,63,63,63	0
2	MYR	A	1003	16/16	0.81	0.39	63,63,63,63	0
2	MYR	A	1001	16/16	0.84	0.34	63,63,63,63	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	SAL	A	1100	10/10	0.85	0.35	23,23,23,23	0
2	MYR	A	1002	16/16	0.90	0.30	63,63,63,63	0
2	MYR	A	1005	16/16	0.92	0.38	63,63,63,63	0

6.5 Other polymers (i)

There are no such residues in this entry.