



# Full wwPDB X-ray Structure Validation Report ⓘ

Dec 17, 2023 – 02:23 PM EST

PDB ID : 1CJY  
Title : HUMAN CYTOSOLIC PHOSPHOLIPASE A2  
Authors : Dessen, A.; Tang, J.; Schmidt, H.; Stahl, M.; Clark, J.D.; Seehra, J.; Somers, W.S.  
Deposited on : 1999-04-20  
Resolution : 2.50 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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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 : 1.8.5 (274361), CSD as541be (2020)  
Xtrriage (Phenix) : **NOT EXECUTED**  
EDS : **NOT EXECUTED**  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

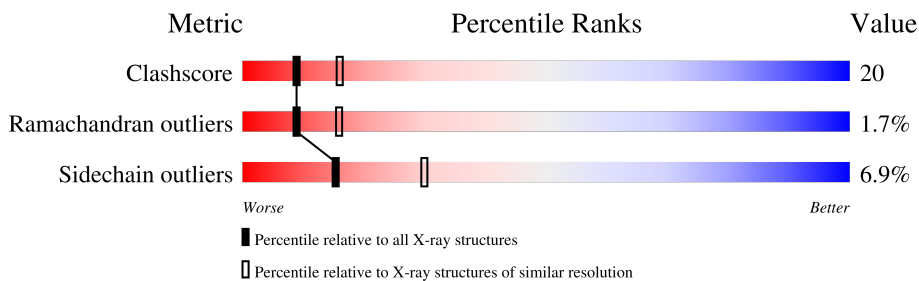
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.50 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	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)

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  $\geq 3$ , 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  $\leq 5\%$

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	749	
1	B	749	

## 2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 9706 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.

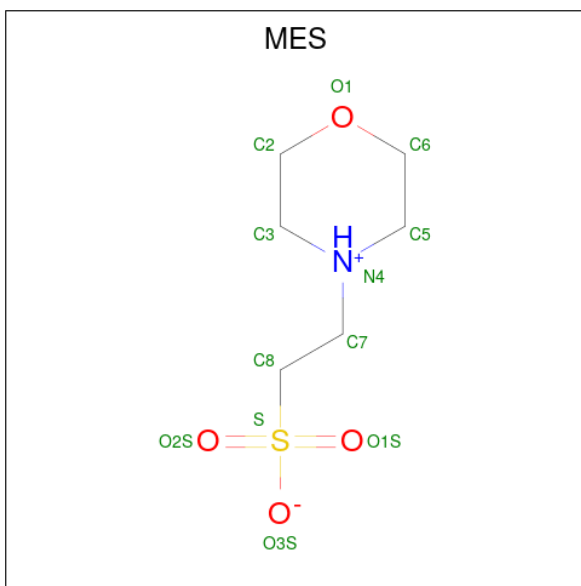
- Molecule 1 is a protein called PROTEIN (CYTOSOLIC PHOSPHOLIPASE A2).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	633	Total 4876	C 3144	N 804	O 895	S 33	0	0	0
1	B	614	Total 4744	C 3066	N 773	O 871	S 34	0	0	0

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	2	Total 2 Ca 2	0	0
2	B	2	Total 2 Ca 2	0	0

- Molecule 3 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (three-letter code: MES) (formula: C<sub>6</sub>H<sub>13</sub>NO<sub>4</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	S		
3	A	1	12	6	1	4	1	0	0
3	B	1	12	6	1	4	1	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
4	A	32	32	32	0	0
4	B	26	26	26	0	0



SER	V1086	E1214	N1320	SER	S1476	LEU	V1641	SER	V1641
GLY	L1091	I1217	T1321	GLY	A1477	D1639	L1642	ASN	L1642
SER	I1217	Q1323	A1322	SER	L1478	I1545	M1643	VAL	M1643
GLN	V1097	P1324	Q1323	SER	F1479	H1546	M1644	GLU	M1644
ALA	L1218	C1325	P1324	SER	M1480	V1547	I1645	ALA	I1645
ARG	D1219	F1325	C1325	ARG	T1481	V1548	M1646	ARG	M1646
ARG	C1220	F1329	F1329	GLY	R1482	D1549	Y1650	ARG	Y1650
GLY	L1227	L1332	L1332	S1415	E1483	S1550	A1652	PHE	A1652
L1102	S1228	L1335	L1335	T1416	G1484	N1555	N1658	LYS	N1658
G1103	W1232	K1335	K1335	M1417	R1485	L1556	E1659	ASN	E1659
K1113	W1232	E1419	E1419	E1418	V1489	P1557	T1659	GLN	T1659
E1116	Y1238	E1420	E1420	E1419	H1490	Y1558	E1660	PHE	E1660
L1123	Y1238	L1421	L1421	L1424	M1491	I1561	E1661	LEU	E1661
F1124	F1243	I1424	I1424	T1425	F1492	L1562	E1662	SER	E1662
N1125	P1244	M1426	M1426	T1426	M1493	R1563	I1670	LYS	I1670
Q1126	E1245	K1427	K1427	L1428	P1564	P1564	E1675	PRO	E1675
V1127	L1255	H1428	H1428	H1429	Q1565	Q1565	S1676	ALA	S1676
T1128	L1255	I1429	I1429	V1430	R1566	G1567	T1680		T1680
E1129	V1259	V1430	V1430	SER	V1568	V1568	Y1685		Y1685
V1131	W1130	ASN	ASN	ASP	D1582	D1582	F1686		F1686
L1132	H1261	ASP	ASP	SER	S1583	S1583	M1687		M1687
S1135	S1260	SER	SER	PRO	S1584	S1584	F1690		F1690
L1143	M1262	SER	SER	LEU	P1585	P1585	L1696		L1696
L1144	P1263	PRO	PRO	LEU	P1586	P1586	H1698		H1698
F1157	L1264	LEU	LEU	ASP	L1590	L1590	L1702		L1702
R1158	T1268	ASP	ASP	PHE	K1595	K1595	I1705		I1705
R1161	P1269	ASP	ASP	ALA	N1600	N1600	D1706		D1706
F1165	Q1270	GLU	GLU	ALA	K1601	K1601	V1707		V1707
L1172	K1271	SER	SER	GLN	L1602	L1602	K1709		K1709
L1173	V1272	THR	THR	GLN	D1608	D1608	M1712		M1712
G1174	L1279	GLU	GLU	ASP	V1611	V1611	V1713		V1713
M1177	W1280	ASN	ASN	ASP	F1612	F1612	E1717		E1717
S1178	K1281	GLU	GLU	ASP	G1616	G1616	TYR		TYR
E1179	K1282	ASP	ASP	ALA	L1617	L1617	ARG		ARG
G1180	K1283	ALA	ALA	ALA	K1618	K1618	GLN		GLN
L1181	S1284	GLY	GLY	VAL	E1619	E1619	ASN		ASN
A1184	F1291	SER	SER	ALA	F1625	F1625	PRO		PRO
R1185	M1297	TYR	TYR	ALA	LYS	LYS	ASP		ASP
D1186	L1298	GLN	GLN	ASP	ASN	ASN	PRO		PRO
P1188	E1301	SER	SER	PRO	PRO	PRO	MET		MET
V1189	T1302	ASN	ASN	GLU	ASP	ASP	GLU		GLU
H1305	H1305	GLN	GLN	ARG	GLU	GLU	LYS		LYS
A1191	H1305	ALA	ALA	ARG	LYS	LYS	D1633		D1633
H1192	T1311	S1463	S1463	GLU	I1633	I1633	T1636		T1636
L1193	T1311	W1464	W1464	ILE			LEU		LEU
K1318	K1318	L1404	L1404	TYR					
V1319	K1318	L1405	L1405	GLU					
	V1319	G1406	G1406	PRO					
		VAL	VAL						
		M1470	M1470						

## 4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	153.59Å 95.49Å 139.13Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	12.00 – 2.50	Depositor
% Data completeness (in resolution range)	93.3 (12.00-2.50)	Depositor
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.06	Depositor
Refinement program	X-PLOR 3.843	Depositor
R, $R_{free}$	0.229 , 0.298	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	9706	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	51.0	wwPDB-VP

## 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: MES, CA

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	0.39	0/4999	0.63	0/6796
1	B	0.40	0/4862	0.64	1/6603 (0.0%)
All	All	0.39	0/9861	0.63	1/13399 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	1227	LEU	CA-CB-CG	5.49	127.94	115.30

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	4876	0	4668	203	0
1	B	4744	0	4576	181	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
3	A	12	0	13	0	0
3	B	12	0	13	1	0
4	A	32	0	0	1	0
4	B	26	0	0	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	9706	0	9270	384	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 (384) 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:323:GLN:N	1:A:323:GLN:HE21	1.54	1.04
1:A:79:LEU:HD22	1:A:85:ASN:HD22	1.23	1.03
1:A:323:GLN:H	1:A:323:GLN:NE2	1.59	0.99
1:B:1323:GLN:H	1:B:1323:GLN:HE21	1.08	0.98
1:B:1465:ILE:HD12	1:B:1465:ILE:H	1.26	0.97
1:A:565:GLN:H	1:A:565:GLN:NE2	1.64	0.95
1:B:1429:ILE:HD12	1:B:1548:VAL:HG11	1.51	0.91
1:B:1323:GLN:H	1:B:1323:GLN:NE2	1.69	0.90
1:A:425:THR:HG23	1:A:428:HIS:H	1.37	0.89
1:B:1262:ASN:HD21	1:B:1264:LEU:HD23	1.37	0.89
1:A:268:THR:HG22	1:A:271:LYS:H	1.38	0.87
1:A:193:LEU:HD11	1:A:561:ILE:HD13	1.54	0.87
1:A:608:ASP:OD1	1:A:611:VAL:HB	1.75	0.87
1:B:1323:GLN:HE21	1:B:1323:GLN:N	1.74	0.85
1:B:1491:ASN:ND2	1:B:1493:MET:H	1.76	0.83
1:A:323:GLN:HE21	1:A:323:GLN:H	0.86	0.83
1:A:97:VAL:HG23	1:A:98:MET:H	1.45	0.81
1:B:1029:LYS:O	1:B:1128:THR:HB	1.81	0.81
1:A:26:ARG:HB2	1:A:69:PRO:O	1.82	0.80
1:A:79:LEU:HD22	1:A:85:ASN:ND2	1.98	0.79
1:B:1268:THR:HG22	1:B:1271:LYS:H	1.49	0.77
1:A:363:MET:HE2	1:A:368:PHE:HA	1.66	0.76
1:A:306:ASN:HD21	1:A:307:ARG:HH11	1.32	0.76
1:A:238:TYR:CE2	1:A:327:PRO:HG3	2.21	0.75
1:B:1187:VAL:HG12	1:B:1188:PRO:HD2	1.67	0.75
1:A:321:THR:H	1:A:323:GLN:HE22	1.31	0.75
1:B:1321:THR:H	1:B:1323:GLN:HE22	1.33	0.75
1:A:29:LYS:O	1:A:128:THR:HB	1.86	0.74
1:A:298:LEU:O	1:A:302:THR:HG23	1.88	0.74
1:B:1097:VAL:HG23	1:B:1098:MET:H	1.53	0.73
1:B:1187:VAL:CG1	1:B:1188:PRO:HD2	2.18	0.73
1:A:157:PHE:CE1	1:A:319:VAL:HG23	2.23	0.73
1:A:15:GLN:NE2	1:A:17:SER:H	1.87	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1425:THR:HB	1:B:1428:HIS:H	1.53	0.71
1:B:1024:VAL:HA	1:B:1132:LEU:HD22	1.72	0.71
1:A:155:LYS:O	1:A:159:GLN:HG3	1.91	0.70
1:B:1608:ASP:O	1:B:1611:VAL:HG23	1.91	0.70
1:B:1264:LEU:HD22	1:B:1264:LEU:H	1.56	0.69
1:A:316:LYS:HE3	1:A:351:PRO:O	1.91	0.69
1:B:1268:THR:CG2	1:B:1271:LYS:H	2.05	0.69
1:A:306:ASN:ND2	1:A:307:ARG:HG2	2.07	0.69
1:B:1645:ILE:HG22	1:B:1646:ASN:N	2.08	0.69
1:A:556:LEU:HD11	1:A:589:GLU:HG2	1.75	0.68
1:A:279:LEU:HG	1:A:297:MET:HE2	1.74	0.68
1:A:565:GLN:H	1:A:565:GLN:HE21	1.41	0.68
1:A:306:ASN:HD21	1:A:307:ARG:NH1	1.90	0.68
1:A:210:LYS:O	1:A:214:GLU:HG3	1.94	0.68
1:A:366:ASP:HA	1:A:383:GLU:HG3	1.75	0.68
1:B:1430:VAL:HG13	1:B:1546:HIS:CE1	2.30	0.67
1:A:181:LEU:HA	1:A:184:ALA:HB2	1.75	0.67
1:B:1113:LYS:O	1:B:1116:GLU:HB3	1.95	0.66
1:B:1298:LEU:O	1:B:1302:THR:HG23	1.95	0.66
1:B:1645:ILE:HG22	1:B:1646:ASN:H	1.59	0.66
1:A:491:ASN:ND2	1:A:493:MET:H	1.94	0.65
1:A:15:GLN:HE22	1:A:17:SER:H	1.42	0.65
1:A:269:PRO:O	1:A:273:LYS:HG3	1.97	0.65
1:B:1342:MET:HE2	1:B:1595:LYS:HG2	1.77	0.65
1:B:1097:VAL:HG23	1:B:1098:MET:N	2.12	0.65
1:B:1405:LEU:HD12	1:B:1466:HIS:HB2	1.79	0.65
1:A:161:ARG:HB2	1:A:322:ALA:HB1	1.79	0.64
1:B:1144:LEU:HD22	1:B:1375:GLY:HA2	1.80	0.64
1:A:610:TYR:O	1:A:614:ARG:HG2	1.98	0.64
1:A:144:LEU:HD22	1:A:375:GLY:HA2	1.79	0.63
1:B:1702:LEU:HD12	1:B:1705:ILE:HD11	1.80	0.63
1:B:1218:LEU:HD22	1:B:1325:PRO:HG2	1.80	0.63
1:A:193:LEU:CD1	1:A:561:ILE:HD13	2.27	0.63
1:B:1311:THR:HB	1:B:1383:GLU:OE2	2.00	0.62
1:A:158:ARG:HH21	1:A:566:ARG:HA	1.64	0.61
1:A:416:THR:OG1	1:A:419:GLU:HG3	2.00	0.61
1:B:1123:ILE:HD12	1:B:1128:THR:O	2.01	0.61
1:A:603:PRO:HB3	1:A:634:CYS:HB2	1.82	0.61
1:B:1078:ILE:HG22	1:B:1373:PHE:HD2	1.64	0.61
1:A:89:ILE:HD13	1:A:132:LEU:HD12	1.83	0.61
1:B:1255:LEU:HD12	1:B:1690:PHE:CE1	2.36	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1465:ILE:H	1:B:1465:ILE:CD1	2.02	0.61
1:A:89:ILE:HD13	1:A:132:LEU:CD1	2.31	0.60
1:B:1187:VAL:HG12	1:B:1188:PRO:CD	2.31	0.60
1:B:1369:GLY:HA2	1:B:1489:VAL:HG22	1.83	0.60
1:A:579:ARG:HD3	1:A:586:PRO:HB3	1.83	0.60
1:B:1255:LEU:HD12	1:B:1690:PHE:HE1	1.65	0.60
1:B:1387:HIS:HD2	4:B:77:HOH:O	1.85	0.60
1:A:161:ARG:NH1	1:A:221:ALA:O	2.34	0.60
1:A:275:TYR:HA	1:A:297:MET:HE1	1.82	0.60
1:A:548:VAL:HG22	1:A:549:ASP:N	2.15	0.60
1:B:1369:GLY:HA2	1:B:1489:VAL:CG2	2.30	0.60
1:B:1565:GLN:H	1:B:1565:GLN:NE2	2.00	0.60
1:B:1018:HIS:CE1	1:B:1081:PRO:HB3	2.36	0.60
1:B:1425:THR:HB	1:B:1428:HIS:N	2.15	0.60
1:B:1228:SER:O	1:B:1231:THR:HB	2.02	0.60
1:A:228:SER:O	1:A:231:THR:HB	2.02	0.59
1:A:125:ASN:O	1:A:127:VAL:HG23	2.02	0.59
1:A:97:VAL:HG23	1:A:98:MET:N	2.16	0.58
1:A:53:THR:HG23	1:A:54:PRO:HD2	1.85	0.58
1:A:21:THR:HB	1:A:135:SER:HB2	1.84	0.58
1:A:645:ILE:O	1:A:648:ARG:HG3	2.03	0.58
1:A:25:LEU:HA	1:A:72:ASN:HD22	1.67	0.58
1:A:553:THR:HG22	1:A:554:PHE:CD2	2.38	0.58
1:A:558:TYR:HB3	1:A:562:LEU:HD22	1.84	0.58
1:A:166:ARG:HH12	1:A:184:ALA:HB3	1.69	0.57
1:B:1582:ASP:O	1:B:1617:LEU:HD22	2.03	0.57
1:A:426:THR:O	1:A:430:VAL:HG22	2.04	0.57
1:A:430:VAL:HG23	1:A:431:SER:H	1.70	0.57
1:B:1021:THR:HB	1:B:1135:SER:HB2	1.86	0.57
1:A:627:ASN:N	1:A:628:PRO:HD2	2.20	0.57
1:B:1416:THR:OG1	1:B:1419:GLU:HG3	2.05	0.57
1:A:15:GLN:HA	1:A:497:ASN:CG	2.24	0.57
1:B:1189:VAL:HB	1:B:1568:VAL:HA	1.86	0.57
1:B:1157:PHE:CE1	1:B:1319:VAL:HG22	2.40	0.56
1:A:319:VAL:HG22	1:A:319:VAL:O	2.06	0.56
1:A:470:MET:HE2	1:A:470:MET:HA	1.86	0.56
1:A:659:THR:OG1	1:A:662:GLU:HG3	2.06	0.56
1:B:1264:LEU:HD22	1:B:1264:LEU:N	2.21	0.56
1:A:430:VAL:HG23	1:A:431:SER:N	2.21	0.56
1:B:1127:VAL:HB	4:B:62:HOH:O	2.04	0.56
1:A:493:MET:O	1:A:496:LEU:HD23	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:480:ASN:O	1:A:483:GLU:HG2	2.06	0.56
1:B:1259:VAL:HG12	1:B:1685:TYR:HB2	1.87	0.55
1:A:335:LYS:NZ	1:A:539:ASP:HB2	2.20	0.55
1:A:366:ASP:OD2	1:A:367:LEU:HD13	2.05	0.55
1:A:498:LEU:C	1:A:498:LEU:HD13	2.27	0.55
1:B:1583:SER:O	1:B:1584:SER:O	2.24	0.55
1:A:157:PHE:CD1	1:A:319:VAL:HG23	2.41	0.55
1:B:1174:GLY:O	1:B:1177:ASN:ND2	2.40	0.55
1:B:1259:VAL:HG12	1:B:1259:VAL:O	2.04	0.55
1:B:1184:ALA:HB1	1:B:1186:ASP:O	2.08	0.54
1:A:332:LEU:O	1:A:547:VAL:HA	2.07	0.54
1:B:1332:LEU:HG	1:B:1550:SER:HA	1.88	0.54
1:B:1650:TYR:O	1:B:1652:ALA:N	2.40	0.54
1:A:259:VAL:HG12	1:A:685:TYR:HB2	1.90	0.54
1:B:1321:THR:OG1	1:B:1323:GLN:NE2	2.41	0.54
1:A:158:ARG:NH2	1:A:566:ARG:O	2.40	0.54
1:A:181:LEU:HA	1:A:184:ALA:CB	2.37	0.54
1:B:1335:LYS:O	1:B:1338:VAL:HG22	2.08	0.54
1:B:1238:TYR:O	1:B:1318:LYS:HG3	2.07	0.53
1:A:335:LYS:O	1:A:338:VAL:HG12	2.08	0.53
1:A:363:MET:HE2	1:A:368:PHE:CA	2.35	0.53
1:B:1158:ARG:NH2	1:B:1566:ARG:O	2.39	0.53
1:B:1268:THR:HG22	1:B:1271:LYS:CB	2.38	0.53
1:B:1054:PRO:HG2	1:B:1494:LEU:HD13	1.89	0.53
1:A:79:LEU:HB3	1:A:85:ASN:ND2	2.24	0.53
1:B:1424:ILE:HD12	1:B:1424:ILE:O	2.08	0.53
1:B:1400:LEU:O	1:B:1404:VAL:HG23	2.08	0.53
1:A:419:GLU:O	1:A:422:GLU:HG2	2.09	0.53
1:B:1165:ILE:HD12	1:B:1220:CYS:O	2.08	0.53
1:A:556:LEU:CD1	1:A:589:GLU:HG2	2.39	0.52
1:B:1480:ASN:CG	1:B:1482:ARG:H	2.12	0.52
1:B:1131:VAL:O	1:B:1132:LEU:HD23	2.09	0.52
1:A:469:ILE:HG22	1:A:470:MET:HE3	1.92	0.52
1:B:1243:PHE:CD1	1:B:1244:PRO:HA	2.44	0.52
1:A:631:GLU:O	1:A:632:LYS:O	2.27	0.52
1:A:306:ASN:C	1:A:306:ASN:HD22	2.13	0.52
1:B:1027:ALA:HA	1:B:1129:GLU:O	2.09	0.52
1:A:589:GLU:OE2	1:A:589:GLU:N	2.34	0.52
1:A:469:ILE:HG22	1:A:470:MET:CE	2.41	0.51
1:A:607:ILE:HG23	1:A:623:PHE:CE2	2.45	0.51
1:A:252:ASN:HD22	1:A:694:HIS:HE1	1.56	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1659:THR:O	1:B:1662:GLU:N	2.38	0.51
1:B:1329:PHE:HB2	1:B:1349:PHE:HB2	1.93	0.51
1:A:268:THR:CG2	1:A:271:LYS:H	2.18	0.51
1:B:1371:LYS:HE2	1:B:1490:HIS:CE1	2.46	0.51
1:B:1465:ILE:HD12	1:B:1465:ILE:N	2.09	0.51
1:B:1210:LYS:O	1:B:1214:GLU:HG3	2.10	0.51
1:B:1231:THR:CG2	1:B:1393:TRP:HE3	2.23	0.51
1:B:1264:LEU:H	1:B:1264:LEU:CD2	2.23	0.51
1:B:1491:ASN:ND2	1:B:1491:ASN:C	2.64	0.51
1:B:1491:ASN:C	1:B:1491:ASN:HD22	2.12	0.51
1:B:1259:VAL:CG1	1:B:1685:TYR:HB2	2.41	0.51
1:B:1262:ASN:C	1:B:1262:ASN:HD22	2.14	0.51
1:A:332:LEU:HG	1:A:550:SER:HA	1.93	0.50
1:A:708:ILE:HG22	1:A:712:MET:HE3	1.93	0.50
1:B:1301:GLU:O	1:B:1305:HIS:HB3	2.11	0.50
1:A:259:VAL:HG12	1:A:259:VAL:O	2.10	0.50
1:B:1035:PHE:HA	1:B:1038:MET:HE3	1.93	0.50
1:A:587:PHE:HE2	1:A:612:PHE:HB2	1.77	0.50
1:B:1041:THR:HG22	1:B:1065:ASN:HA	1.93	0.50
1:A:181:LEU:HG	1:A:716:ILE:HD13	1.93	0.50
1:B:1078:ILE:HG22	1:B:1373:PHE:CD2	2.46	0.50
1:B:1191:ALA:CB	1:B:1561:ILE:HG12	2.42	0.50
1:B:1282:LYS:NZ	1:B:1384:ASN:HD21	2.09	0.50
1:B:1231:THR:HG23	1:B:1393:TRP:HE3	1.76	0.50
1:B:1279:LEU:HG	1:B:1297:MET:CE	2.42	0.50
1:A:306:ASN:HD21	1:A:307:ARG:HG2	1.77	0.49
1:B:1712:MET:O	1:B:1716:ILE:HG13	2.12	0.49
1:A:30:VAL:HG11	1:A:44:PRO:HG3	1.93	0.49
1:A:215:SER:OG	1:A:217:ILE:HG12	2.13	0.49
1:A:143:ASP:OD2	1:A:377:VAL:HG13	2.12	0.49
1:A:469:ILE:O	1:A:473:VAL:HG23	2.12	0.49
1:A:548:VAL:HG22	1:A:549:ASP:H	1.75	0.49
1:B:1645:ILE:CG2	1:B:1646:ASN:H	2.22	0.49
1:A:123:ILE:HD12	1:A:123:ILE:N	2.27	0.49
1:B:1043:ASP:HA	1:B:1063:PHE:O	2.13	0.49
1:A:238:TYR:CZ	1:A:327:PRO:HG3	2.48	0.49
1:B:1123:ILE:HD11	1:B:1126:GLN:C	2.32	0.49
1:B:1421:LEU:O	1:B:1421:LEU:HD23	2.13	0.49
1:A:20:PHE:HD1	1:A:135:SER:O	1.96	0.49
1:A:122:PHE:C	1:A:123:ILE:HD12	2.34	0.49
1:A:306:ASN:HD22	1:A:307:ARG:N	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1079:LEU:HB3	1:B:1085:ASN:OD1	2.12	0.49
1:A:211:ALA:HB1	1:A:702:LEU:HD13	1.95	0.49
1:B:1143:ASP:OD2	1:B:1377:VAL:HG13	2.13	0.49
1:A:624:LYS:HG3	1:A:625:PRO:HD2	1.94	0.48
1:B:1421:LEU:HA	1:B:1424:ILE:CG2	2.43	0.48
1:B:1659:THR:O	1:B:1660:GLU:C	2.50	0.48
1:A:212:LEU:HD22	1:A:217:ILE:HG21	1.95	0.48
1:B:1231:THR:HG23	1:B:1393:TRP:CE3	2.48	0.48
1:A:668:PHE:CD2	1:A:692:ARG:HD3	2.48	0.48
1:A:279:LEU:HG	1:A:297:MET:CE	2.44	0.48
1:A:611:VAL:O	1:A:615:GLU:HB2	2.14	0.48
1:B:1399:ILE:HA	1:B:1485:ARG:HG3	1.94	0.48
1:B:1650:TYR:HB3	1:B:1652:ALA:O	2.14	0.48
1:A:239:SER:HB2	1:A:310:THR:HG21	1.96	0.48
1:B:1178:SER:O	1:B:1180:GLY:N	2.47	0.48
1:B:1430:VAL:HG13	1:B:1546:HIS:HE1	1.79	0.48
1:B:1480:ASN:HD21	1:B:1482:ARG:CB	2.26	0.48
1:B:1561:ILE:HG13	1:B:1568:VAL:HG11	1.95	0.48
1:B:1231:THR:HG21	1:B:1393:TRP:HB2	1.96	0.47
1:A:610:TYR:HA	1:A:613:ASP:OD1	2.13	0.47
1:B:1032:LYS:HG2	1:B:1102:LEU:HD22	1.96	0.47
1:B:1321:THR:N	1:B:1323:GLN:HE22	2.08	0.47
1:A:150:LEU:CD1	1:A:158:ARG:HE	2.26	0.47
1:A:645:ILE:HG22	1:A:646:ASN:N	2.29	0.47
1:B:1193:LEU:HG	1:B:1557:PRO:HG2	1.96	0.47
1:B:1214:GLU:OE1	1:B:1698:HIS:HE1	1.97	0.47
1:A:311:THR:HB	1:A:383:GLU:OE2	2.14	0.47
1:A:333:HIS:HE1	4:A:3029:HOH:O	1.98	0.47
1:B:1387:HIS:CD2	4:B:77:HOH:O	2.63	0.47
1:B:1421:LEU:HD23	1:B:1421:LEU:C	2.34	0.47
1:B:1687:ASN:N	1:B:1687:ASN:HD22	2.12	0.47
1:A:24:VAL:HA	1:A:132:LEU:HD23	1.97	0.47
1:A:670:ILE:N	1:A:670:ILE:HD12	2.30	0.47
1:B:1491:ASN:HB2	1:B:1545:ILE:HG23	1.96	0.46
1:B:1261:HIS:O	1:B:1263:PRO:HD3	2.15	0.46
1:A:708:ILE:HG22	1:A:712:MET:CE	2.45	0.46
1:A:421:LEU:O	1:A:424:ILE:HG22	2.15	0.46
1:A:670:ILE:HG22	1:A:671:PHE:CD1	2.50	0.46
1:B:1165:ILE:HD12	1:B:1220:CYS:C	2.36	0.46
1:B:1370:SER:HA	1:B:1381:TYR:CD1	2.51	0.46
1:A:124:PHE:O	1:A:128:THR:HG22	2.16	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:268:THR:HG23	1:A:270:GLN:H	1.80	0.46
1:B:1558:TYR:HB3	1:B:1562:LEU:HD22	1.98	0.46
1:B:1268:THR:HG22	1:B:1271:LYS:HB2	1.97	0.46
1:A:576:PHE:HE2	1:A:697:MET:HG3	1.81	0.46
1:A:586:PRO:CB	1:A:641:VAL:HG21	2.45	0.46
1:B:1332:LEU:O	1:B:1547:VAL:HA	2.16	0.46
1:A:24:VAL:HG11	1:A:60:THR:HG21	1.98	0.46
1:A:491:ASN:HD21	1:A:493:MET:HB2	1.80	0.46
1:B:1157:PHE:CE1	1:B:1319:VAL:CG2	2.98	0.46
1:A:15:GLN:NE2	1:A:17:SER:N	2.61	0.46
1:B:1675:GLU:O	1:B:1676:SER:O	2.34	0.46
1:A:346:TRP:CE2	1:A:559:PRO:HG2	2.52	0.45
1:A:561:ILE:HD12	1:A:571:ILE:HG12	1.98	0.45
1:B:1280:TRP:O	1:B:1284:SER:HB2	2.16	0.45
1:B:1491:ASN:HD22	1:B:1492:PHE:N	2.13	0.45
1:A:25:LEU:HD12	1:A:131:VAL:HG12	1.98	0.45
1:A:306:ASN:ND2	1:A:306:ASN:C	2.68	0.45
1:A:712:MET:O	1:A:716:ILE:HG13	2.16	0.45
1:A:231:THR:HG23	1:A:393:TRP:CE3	2.51	0.45
1:A:267:LEU:HD11	1:A:298:LEU:HD22	1.98	0.45
1:A:594:GLU:OE1	1:A:607:ILE:HG12	2.17	0.45
1:A:157:PHE:CD1	1:A:319:VAL:CG2	3.00	0.45
1:A:346:TRP:CD2	1:A:559:PRO:HG2	2.51	0.45
1:A:706:ASP:OD1	1:A:706:ASP:N	2.47	0.45
1:B:1244:PRO:O	1:B:1245:GLU:C	2.55	0.45
1:B:1274:ARG:HH11	1:B:1274:ARG:HG2	1.82	0.45
1:A:262:ASN:HD22	1:A:263:PRO:CD	2.29	0.45
1:A:335:LYS:HZ2	1:A:539:ASP:HB2	1.82	0.45
1:B:1633:ASP:N	1:B:1633:ASP:OD1	2.50	0.45
1:A:223:TYR:CZ	1:A:566:ARG:HD3	2.52	0.45
1:A:263:PRO:O	1:A:266:LEU:HB2	2.17	0.45
1:B:1053:THR:HG22	1:B:1054:PRO:HD2	1.98	0.45
1:A:340:GLU:OE1	1:A:342:MET:HB3	2.16	0.44
1:B:1659:THR:O	1:B:1661:GLU:N	2.50	0.44
1:A:553:THR:HG22	1:A:554:PHE:HD2	1.79	0.44
1:B:1491:ASN:HD21	1:B:1493:MET:HB2	1.82	0.44
1:A:231:THR:CG2	1:A:393:TRP:CE3	3.00	0.44
1:B:1050:ILE:HD12	1:B:1077:PHE:CD1	2.52	0.44
1:B:1566:ARG:O	1:B:1567:GLY:C	2.55	0.44
1:A:124:PHE:HB2	1:A:128:THR:HG23	1.99	0.44
1:A:618:LYS:HG3	1:A:621:TYR:CE2	2.53	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1612:PHE:O	1:B:1616:GLY:N	2.45	0.44
1:A:243:PHE:CD1	1:A:244:PRO:HA	2.53	0.44
1:A:378:VAL:HG23	1:A:379:LYS:N	2.32	0.44
1:A:56:SER:O	1:A:58:LYS:HG3	2.17	0.44
1:A:342:MET:O	1:A:342:MET:HG3	2.17	0.44
1:A:621:TYR:CD1	1:A:621:TYR:N	2.86	0.44
1:B:1352:TYR:O	1:B:1365:PRO:HD3	2.18	0.44
1:B:1644:ASN:HA	1:B:1696:LEU:HD11	2.00	0.44
1:A:274:ARG:HG2	1:A:274:ARG:HH11	1.82	0.44
1:A:558:TYR:N	1:A:559:PRO:CD	2.80	0.44
1:B:1273:LYS:HE3	1:B:1273:LYS:HB2	1.90	0.44
1:B:1617:LEU:HD21	1:B:1643:ALA:CB	2.47	0.44
1:A:25:LEU:HD23	1:A:72:ASN:ND2	2.32	0.43
1:A:97:VAL:CG2	1:A:98:MET:H	2.25	0.43
1:A:341:LEU:HD13	1:A:552:LEU:HB3	1.99	0.43
1:B:1035:PHE:HA	1:B:1038:MET:CE	2.47	0.43
1:B:1123:ILE:HD11	1:B:1127:VAL:N	2.33	0.43
1:B:1642:LEU:HG	1:B:1670:ILE:HD13	2.00	0.43
1:A:582:ASP:OD1	1:A:672:ASP:N	2.51	0.43
1:B:1231:THR:CG2	1:B:1393:TRP:CE3	3.01	0.43
1:B:1619:GLU:OE2	1:B:1646:ASN:HB2	2.19	0.43
1:A:44:PRO:O	1:A:62:HIS:HA	2.18	0.43
1:A:114:VAL:HA	1:A:136:LEU:O	2.18	0.43
1:B:1708:ILE:O	1:B:1712:MET:HG3	2.18	0.43
1:A:146:PHE:HA	1:A:360:GLY:O	2.19	0.43
1:A:231:THR:CG2	1:A:393:TRP:HE3	2.32	0.43
1:A:590:LEU:HD23	1:A:590:LEU:O	2.18	0.43
1:B:1060:THR:HB	1:B:1073:GLU:OE2	2.19	0.43
1:B:1161:ARG:HB2	1:B:1322:ALA:HB1	2.01	0.42
1:B:1259:VAL:O	1:B:1259:VAL:CG1	2.66	0.42
1:A:192:ILE:N	1:A:192:ILE:HD12	2.35	0.42
1:A:304:ILE:HB	1:A:307:ARG:HG3	2.02	0.42
1:A:557:PRO:HB2	1:A:560:LEU:HD12	2.01	0.42
1:A:43:ASP:HA	1:A:63:PHE:O	2.19	0.42
1:B:1600:ASN:O	1:B:1602:LEU:HD22	2.20	0.42
1:B:1645:ILE:CG2	1:B:1646:ASN:N	2.74	0.42
1:B:1698:HIS:CE1	1:B:1702:LEU:HD22	2.54	0.42
1:A:80:ASP:OD1	1:A:80:ASP:C	2.57	0.42
1:A:259:VAL:CG1	1:A:685:TYR:HB2	2.49	0.42
1:A:712:MET:O	1:A:715:SER:HB2	2.20	0.42
1:B:1274:ARG:HG2	1:B:1274:ARG:NH1	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:110:SER:C	1:A:112:MET:H	2.21	0.42
1:B:1177:ASN:O	1:B:1178:SER:C	2.57	0.42
1:B:1641:VAL:CG1	1:B:1642:LEU:N	2.82	0.42
1:A:42:PRO:C	1:A:44:PRO:HD3	2.40	0.42
1:A:264:LEU:CD2	1:A:405:LEU:HD23	2.50	0.42
1:A:548:VAL:CG2	1:A:549:ASP:N	2.83	0.42
1:B:1231:THR:HG22	1:B:1232:TRP:N	2.33	0.42
1:A:50:ILE:HD12	1:A:77:PHE:CD2	2.55	0.42
1:A:267:LEU:HD13	1:A:469:ILE:HD11	2.00	0.42
1:A:371:LYS:NZ	1:A:490:HIS:NE2	2.67	0.42
1:B:1172:LEU:CD2	1:B:1217:ILE:HD13	2.50	0.42
1:A:27:ALA:HA	1:A:129:GLU:O	2.19	0.42
1:A:144:LEU:HD12	1:A:144:LEU:HA	1.85	0.42
1:A:193:LEU:HD11	1:A:561:ILE:CD1	2.36	0.42
1:B:1097:VAL:CG2	1:B:1098:MET:H	2.28	0.42
1:B:1181:LEU:HG	1:B:1716:ILE:HD13	2.02	0.42
1:B:1397:PHE:CE2	1:B:1417:MET:HE3	2.55	0.42
1:A:472:LEU:HD12	1:A:472:LEU:HA	1.85	0.42
1:B:1262:ASN:HD21	1:B:1264:LEU:CD2	2.20	0.42
1:A:326:LEU:HA	1:A:327:PRO:HD3	1.94	0.42
1:A:425:THR:HG23	1:A:428:HIS:N	2.18	0.42
1:A:430:VAL:CG2	1:A:431:SER:H	2.29	0.42
1:B:1421:LEU:HA	1:B:1424:ILE:HG21	2.01	0.42
1:A:166:ARG:NH1	1:A:184:ALA:HB3	2.35	0.41
1:B:1064:ASN:OD1	3:B:4000:MES:H31	2.20	0.41
1:B:1262:ASN:HD22	1:B:1263:PRO:N	2.18	0.41
1:B:1363:MET:HE3	1:B:1492:PHE:CD2	2.55	0.41
1:B:1262:ASN:C	1:B:1262:ASN:ND2	2.74	0.41
1:A:589:GLU:H	1:A:589:GLU:CD	2.19	0.41
1:B:1044:PRO:O	1:B:1062:HIS:HA	2.20	0.41
1:B:1268:THR:HG23	1:B:1270:GLN:H	1.84	0.41
1:B:1489:VAL:HG22	4:B:74:HOH:O	2.19	0.41
1:A:26:ARG:HB3	1:A:70:VAL:HA	2.01	0.41
1:A:26:ARG:CB	1:A:70:VAL:HA	2.50	0.41
1:A:319:VAL:O	1:A:319:VAL:CG2	2.68	0.41
1:A:192:ILE:N	1:A:192:ILE:CD1	2.83	0.41
1:A:320:ASN:OD1	1:A:321:THR:HG23	2.21	0.41
1:B:1617:LEU:HD21	1:B:1643:ALA:HB1	2.02	0.41
1:A:15:GLN:HA	1:A:497:ASN:OD1	2.20	0.41
1:B:1052:THR:OG1	1:B:1085:ASN:ND2	2.54	0.41
1:B:1276:VAL:HG11	1:B:1476:SER:CB	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:470:MET:HA	1:A:470:MET:CE	2.49	0.41
1:B:1086:VAL:O	1:B:1086:VAL:HG23	2.20	0.41
1:B:1339:SER:HA	1:B:1426:THR:HG21	2.02	0.41
1:B:1103:GLY:HA3	1:B:1124:PHE:HD2	1.86	0.41
1:A:266:LEU:HD12	1:A:302:THR:HG22	2.02	0.41
1:A:572:ILE:HG22	1:A:574:PHE:CE1	2.55	0.41
1:A:673:ASP:OD1	1:A:674:PRO:HD2	2.21	0.41
1:B:1279:LEU:HG	1:B:1297:MET:HE2	2.02	0.41
1:B:1709:LYS:O	1:B:1713:VAL:HG23	2.21	0.41
1:A:274:ARG:HG2	1:A:274:ARG:NH1	2.35	0.40
1:B:1291:PHE:CE1	1:B:1470:MET:HE3	2.56	0.40
1:B:1480:ASN:ND2	1:B:1483:GLU:N	2.69	0.40
1:B:1563:ARG:HA	1:B:1564:PRO:HD2	1.90	0.40
1:A:262:ASN:HD22	1:A:263:PRO:HD2	1.85	0.40
1:A:276:VAL:HG13	1:A:478:LEU:HG	2.02	0.40
1:A:372:PHE:CE1	1:A:377:VAL:HG12	2.56	0.40
1:A:702:LEU:HD12	1:A:702:LEU:HA	1.94	0.40
1:B:1061:ARG:HG2	1:B:1061:ARG:HH11	1.86	0.40
1:B:1340:GLU:HB3	1:B:1343:PHE:HD2	1.87	0.40
1:A:124:PHE:HB2	1:A:128:THR:CG2	2.52	0.40
1:A:608:ASP:OD2	1:A:614:ARG:NH1	2.53	0.40
1:B:1417:MET:HG2	1:B:1680:THR:HG21	2.04	0.40
1:B:1418:GLU:H	1:B:1418:GLU:CD	2.24	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	625/749 (83%)	565 (90%)	48 (8%)	12 (2%)	<b>8</b> <b>13</b>
1	B	602/749 (80%)	553 (92%)	40 (7%)	9 (2%)	<b>10</b> <b>18</b>

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	1227/1498 (82%)	1118 (91%)	88 (7%)	21 (2%)	9	16

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	430	VAL
1	A	625	PRO
1	A	632	LYS
1	B	1178	SER
1	B	1584	SER
1	B	1660	GLU
1	B	1676	SER
1	A	15	GLN
1	A	424	ILE
1	B	1179	GLU
1	A	267	LEU
1	A	542	SER
1	B	1180	GLY
1	A	140	SER
1	A	338	VAL
1	B	1184	ALA
1	B	1645	ILE
1	A	55	ASP
1	A	586	PRO
1	B	1177	ASN
1	A	645	ILE

### 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	519/677 (77%)	487 (94%)	32 (6%)	18	35
1	B	511/677 (76%)	472 (92%)	39 (8%)	13	25
All	All	1030/1354 (76%)	959 (93%)	71 (7%)	15	30

All (71) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	15	GLN
1	A	26	ARG
1	A	101	THR
1	A	106	THR
1	A	144	LEU
1	A	161	ARG
1	A	231	THR
1	A	255	LEU
1	A	268	THR
1	A	297	MET
1	A	302	THR
1	A	306	ASN
1	A	323	GLN
1	A	421	LEU
1	A	472	LEU
1	A	478	LEU
1	A	488	LYS
1	A	489	VAL
1	A	491	ASN
1	A	494	LEU
1	A	496	LEU
1	A	555	ASN
1	A	562	LEU
1	A	565	GLN
1	A	569	ASP
1	A	582	ASP
1	A	624	LYS
1	A	636	THR
1	A	644	ASN
1	A	653	PRO
1	A	702	LEU
1	A	706	ASP
1	B	1053	THR
1	B	1059	ARG
1	B	1091	LEU
1	B	1101	THR
1	B	1128	THR
1	B	1144	LEU
1	B	1186	ASP
1	B	1227	LEU
1	B	1231	THR
1	B	1262	ASN

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Mol	Chain	Res	Type
1	B	1268	THR
1	B	1284	SER
1	B	1302	THR
1	B	1319	VAL
1	B	1323	GLN
1	B	1340	GLU
1	B	1367	LEU
1	B	1402	ASN
1	B	1425	THR
1	B	1429	ILE
1	B	1465	ILE
1	B	1478	LEU
1	B	1481	THR
1	B	1485	ARG
1	B	1491	ASN
1	B	1494	LEU
1	B	1548	VAL
1	B	1555	ASN
1	B	1562	LEU
1	B	1565	GLN
1	B	1568	VAL
1	B	1582	ASP
1	B	1586	PRO
1	B	1590	LEU
1	B	1595	LYS
1	B	1636	THR
1	B	1658	GLU
1	B	1702	LEU
1	B	1706	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (37) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	15	GLN
1	A	72	ASN
1	A	82	ASN
1	A	85	ASN
1	A	153	GLN
1	A	258	ASN
1	A	262	ASN
1	A	306	ASN
1	A	323	GLN

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Mol	Chain	Res	Type
1	A	461	GLN
1	A	491	ASN
1	A	565	GLN
1	A	627	ASN
1	A	644	ASN
1	A	684	GLN
1	A	687	ASN
1	A	694	HIS
1	A	704	ASN
1	B	1018	HIS
1	B	1072	ASN
1	B	1082	ASN
1	B	1085	ASN
1	B	1258	ASN
1	B	1262	ASN
1	B	1287	GLN
1	B	1309	ASN
1	B	1323	GLN
1	B	1384	ASN
1	B	1387	HIS
1	B	1480	ASN
1	B	1491	ASN
1	B	1565	GLN
1	B	1684	GLN
1	B	1687	ASN
1	B	1694	HIS
1	B	1698	HIS
1	B	1703	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](#)

There are no non-standard protein/DNA/RNA residues in this entry.

### 5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

## 5.6 Ligand geometry

Of 6 ligands modelled in this entry, 4 are monoatomic - leaving 2 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
3	MES	B	4000	2	12,12,12	8.86	8 (66%)	14,16,16	2.61	6 (42%)
3	MES	A	3000	2	12,12,12	9.06	8 (66%)	14,16,16	2.68	6 (42%)

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	MES	B	4000	2	-	2/6/14/14	0/1/1/1
3	MES	A	3000	2	-	1/6/14/14	0/1/1/1

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	3000	MES	C8-S	-24.05	1.43	1.77
3	B	4000	MES	C8-S	-23.50	1.44	1.77
3	A	3000	MES	O1S-S	11.83	1.80	1.45
3	B	4000	MES	O2S-S	11.60	1.79	1.45
3	A	3000	MES	O2S-S	11.40	1.78	1.45
3	B	4000	MES	O1S-S	11.21	1.78	1.45
3	A	3000	MES	O3S-S	9.11	1.79	1.47
3	B	4000	MES	O3S-S	8.79	1.78	1.47
3	A	3000	MES	C7-C8	-4.93	1.39	1.52
3	B	4000	MES	C7-C8	-4.83	1.39	1.52
3	A	3000	MES	C3-C2	-3.16	1.38	1.50
3	B	4000	MES	C3-C2	-3.09	1.38	1.50
3	B	4000	MES	C7-N4	-2.55	1.41	1.47
3	A	3000	MES	C7-N4	-2.44	1.41	1.47
3	B	4000	MES	C5-C6	-2.37	1.41	1.50
3	A	3000	MES	C5-C6	-2.33	1.41	1.50

All (12) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	3000	MES	O3S-S-C8	5.79	115.14	105.77
3	B	4000	MES	O3S-S-C8	5.43	114.55	105.77
3	A	3000	MES	O1S-S-C8	5.26	113.24	106.92
3	B	4000	MES	O1S-S-C8	5.06	113.01	106.92
3	B	4000	MES	O2S-S-C8	3.52	111.15	106.92
3	A	3000	MES	O2S-S-C8	3.24	110.82	106.92
3	A	3000	MES	O3S-S-O2S	-3.03	103.87	111.27
3	B	4000	MES	O1-C2-C3	-2.57	106.13	111.80
3	A	3000	MES	O1-C2-C3	-2.56	106.15	111.80
3	B	4000	MES	O3S-S-O2S	-2.51	105.13	111.27
3	B	4000	MES	O3S-S-O1S	-2.46	105.27	111.27
3	A	3000	MES	O3S-S-O1S	-2.29	105.67	111.27

There are no chirality outliers.

All (3) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	A	3000	MES	N4-C7-C8-S
3	B	4000	MES	N4-C7-C8-S
3	B	4000	MES	C7-C8-S-O2S

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	4000	MES	1	0

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.



## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

### 6.2 Non-standard residues in protein, DNA, RNA chains

EDS was not executed - this section is therefore empty.

### 6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

### 6.4 Ligands

EDS was not executed - this section is therefore empty.

### 6.5 Other polymers

EDS was not executed - this section is therefore empty.