



Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 06:32 PM EDT

PDB ID : 1HPL
Title : HORSE PANCREATIC LIPASE. THE CRYSTAL STRUCTURE AT 2.3
ANGSTROMS RESOLUTION
Authors : Bourne, Y.; Cambillau, C.
Deposited on : 1993-01-27
Resolution : 2.30 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467
Xtriage (Phenix) : 1.13
EDS : 2.36.2
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) : 2.36.2

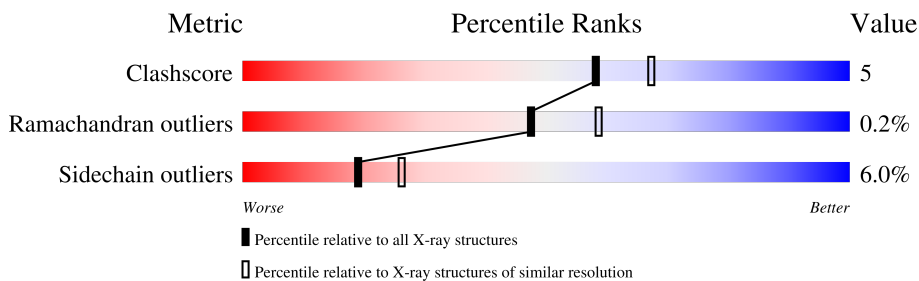
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)

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 $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	449	
1	B	449	

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 7709 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 LIPASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	449	3501	2205	601	676	19	0	0	0
1	B	449	3501	2205	601	676	19	0	0	0

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

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total 1	Ca 1	0	0
2	B	1	Total 1	Ca 1	0	0

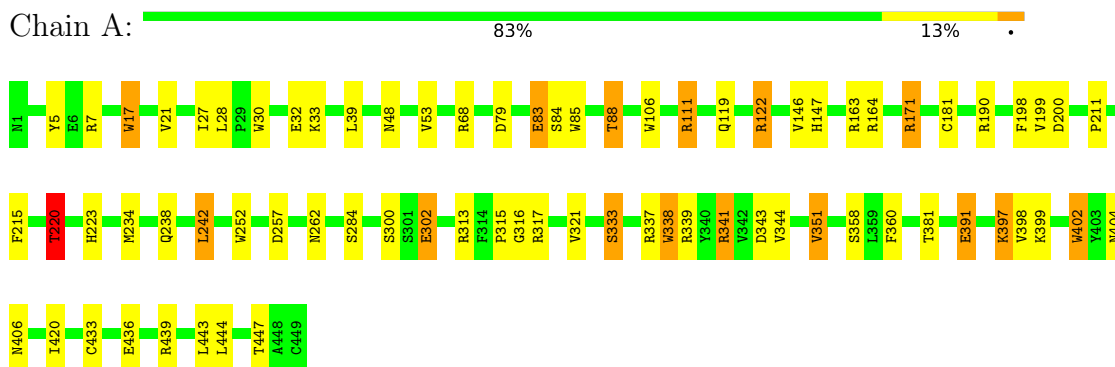
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	397	Total 397	O 397	0	0
3	B	308	Total 308	O 308	0	0

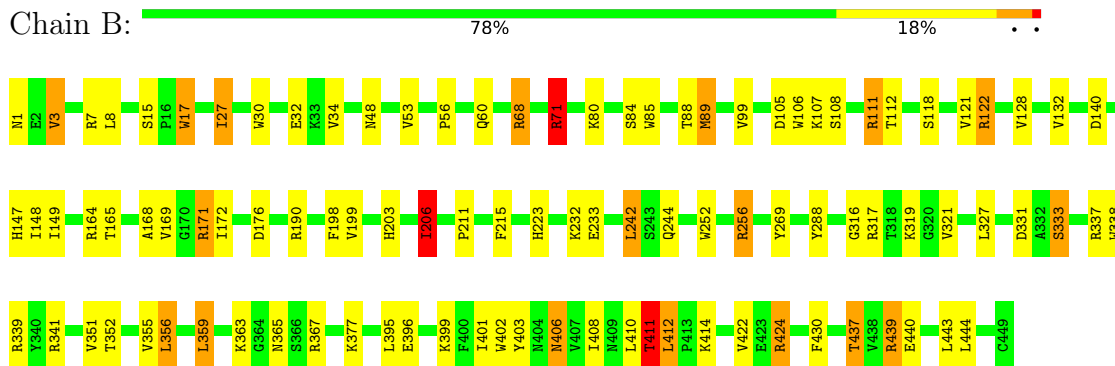
3 Residue-property plots

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. 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. 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: LIPASE



- Molecule 1: LIPASE



4 Data and refinement statistics i

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	79.80Å 97.20Å 145.30Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	6.00 – 2.30 6.05 – 2.31	Depositor EDS
% Data completeness (in resolution range)	(Not available) (6.00-2.30) 86.6 (6.05-2.31)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$	-	Xtrriage
Refinement program	X-PLOR	Depositor
R, R_{free}	0.159 , (Not available) 0.331 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	18.9	Xtrriage
Anisotropy	0.244	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 99.7	EDS
L-test for twinning ¹	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.81	EDS
Total number of atoms	7709	wwPDB-VP
Average B, all atoms (Å ²)	19.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 30.58 % 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 1.2770e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

¹Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for centric 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: 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	0.83	1/3587 (0.0%)	1.60	52/4867 (1.1%)
1	B	0.83	0/3587	1.71	67/4867 (1.4%)
All	All	0.83	1/7174 (0.0%)	1.65	119/9734 (1.2%)

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	2
1	B	0	3
All	All	0	5

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	146	VAL	CA-CB	5.60	1.66	1.54

All (119) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	333	SER	O-C-N	-21.47	88.34	122.70
1	A	333	SER	O-C-N	-19.70	91.19	122.70
1	B	122	ARG	NE-CZ-NH1	19.23	129.91	120.30
1	A	339	ARG	NE-CZ-NH2	-17.82	111.39	120.30
1	B	171	ARG	NE-CZ-NH1	17.45	129.03	120.30
1	B	164	ARG	NE-CZ-NH2	-16.29	112.16	120.30
1	B	122	ARG	NE-CZ-NH2	-15.84	112.38	120.30
1	B	7	ARG	NE-CZ-NH2	-14.68	112.96	120.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	164	ARG	NE-CZ-NH2	-14.28	113.16	120.30
1	B	7	ARG	NE-CZ-NH1	12.68	126.64	120.30
1	A	339	ARG	NE-CZ-NH1	11.96	126.28	120.30
1	B	71	ARG	NE-CZ-NH2	-11.72	114.44	120.30
1	A	164	ARG	NE-CZ-NH1	11.68	126.14	120.30
1	A	122	ARG	NE-CZ-NH1	11.17	125.88	120.30
1	B	171	ARG	NE-CZ-NH2	-10.76	114.92	120.30
1	B	339	ARG	NE-CZ-NH1	10.76	125.68	120.30
1	B	317	ARG	NE-CZ-NH2	-10.41	115.09	120.30
1	A	171	ARG	NE-CZ-NH2	-10.37	115.11	120.30
1	B	337	ARG	NE-CZ-NH2	-10.04	115.28	120.30
1	B	68	ARG	NE-CZ-NH2	-9.86	115.37	120.30
1	A	171	ARG	NE-CZ-NH1	9.63	125.11	120.30
1	B	30	TRP	CD1-CG-CD2	9.54	113.93	106.30
1	B	71	ARG	NE-CZ-NH1	9.47	125.04	120.30
1	B	317	ARG	NE-CZ-NH1	9.39	125.00	120.30
1	B	333	SER	CA-C-N	9.28	137.62	117.20
1	B	339	ARG	NE-CZ-NH2	-9.27	115.67	120.30
1	A	333	SER	CA-C-N	9.17	137.38	117.20
1	B	68	ARG	NE-CZ-NH1	9.07	124.84	120.30
1	A	122	ARG	NE-CZ-NH2	-8.99	115.81	120.30
1	B	17	TRP	CD1-CG-CD2	8.78	113.32	106.30
1	A	439	ARG	NE-CZ-NH1	8.34	124.47	120.30
1	B	164	ARG	NE-CZ-NH1	8.24	124.42	120.30
1	A	313	ARG	NE-CZ-NH2	-8.19	116.21	120.30
1	A	5	TYR	CB-CG-CD1	-8.16	116.10	121.00
1	B	439	ARG	NE-CZ-NH1	8.16	124.38	120.30
1	A	252	TRP	CD1-CG-CD2	8.12	112.80	106.30
1	B	17	TRP	CE2-CD2-CG	-8.02	100.88	107.30
1	A	17	TRP	CD1-CG-CD2	8.00	112.70	106.30
1	B	85	TRP	CD1-CG-CD2	7.95	112.66	106.30
1	B	111	ARG	NE-CZ-NH1	7.92	124.26	120.30
1	B	337	ARG	NE-CZ-NH1	7.80	124.20	120.30
1	A	402	TRP	CD1-CG-CD2	7.69	112.45	106.30
1	A	30	TRP	CD1-CG-CD2	7.67	112.44	106.30
1	A	17	TRP	CE2-CD2-CG	-7.64	101.19	107.30
1	A	341	ARG	NE-CZ-NH1	7.61	124.11	120.30
1	A	85	TRP	CD1-CG-CD2	7.61	112.39	106.30
1	B	402	TRP	CD1-CG-CD2	7.58	112.36	106.30
1	A	17	TRP	CG-CD2-CE3	7.57	140.71	133.90
1	B	30	TRP	CE2-CD2-CG	-7.49	101.31	107.30
1	B	85	TRP	CE2-CD2-CG	-7.47	101.32	107.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	190	ARG	NE-CZ-NH1	7.46	124.03	120.30
1	B	424	ARG	NE-CZ-NH2	-7.43	116.59	120.30
1	A	338	TRP	CD1-CG-CD2	7.36	112.18	106.30
1	A	163	ARG	NE-CZ-NH1	7.21	123.91	120.30
1	A	85	TRP	CE2-CD2-CG	-7.16	101.57	107.30
1	A	30	TRP	CE2-CD2-CG	-7.12	101.60	107.30
1	B	256	ARG	NE-CZ-NH1	7.09	123.84	120.30
1	B	338	TRP	CD1-CG-CD2	7.00	111.90	106.30
1	A	7	ARG	NE-CZ-NH1	6.95	123.78	120.30
1	B	402	TRP	CE2-CD2-CG	-6.95	101.74	107.30
1	B	3	VAL	CB-CA-C	-6.93	98.23	111.40
1	A	252	TRP	CE2-CD2-CG	-6.92	101.76	107.30
1	A	317	ARG	NE-CZ-NH2	-6.80	116.90	120.30
1	B	106	TRP	CE2-CD2-CG	-6.77	101.88	107.30
1	B	424	ARG	CB-CG-CD	-6.72	94.14	111.60
1	B	111	ARG	NE-CZ-NH2	-6.65	116.97	120.30
1	B	206	ILE	CA-CB-CG1	-6.64	98.38	111.00
1	B	288	TYR	CB-CG-CD1	-6.62	117.03	121.00
1	A	17	TRP	CB-CG-CD1	-6.62	118.39	127.00
1	B	252	TRP	CD1-CG-CD2	6.52	111.52	106.30
1	B	269	TYR	CB-CG-CD2	-6.45	117.13	121.00
1	B	30	TRP	CG-CD1-NE1	-6.42	103.67	110.10
1	B	411	THR	CA-C-N	-6.40	103.12	117.20
1	B	256	ARG	NE-CZ-NH2	-6.38	117.11	120.30
1	A	300	SER	N-CA-CB	-6.29	101.06	110.50
1	A	338	TRP	CE2-CD2-CG	-6.28	102.28	107.30
1	B	338	TRP	CE2-CD2-CG	-6.27	102.28	107.30
1	A	337	ARG	NE-CZ-NH1	6.26	123.43	120.30
1	B	190	ARG	NE-CZ-NH1	6.25	123.42	120.30
1	B	17	TRP	CB-CG-CD1	-6.25	118.88	127.00
1	B	8	LEU	CA-C-N	6.23	128.66	116.20
1	B	252	TRP	CE2-CD2-CG	-6.21	102.33	107.30
1	B	367	ARG	CA-CB-CG	6.19	127.02	113.40
1	A	106	TRP	CE2-CD2-CG	-6.17	102.36	107.30
1	B	17	TRP	CG-CD2-CE3	6.14	139.43	133.90
1	A	315	PRO	CA-C-N	6.11	128.42	116.20
1	B	8	LEU	O-C-N	-6.10	112.84	123.20
1	A	337	ARG	NE-CZ-NH2	-6.07	117.27	120.30
1	A	402	TRP	CE2-CD2-CG	-6.07	102.45	107.30
1	B	356	LEU	CA-CB-CG	6.05	129.23	115.30
1	A	402	TRP	CG-CD1-NE1	-5.97	104.13	110.10
1	B	106	TRP	CD1-CG-CD2	5.85	110.98	106.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	242	LEU	CA-CB-CG	5.80	128.64	115.30
1	A	190	ARG	NE-CZ-NH2	-5.77	117.42	120.30
1	B	176	ASP	CB-CG-OD1	5.75	123.47	118.30
1	A	397	LYS	CA-CB-CG	5.72	125.99	113.40
1	B	171	ARG	CB-CG-CD	5.67	126.34	111.60
1	A	106	TRP	CD1-CG-CD2	5.66	110.83	106.30
1	B	17	TRP	CG-CD1-NE1	-5.65	104.45	110.10
1	B	333	SER	CA-C-O	5.63	131.92	120.10
1	B	341	ARG	CG-CD-NE	-5.57	100.11	111.80
1	A	68	ARG	NE-CZ-NH1	5.44	123.02	120.30
1	A	30	TRP	CG-CD1-NE1	-5.40	104.70	110.10
1	A	85	TRP	CB-CG-CD1	-5.40	119.98	127.00
1	B	331	ASP	CB-CG-OD1	5.39	123.15	118.30
1	A	111	ARG	NE-CZ-NH1	5.35	122.97	120.30
1	B	27	ILE	CA-CB-CG1	-5.34	100.86	111.00
1	A	252	TRP	CG-CD1-NE1	-5.32	104.78	110.10
1	B	85	TRP	CB-CG-CD1	-5.29	120.12	127.00
1	B	27	ILE	CA-CB-CG2	5.28	121.46	110.90
1	B	206	ILE	N-CA-CB	-5.27	98.68	110.80
1	A	21	VAL	CA-CB-CG2	-5.23	103.06	110.90
1	B	89	MET	CG-SD-CE	-5.15	91.96	100.20
1	B	363	LYS	CB-CG-CD	-5.15	98.22	111.60
1	A	220	THR	N-CA-CB	-5.14	100.54	110.30
1	A	17	TRP	CG-CD1-NE1	-5.08	105.02	110.10
1	A	85	TRP	CA-CB-CG	5.08	123.35	113.70
1	A	300	SER	CA-CB-OG	5.04	124.80	111.20
1	A	338	TRP	CG-CD1-NE1	-5.00	105.10	110.10

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	333	SER	Mainchain,Peptide
1	B	333	SER	Mainchain,Peptide
1	B	71	ARG	Sidechain

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	3501	0	3334	32	2
1	B	3501	0	3334	39	2
2	A	1	0	0	0	0
2	B	1	0	0	0	0
3	A	397	0	0	7	1
3	B	308	0	0	1	2
All	All	7709	0	6668	66	4

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 5.

All (66) 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:B:165:THR:HG21	1:B:169:VAL:HG23	1.57	0.85
1:B:395:LEU:HD22	1:B:422:VAL:HG11	1.63	0.78
1:A:443:LEU:H	1:B:48:ASN:HD21	1.32	0.77
1:A:111:ARG:HH21	1:B:408:ILE:HG23	1.56	0.70
1:B:399:LYS:HD3	1:B:443:LEU:HD13	1.74	0.68
1:B:84:SER:O	1:B:88:THR:HG23	1.95	0.67
1:B:199:VAL:H	1:B:223:HIS:HD2	1.44	0.64
1:A:84:SER:O	1:A:88:THR:HG23	1.99	0.62
1:A:242:LEU:HD22	1:A:242:LEU:H	1.70	0.56
1:B:232:LYS:HD3	1:B:233:GLU:HG3	1.88	0.56
1:A:147:HIS:CD2	1:A:171:ARG:HG2	2.42	0.55
1:B:171:ARG:HD3	1:B:198:PHE:CD2	2.42	0.55
1:B:412:LEU:HD12	1:B:439:ARG:HD2	1.89	0.55
1:B:147:HIS:CD2	1:B:171:ARG:HG2	2.42	0.55
1:A:360:PHE:CZ	1:A:399:LYS:HE2	2.42	0.54
1:A:199:VAL:H	1:A:223:HIS:HD2	1.57	0.52
1:A:48:ASN:HD21	1:B:443:LEU:H	1.58	0.52
1:A:79:ASP:HA	3:A:1097:HOH:O	2.09	0.52
1:B:71:ARG:HD2	1:B:99:VAL:HG21	1.93	0.51
1:A:223:HIS:HA	1:A:321:VAL:HA	1.93	0.51
1:B:128:VAL:O	1:B:132:VAL:HG13	2.10	0.51
1:B:422:VAL:HG13	1:B:430:PHE:HB2	1.93	0.51
1:B:89:MET:HE3	1:B:149:ILE:HD13	1.93	0.50
1:A:234:MET:H	1:A:262:ASN:ND2	2.10	0.50
1:A:316:GLY:HA3	3:A:1306:HOH:O	2.12	0.49
1:A:27:ILE:HG13	1:A:119:GLN:HG3	1.95	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:17:TRP:CZ3	1:A:122:ARG:HD3	2.49	0.48
1:A:88:THR:HG22	3:A:1038:HOH:O	2.15	0.47
1:B:203:HIS:HB3	1:B:206:ILE:CD1	2.45	0.47
1:A:341:ARG:HH11	1:A:341:ARG:HG3	1.80	0.47
1:B:223:HIS:HA	1:B:321:VAL:HA	1.96	0.47
1:B:359:LEU:HG	1:B:395:LEU:HD21	1.96	0.46
1:B:17:TRP:CZ3	1:B:122:ARG:HD3	2.51	0.46
1:A:220:THR:HG23	3:A:1083:HOH:O	2.17	0.45
1:B:118:SER:O	1:B:121:VAL:HG22	2.16	0.45
1:A:358:SER:OG	1:A:399:LYS:HB2	2.17	0.45
1:B:411:THR:HG22	1:B:412:LEU:HD22	1.99	0.45
1:B:403:TYR:HA	1:B:440:GLU:HG3	1.98	0.44
1:A:33:LYS:HE3	3:A:1032:HOH:O	2.17	0.44
1:A:443:LEU:H	1:B:48:ASN:ND2	2.08	0.44
1:B:414:LYS:HB3	1:B:437:THR:HB	1.99	0.44
1:B:352:THR:O	1:B:406:ASN:HB2	2.17	0.44
1:A:181:CYS:SG	3:A:968:HOH:O	2.62	0.44
1:A:48:ASN:HD21	1:B:443:LEU:N	2.16	0.44
1:B:165:THR:HG22	1:B:168:ALA:HB3	2.00	0.43
1:B:377:LYS:HD2	3:B:1119:HOH:O	2.17	0.43
1:B:412:LEU:HD12	1:B:439:ARG:CD	2.47	0.43
1:B:316:GLY:HA2	1:B:319:LYS:HG2	2.01	0.42
1:B:34:VAL:O	1:B:108:SER:HB2	2.19	0.42
1:A:171:ARG:HD2	1:A:200:ASP:OD1	2.19	0.42
1:B:105:ASP:OD2	1:B:107:LYS:HE3	2.19	0.42
1:B:401:ILE:HB	1:B:443:LEU:HD23	2.02	0.42
1:A:344:VAL:O	1:A:381:THR:HA	2.20	0.41
1:A:398:VAL:HG11	1:A:420:ILE:HG21	2.02	0.41
1:B:171:ARG:HA	1:B:198:PHE:O	2.19	0.41
1:A:351:VAL:HG11	1:A:402:TRP:CZ3	2.55	0.41
1:A:83:GLU:H	1:A:83:GLU:CD	2.23	0.41
1:A:171:ARG:HD3	1:A:198:PHE:CD2	2.55	0.41
1:B:351:VAL:HG22	1:B:352:THR:N	2.36	0.41
1:B:424:ARG:HH11	1:B:424:ARG:HD2	1.74	0.41
1:A:338:TRP:CD1	1:A:391:GLU:HG3	2.56	0.40
1:B:148:ILE:O	1:B:172:ILE:HA	2.21	0.40
1:B:56:PRO:O	1:B:60:GLN:HB2	2.21	0.40
1:A:238:GLN:H	1:A:238:GLN:CD	2.24	0.40
1:A:343:ASP:O	1:A:420:ILE:HA	2.22	0.40
1:A:433:CYS:HB3	3:A:1124:HOH:O	2.21	0.40

All (4) symmetry-related close contacts are listed below. The label for Atom-2 includes the sym-

metry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1:ASN:OD1	3:A:1307:HOH:O[2_565]	1.68	0.52
1:A:302:GLU:OE2	3:B:1043:HOH:O[2_564]	1.97	0.23
1:B:256:ARG:NH2	1:B:396:GLU:OE2[3_655]	2.12	0.08
1:A:302:GLU:CD	3:B:1043:HOH:O[2_564]	2.18	0.02

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	447/449 (100%)	431 (96%)	16 (4%)	0	100	100
1	B	447/449 (100%)	430 (96%)	15 (3%)	2 (0%)	34	42
All	All	894/898 (100%)	861 (96%)	31 (4%)	2 (0%)	47	58

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	410	LEU
1	B	411	THR

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	385/385 (100%)	364 (94%)	21 (6%)	21	30
1	B	385/385 (100%)	360 (94%)	25 (6%)	17	23

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
All	All	770/770 (100%)	724 (94%)	46 (6%)	19	26

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	28	LEU
1	A	32	GLU
1	A	39	LEU
1	A	53	VAL
1	A	83	GLU
1	A	88	THR
1	A	211	PRO
1	A	215	PHE
1	A	220	THR
1	A	242	LEU
1	A	257	ASP
1	A	284	SER
1	A	302	GLU
1	A	351	VAL
1	A	391	GLU
1	A	397	LYS
1	A	404	ASN
1	A	406	ASN
1	A	436	GLU
1	A	444	LEU
1	A	447	THR
1	B	3	VAL
1	B	15	SER
1	B	27	ILE
1	B	32	GLU
1	B	53	VAL
1	B	68	ARG
1	B	80	LYS
1	B	111	ARG
1	B	112	THR
1	B	140	ASP
1	B	206	ILE
1	B	211	PRO
1	B	215	PHE
1	B	242	LEU
1	B	244	GLN
1	B	327	LEU

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	355	VAL
1	B	356	LEU
1	B	359	LEU
1	B	365	ASN
1	B	406	ASN
1	B	411	THR
1	B	412	LEU
1	B	437	THR
1	B	444	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	48	ASN
1	A	223	HIS
1	A	262	ASN
1	A	328	ASN
1	A	404	ASN
1	B	48	ASN
1	B	223	HIS
1	B	328	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 [i](#)

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.