



Full wwPDB X-ray Structure Validation Report ⓘ

Nov 3, 2024 – 07:10 AM EST

PDB ID : 1EK9
Title : 2.1A X-RAY STRUCTURE OF TOLC: AN INTEGRAL OUTER MEMBRANE PROTEIN AND EFFLUX PUMP COMPONENT FROM ESCHERICHIA COLI
Authors : Koronakis, V.; Sharff, A.J.; Koronakis, E.; Luisi, B.; Hughes, C.
Deposited on : 2000-03-07
Resolution : 2.10 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
Mogul : 2022.3.0, CSD as543be (2022)
Xtriage (Phenix) : 1.20.1
EDS : 3.0
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4 : 9.0.003 (Gargrove)
Density-Fitness : 1.0.11
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

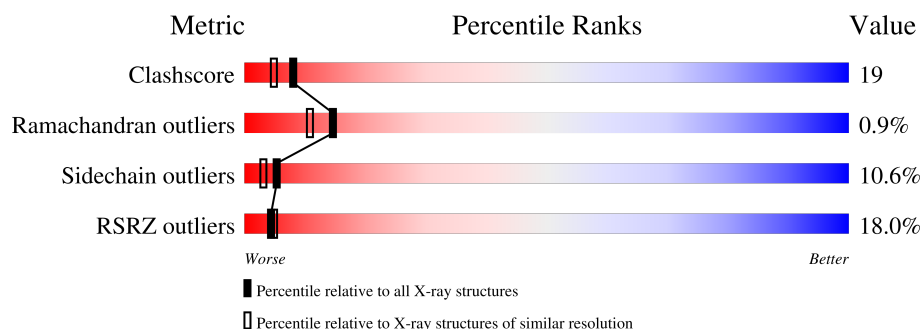
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 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	180529	6893 (2.10-2.10)
Ramachandran outliers	177936	6839 (2.10-2.10)
Sidechain outliers	177891	6840 (2.10-2.10)
RSRZ outliers	164620	6234 (2.10-2.10)

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 $\leq 5\%$. 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	428	17% 67% 25% 7%
1	B	428	18% 71% 23% 5%
1	C	428	19% 68% 24% 7%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 11426 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 OUTER MEMBRANE PROTEIN TOLC.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	428	Total	C	N	O	Se	0	0	0
			3306	2038	586	677	5			
1	B	428	Total	C	N	O	Se	0	0	0
			3306	2038	586	677	5			
1	C	428	Total	C	N	O	Se	0	0	0
			3306	2038	586	677	5			

There are 15 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	4	MSE	MET	modified residue	UNP P02930
A	78	MSE	MET	modified residue	UNP P02930
A	279	MSE	MET	modified residue	UNP P02930
A	297	MSE	MET	modified residue	UNP P02930
A	358	MSE	MET	modified residue	UNP P02930
B	4	MSE	MET	modified residue	UNP P02930
B	78	MSE	MET	modified residue	UNP P02930
B	279	MSE	MET	modified residue	UNP P02930
B	297	MSE	MET	modified residue	UNP P02930
B	358	MSE	MET	modified residue	UNP P02930
C	4	MSE	MET	modified residue	UNP P02930
C	78	MSE	MET	modified residue	UNP P02930
C	279	MSE	MET	modified residue	UNP P02930
C	297	MSE	MET	modified residue	UNP P02930
C	358	MSE	MET	modified residue	UNP P02930

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	442	Total	O	0	0
			442	442		
2	B	558	Total	O	0	0
			558	558		

Continued on next page...

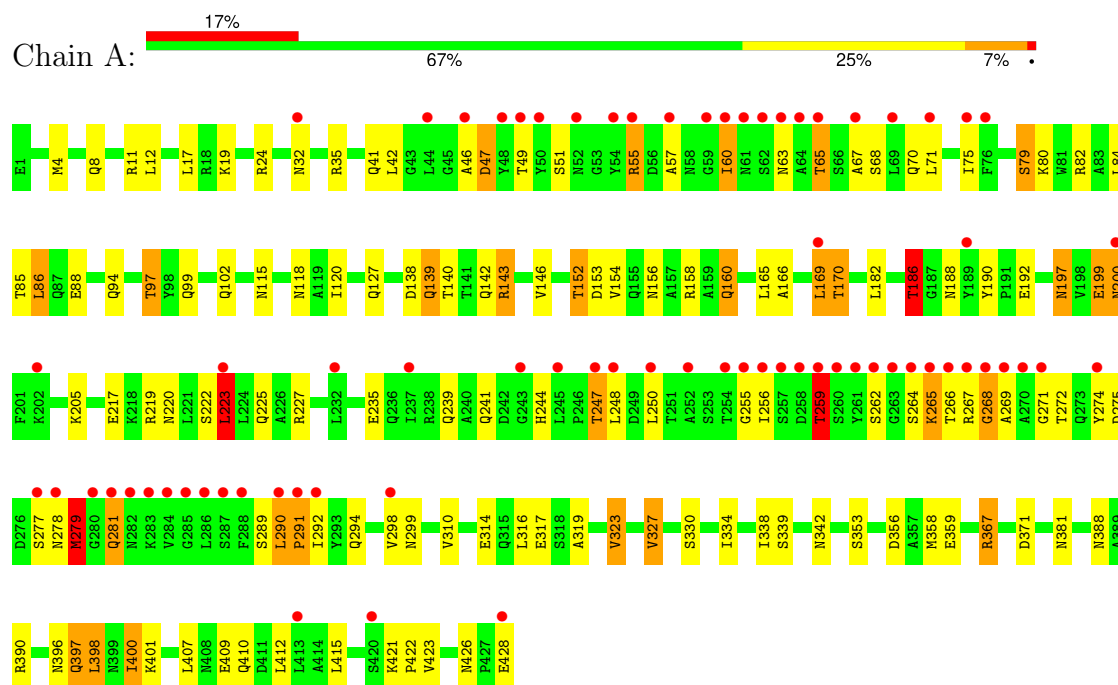
Continued from previous page...

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	C	508	Total 508	O 508	0	0

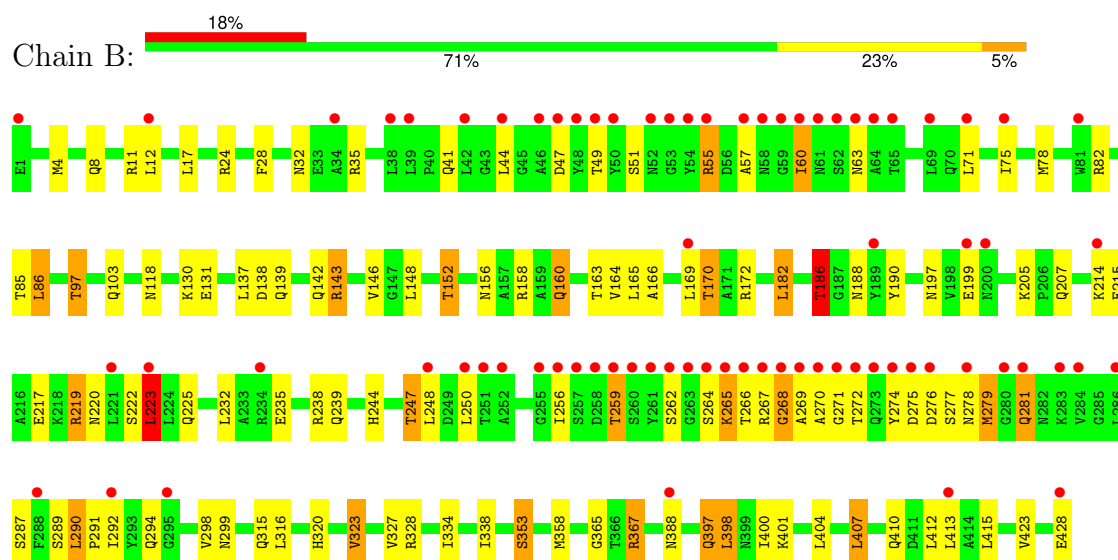
3 Residue-property plots

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 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.

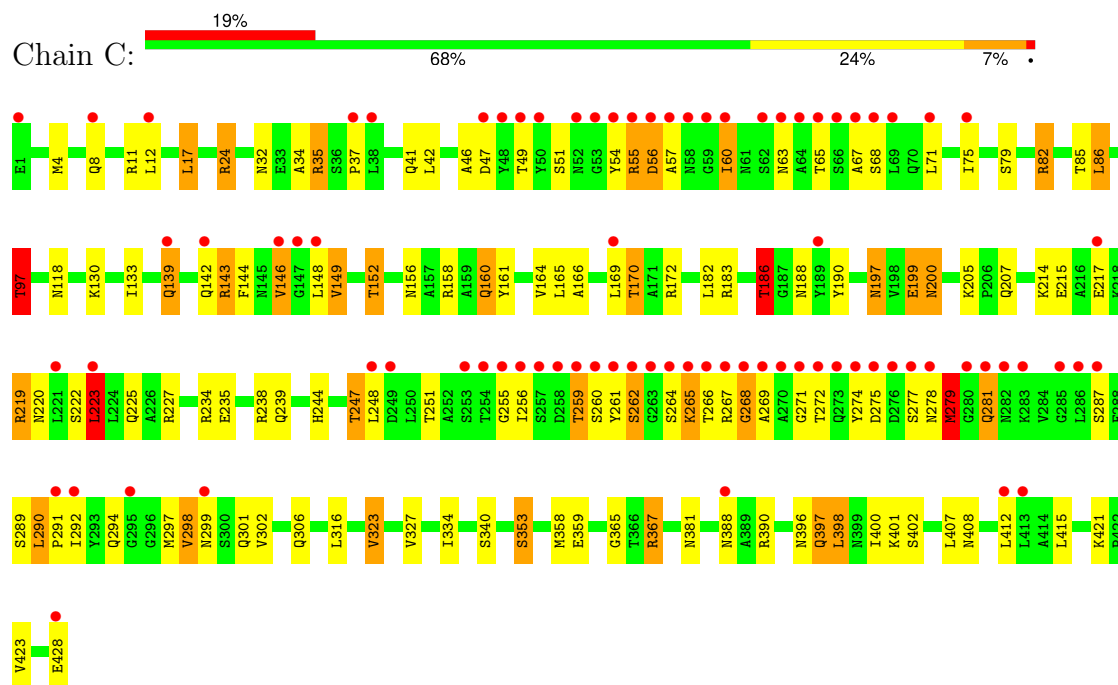
• Molecule 1: OUTER MEMBRANE PROTEIN TOLC



• Molecule 1: OUTER MEMBRANE PROTEIN TOLC



● Molecule 1: OUTER MEMBRANE PROTEIN TOLC



4 Data and refinement statistics

Property	Value	Source
Space group	H 3	Depositor
Cell constants a, b, c, α , β , γ	265.05Å 265.05Å 95.96Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 2.10 20.00 – 2.10	Depositor EDS
% Data completeness (in resolution range)	(Not available) (20.00-2.10) 99.5 (20.00-2.10)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.19 (at 2.10Å)	Xtriage
Refinement program	BUSTER-TNT	Depositor
R, R_{free}	0.208 , 0.257 0.223 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	37.6	Xtriage
Anisotropy	0.024	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 64.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	0.000 for h,-h-k,-l	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	11426	wwPDB-VP
Average B, all atoms (Å ²)	50.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.11% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality

5.1 Standard geometry

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	0.85	1/3342 (0.0%)	1.27	20/4530 (0.4%)
1	B	0.87	1/3342 (0.0%)	1.19	17/4530 (0.4%)
1	C	0.88	0/3342	1.26	28/4530 (0.6%)
All	All	0.86	2/10026 (0.0%)	1.24	65/13590 (0.5%)

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	C	0	5
All	All	0	7

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	353	SER	CB-OG	-5.97	1.34	1.42
1	B	353	SER	CB-OG	-5.54	1.35	1.42

All (65) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	367	ARG	NE-CZ-NH1	-21.04	109.78	120.30
1	A	367	ARG	NE-CZ-NH1	-19.04	110.78	120.30
1	B	143	ARG	NE-CZ-NH1	17.25	128.92	120.30
1	A	367	ARG	NE-CZ-NH2	17.23	128.91	120.30
1	B	367	ARG	NE-CZ-NH1	-14.76	112.92	120.30
1	A	143	ARG	NE-CZ-NH1	14.27	127.43	120.30
1	A	143	ARG	NE-CZ-NH2	-13.28	113.66	120.30
1	C	143	ARG	NE-CZ-NH1	13.03	126.82	120.30
1	C	143	ARG	NE-CZ-NH2	-11.90	114.35	120.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	367	ARG	NE-CZ-NH2	11.49	126.05	120.30
1	B	143	ARG	NE-CZ-NH2	-10.28	115.16	120.30
1	C	183	ARG	NE-CZ-NH1	9.81	125.21	120.30
1	C	390	ARG	NE-CZ-NH1	9.43	125.02	120.30
1	A	158	ARG	NE-CZ-NH1	9.34	124.97	120.30
1	A	158	ARG	NE-CZ-NH2	-8.97	115.81	120.30
1	C	183	ARG	NE-CZ-NH2	-8.57	116.02	120.30
1	A	390	ARG	NE-CZ-NH2	-8.49	116.06	120.30
1	A	279	MSE	CA-CB-CG	7.94	126.79	113.30
1	A	259	THR	N-CA-CB	7.47	124.49	110.30
1	A	390	ARG	NE-CZ-NH1	7.28	123.94	120.30
1	B	259	THR	N-CA-CB	7.11	123.81	110.30
1	C	143	ARG	CD-NE-CZ	7.10	133.53	123.60
1	C	367	ARG	NE-CZ-NH2	7.09	123.84	120.30
1	B	223	LEU	CB-CA-C	6.95	123.40	110.20
1	B	428	GLU	N-CA-CB	6.71	122.68	110.60
1	C	259	THR	N-CA-CB	6.57	122.79	110.30
1	B	328	ARG	NE-CZ-NH2	-6.47	117.06	120.30
1	A	428	GLU	N-CA-CB	6.39	122.10	110.60
1	C	367	ARG	NH1-CZ-NH2	6.33	126.37	119.40
1	A	186	THR	N-CA-CB	-6.33	98.27	110.30
1	C	219	ARG	NE-CZ-NH1	-6.32	117.14	120.30
1	A	356	ASP	CB-CG-OD2	6.10	123.79	118.30
1	C	186	THR	N-CA-CB	-6.06	98.79	110.30
1	B	186	THR	N-CA-CB	-6.05	98.81	110.30
1	B	223	LEU	CA-CB-CG	5.98	129.06	115.30
1	C	24	ARG	NE-CZ-NH1	-5.87	117.36	120.30
1	C	428	GLU	N-CA-CB	5.82	121.08	110.60
1	A	143	ARG	CD-NE-CZ	5.81	131.74	123.60
1	A	223	LEU	CA-CB-CG	5.81	128.67	115.30
1	C	340	SER	N-CA-CB	5.79	119.18	110.50
1	C	223	LEU	CB-CA-C	5.76	121.14	110.20
1	C	35	ARG	NE-CZ-NH2	5.75	123.17	120.30
1	C	367	ARG	CD-NE-CZ	5.75	131.65	123.60
1	A	223	LEU	CB-CA-C	5.72	121.07	110.20
1	B	172	ARG	NE-CZ-NH2	-5.70	117.45	120.30
1	C	298	VAL	CA-C-N	5.61	129.53	117.20
1	C	56	ASP	CB-CG-OD2	-5.58	113.28	118.30
1	A	291	PRO	CA-C-N	5.55	129.41	117.20
1	C	149	VAL	N-CA-CB	-5.47	99.46	111.50
1	C	158	ARG	NE-CZ-NH1	-5.46	117.57	120.30
1	C	35	ARG	NE-CZ-NH1	-5.39	117.61	120.30

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	279	MSE	CA-CB-CG	5.38	122.44	113.30
1	B	164	VAL	CG1-CB-CG2	-5.35	102.34	110.90
1	B	232	LEU	CA-CB-CG	5.34	127.58	115.30
1	C	223	LEU	CA-CB-CG	5.31	127.51	115.30
1	B	219	ARG	NE-CZ-NH1	-5.24	117.68	120.30
1	A	153	ASP	CB-CG-OD1	5.22	123.00	118.30
1	A	115	ASN	N-CA-CB	5.19	119.95	110.60
1	B	78	MSE	CG-SE-CE	-5.17	87.53	98.90
1	C	82	ARG	NE-CZ-NH1	-5.13	117.73	120.30
1	B	138	ASP	CB-CG-OD2	5.12	122.91	118.30
1	B	182	LEU	CA-CB-CG	5.10	127.04	115.30
1	C	17	LEU	CB-CG-CD2	5.08	119.64	111.00
1	C	158	ARG	CG-CD-NE	-5.06	101.17	111.80
1	A	153	ASP	CB-CG-OD2	-5.05	113.76	118.30

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	314	GLU	Mainchain
1	A	317	GLU	Mainchain
1	C	144	PHE	Mainchain
1	C	34	ALA	Mainchain
1	C	353	SER	Mainchain
1	C	402	SER	Mainchain
1	C	97	THR	Mainchain

5.2 Too-close contacts ⓘ

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	3306	0	3256	135	0
1	B	3306	0	3256	131	0
1	C	3306	0	3256	145	0
2	A	442	0	0	40	2
2	B	558	0	0	45	1
2	C	508	0	0	54	1

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	11426	0	9768	377	2

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 19.

All (377) 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:156:ASN:HD21	1:C:367:ARG:NH1	1.34	1.23
1:B:423:VAL:HB	2:B:703:HOH:O	1.40	1.19
1:A:156:ASN:HD21	1:B:367:ARG:NH1	1.42	1.17
1:C:423:VAL:HB	2:C:624:HOH:O	1.42	1.16
1:A:367:ARG:NH1	1:C:156:ASN:HD21	1.46	1.14
1:B:146:VAL:HB	2:B:952:HOH:O	1.47	1.12
1:B:265:LYS:HG2	2:B:971:HOH:O	1.49	1.10
1:A:146:VAL:HB	2:A:750:HOH:O	1.55	1.03
1:C:388:ASN:HB2	2:C:525:HOH:O	1.61	0.99
1:A:426:ASN:HB2	2:A:803:HOH:O	1.65	0.97
1:B:156:ASN:ND2	1:C:367:ARG:NH1	2.11	0.96
1:B:156:ASN:HD21	1:C:367:ARG:HH12	1.05	0.94
1:B:97:THR:HG22	1:B:225:GLN:NE2	1.82	0.93
1:B:118:ASN:HD21	1:B:388:ASN:HD22	1.18	0.91
1:C:79:SER:HA	2:C:933:HOH:O	1.70	0.91
1:B:388:ASN:HB2	2:B:520:HOH:O	1.69	0.90
1:C:57:ALA:HB3	2:C:695:HOH:O	1.70	0.89
1:B:156:ASN:ND2	1:C:367:ARG:HH12	1.70	0.89
1:A:156:ASN:ND2	1:B:367:ARG:NH1	2.22	0.88
1:A:415:LEU:HD21	2:A:609:HOH:O	1.75	0.87
1:C:118:ASN:HD21	1:C:388:ASN:HD22	1.23	0.87
1:A:298:VAL:O	1:A:299:ASN:HB2	1.75	0.86
1:B:85:THR:HG22	2:B:581:HOH:O	1.75	0.86
1:A:118:ASN:HD21	1:A:388:ASN:HD22	1.22	0.85
1:A:156:ASN:HD21	1:B:367:ARG:HH12	1.20	0.84
1:A:227:ARG:HD3	2:A:721:HOH:O	1.75	0.84
1:A:421:LYS:HE3	2:A:787:HOH:O	1.78	0.84
1:A:97:THR:HG22	1:A:225:GLN:NE2	1.94	0.82
1:A:367:ARG:NH1	1:C:156:ASN:ND2	2.27	0.81
1:A:381:ASN:HB3	2:A:500:HOH:O	1.80	0.81
1:C:97:THR:HG22	1:C:225:GLN:NE2	1.96	0.81
1:C:160:GLN:HG3	2:C:875:HOH:O	1.81	0.81
1:A:186:THR:HG22	1:A:188:ASN:H	1.45	0.80

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:160:GLN:HG3	2:B:596:HOH:O	1.83	0.79
1:C:139:GLN:NE2	1:C:143:ARG:NH2	2.33	0.77
1:C:388:ASN:HB2	2:C:504:HOH:O	1.82	0.77
1:B:186:THR:HG22	1:B:188:ASN:H	1.48	0.77
1:B:130:LYS:CE	2:B:937:HOH:O	2.32	0.77
1:C:398:LEU:HD11	1:C:415:LEU:HD11	1.66	0.77
1:A:334:ILE:HD12	1:A:400:ILE:HD12	1.66	0.76
1:A:85:THR:HG22	2:A:736:HOH:O	1.85	0.76
1:B:97:THR:HG22	1:B:225:GLN:HE22	1.49	0.76
1:A:160:GLN:HG3	2:A:784:HOH:O	1.84	0.76
1:B:130:LYS:HE2	2:B:937:HOH:O	1.85	0.75
1:C:186:THR:HG22	1:C:188:ASN:H	1.52	0.75
1:C:139:GLN:NE2	1:C:143:ARG:HH22	1.84	0.74
1:B:367:ARG:NE	2:B:934:HOH:O	2.21	0.74
1:C:139:GLN:HE21	1:C:143:ARG:NH2	1.86	0.74
1:C:267:ARG:NE	2:C:925:HOH:O	2.20	0.74
1:A:127:GLN:NE2	2:A:832:HOH:O	2.21	0.74
1:B:139:GLN:NE2	1:B:143:ARG:NH2	2.35	0.74
1:C:85:THR:HG22	2:C:533:HOH:O	1.87	0.74
1:C:186:THR:HG21	1:C:190:TYR:HE1	1.53	0.73
1:A:139:GLN:NE2	1:A:143:ARG:NH2	2.36	0.73
1:A:165:LEU:O	1:A:169:LEU:HD22	1.89	0.73
1:B:298:VAL:O	1:B:299:ASN:HB2	1.88	0.73
1:A:358:MSE:SE	1:A:367:ARG:HD2	2.39	0.73
1:B:244:HIS:HE1	2:B:621:HOH:O	1.72	0.73
1:C:65:THR:HG21	2:C:921:HOH:O	1.89	0.72
1:B:367:ARG:NH2	2:B:934:HOH:O	2.22	0.72
1:C:133:ILE:HD11	2:C:850:HOH:O	1.89	0.72
1:A:65:THR:HG22	2:A:515:HOH:O	1.89	0.72
1:B:367:ARG:CZ	2:B:934:HOH:O	2.36	0.72
1:A:398:LEU:HD11	1:A:415:LEU:HD11	1.71	0.71
1:C:298:VAL:O	1:C:299:ASN:HB2	1.91	0.71
1:B:118:ASN:HD21	1:B:388:ASN:ND2	1.87	0.71
1:A:4:MSE:HG3	2:A:700:HOH:O	1.89	0.70
1:B:220:ASN:HD21	1:B:222:SER:HB2	1.56	0.70
1:C:220:ASN:HD22	1:C:223:LEU:H	1.40	0.70
1:B:410:GLN:HG2	2:B:627:HOH:O	1.91	0.70
1:C:146:VAL:CG2	2:C:629:HOH:O	2.39	0.70
1:C:146:VAL:HG23	2:C:629:HOH:O	1.92	0.69
1:B:169:LEU:HD13	2:B:648:HOH:O	1.93	0.68
1:C:398:LEU:CD1	1:C:415:LEU:HD11	2.23	0.68

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:219:ARG:HD2	2:A:571:HOH:O	1.94	0.68
1:A:220:ASN:HD22	1:A:223:LEU:H	1.38	0.68
1:B:413:LEU:CD2	2:B:823:HOH:O	2.41	0.68
1:A:220:ASN:HD21	1:A:222:SER:HB2	1.58	0.68
1:C:220:ASN:HD21	1:C:222:SER:HB2	1.59	0.68
1:A:186:THR:HG21	1:A:190:TYR:HE1	1.59	0.67
1:C:269:ALA:HB1	2:C:888:HOH:O	1.95	0.67
1:C:358:MSE:SE	1:C:367:ARG:HH11	2.28	0.67
1:C:265:LYS:HE3	1:C:265:LYS:HA	1.77	0.67
1:B:220:ASN:HD22	1:B:223:LEU:H	1.43	0.67
1:A:170:THR:HG21	2:B:508:HOH:O	1.94	0.66
1:C:32:ASN:HD22	1:C:35:ARG:HH22	1.41	0.66
1:C:397:GLN:HE21	1:C:397:GLN:HA	1.60	0.66
1:A:244:HIS:HE1	2:A:514:HOH:O	1.76	0.66
1:B:244:HIS:HD2	2:B:836:HOH:O	1.79	0.66
1:C:169:LEU:HD13	2:C:728:HOH:O	1.95	0.66
1:B:32:ASN:HD22	1:B:35:ARG:HH22	1.42	0.65
1:A:156:ASN:HD21	1:B:367:ARG:CZ	2.09	0.65
1:A:156:ASN:ND2	1:B:367:ARG:CZ	2.61	0.64
1:A:367:ARG:CZ	1:C:156:ASN:HD21	2.08	0.64
1:B:139:GLN:HE21	1:B:143:ARG:NH2	1.92	0.64
1:C:267:ARG:HG2	2:C:925:HOH:O	1.97	0.64
1:C:381:ASN:HB3	2:C:585:HOH:O	1.97	0.64
1:B:186:THR:CG2	1:B:188:ASN:H	2.11	0.64
1:B:413:LEU:HD22	2:B:823:HOH:O	1.98	0.64
1:C:281:GLN:HA	1:C:281:GLN:HE21	1.62	0.64
1:A:265:LYS:HE3	1:A:265:LYS:HA	1.78	0.64
1:C:271:GLY:O	1:C:272:THR:HB	1.97	0.63
1:A:41:GLN:HE22	1:B:294:GLN:HB3	1.63	0.63
1:A:398:LEU:CD1	1:A:415:LEU:HD11	2.28	0.63
1:A:367:ARG:NH1	1:C:152:THR:OG1	2.32	0.63
1:B:398:LEU:CD1	1:B:415:LEU:HD11	2.29	0.63
1:C:267:ARG:CG	2:C:925:HOH:O	2.47	0.63
1:A:156:ASN:ND2	1:B:367:ARG:HH12	1.91	0.62
1:A:192:GLU:HB2	2:A:868:HOH:O	1.99	0.62
1:C:182:LEU:O	1:C:186:THR:HB	1.99	0.62
1:A:367:ARG:HH12	1:C:156:ASN:HD21	1.39	0.62
1:B:165:LEU:O	1:B:169:LEU:HD22	1.98	0.62
1:A:186:THR:CG2	1:A:188:ASN:H	2.11	0.62
1:A:244:HIS:HD2	2:A:845:HOH:O	1.83	0.61
1:C:172:ARG:HB2	2:C:720:HOH:O	2.01	0.61

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:281:GLN:HE21	1:A:281:GLN:HA	1.66	0.61
1:B:186:THR:HG21	1:B:190:TYR:HE1	1.64	0.60
1:B:268:GLY:O	1:B:269:ALA:HB3	2.01	0.60
1:B:281:GLN:HA	1:B:281:GLN:HE21	1.65	0.60
1:C:398:LEU:HD11	1:C:415:LEU:CD1	2.32	0.60
1:C:247:THR:HG23	1:C:289:SER:HB3	1.82	0.59
1:A:97:THR:HG22	1:A:225:GLN:HE22	1.64	0.59
1:A:367:ARG:CZ	1:C:156:ASN:ND2	2.64	0.59
1:A:397:GLN:HA	1:A:397:GLN:HE21	1.67	0.59
1:B:205:LYS:HD2	2:B:655:HOH:O	2.02	0.59
1:C:165:LEU:O	1:C:169:LEU:HD22	2.03	0.59
1:C:186:THR:HG21	1:C:190:TYR:CE1	2.37	0.59
1:A:290:LEU:HD13	1:A:292:ILE:HG13	1.85	0.58
1:A:118:ASN:HD21	1:A:388:ASN:ND2	1.96	0.58
1:A:32:ASN:HD22	1:A:35:ARG:HH22	1.51	0.58
1:B:130:LYS:NZ	2:B:937:HOH:O	2.20	0.58
1:B:57:ALA:O	1:B:60:ILE:HG22	2.04	0.58
1:B:290:LEU:HD13	1:B:292:ILE:HG13	1.85	0.58
1:A:118:ASN:ND2	1:A:388:ASN:HD22	1.99	0.58
1:A:79:SER:HA	2:A:811:HOH:O	2.04	0.57
1:C:207:GLN:NE2	2:C:927:HOH:O	2.37	0.57
1:B:410:GLN:NE2	2:B:728:HOH:O	2.36	0.57
1:B:320:HIS:HB2	2:B:681:HOH:O	2.04	0.57
1:A:4:MSE:O	1:A:8:GLN:HG2	2.05	0.57
1:B:247:THR:CG2	1:B:289:SER:HB3	2.35	0.57
1:B:244:HIS:O	2:B:966:HOH:O	2.17	0.56
1:C:290:LEU:HD13	1:C:292:ILE:HG13	1.87	0.56
1:A:265:LYS:HG3	2:A:775:HOH:O	2.05	0.56
1:A:268:GLY:O	1:A:269:ALA:HB3	2.06	0.56
1:B:397:GLN:HE21	1:B:397:GLN:HA	1.69	0.56
1:C:160:GLN:NE2	2:C:509:HOH:O	2.39	0.56
1:C:4:MSE:O	1:C:8:GLN:HG2	2.06	0.56
1:A:342:ASN:ND2	2:A:747:HOH:O	2.38	0.55
1:B:156:ASN:ND2	1:C:367:ARG:CZ	2.69	0.55
1:B:334:ILE:HD12	1:B:400:ILE:HD12	1.87	0.55
1:B:4:MSE:O	1:B:8:GLN:HG2	2.07	0.55
1:C:219:ARG:HD2	2:C:913:HOH:O	2.07	0.55
1:B:41:GLN:HE22	1:C:294:GLN:HB3	1.71	0.55
1:A:146:VAL:O	1:A:146:VAL:HG22	2.07	0.55
1:A:120:ILE:HG21	1:A:423:VAL:HG11	1.89	0.55
1:B:265:LYS:HE3	1:B:265:LYS:HA	1.88	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:215:GLU:OE1	1:C:219:ARG:NH1	2.40	0.55
1:A:294:GLN:HB3	1:C:41:GLN:HE22	1.71	0.55
1:B:398:LEU:HD13	1:B:415:LEU:HD11	1.88	0.55
1:A:60:ILE:HD12	1:A:274:TYR:CE1	2.42	0.54
1:A:186:THR:HG21	1:A:190:TYR:CE1	2.40	0.54
1:B:170:THR:HG21	2:C:546:HOH:O	2.05	0.54
1:B:247:THR:HG23	1:B:289:SER:HB3	1.88	0.54
1:A:170:THR:CG2	2:B:508:HOH:O	2.55	0.54
1:C:8:GLN:NE2	2:C:908:HOH:O	2.38	0.54
1:C:170:THR:HG21	2:C:466:HOH:O	2.08	0.54
1:C:408:ASN:HB2	2:C:707:HOH:O	2.07	0.54
1:B:265:LYS:HD2	2:B:935:HOH:O	2.07	0.53
1:A:410:GLN:HG2	2:A:847:HOH:O	2.08	0.53
1:B:182:LEU:O	1:B:186:THR:HB	2.09	0.53
1:B:290:LEU:HD22	1:B:291:PRO:HD2	1.90	0.53
1:B:215:GLU:OE1	1:B:219:ARG:NH1	2.42	0.53
1:B:131:GLU:HB3	2:B:571:HOH:O	2.09	0.53
1:A:398:LEU:HD11	1:A:415:LEU:CD1	2.39	0.53
1:C:274:TYR:CD2	2:C:896:HOH:O	2.62	0.52
1:A:422:PRO:HB3	2:A:868:HOH:O	2.09	0.52
1:B:57:ALA:HB2	1:C:279:MSE:HE3	1.91	0.52
1:A:197:ASN:ND2	1:A:200:ASN:H	2.07	0.52
1:C:323:VAL:O	1:C:327:VAL:HG13	2.09	0.52
1:A:290:LEU:HD22	1:A:291:PRO:HD2	1.91	0.51
1:B:44:LEU:HB2	1:C:292:ILE:HD11	1.91	0.51
1:A:279:MSE:CE	2:A:661:HOH:O	2.58	0.51
1:A:247:THR:HG23	1:A:289:SER:HB3	1.92	0.51
1:C:65:THR:HG22	2:C:777:HOH:O	2.10	0.51
1:C:197:ASN:C	1:C:197:ASN:HD22	2.14	0.51
1:A:182:LEU:O	1:A:186:THR:HB	2.10	0.51
1:C:244:HIS:HE1	2:C:899:HOH:O	1.93	0.51
1:B:267:ARG:NH2	1:B:275:ASP:HA	2.26	0.51
1:A:334:ILE:HG13	1:A:396:ASN:HB3	1.93	0.51
1:C:234:ARG:NH1	2:C:667:HOH:O	2.32	0.51
1:C:388:ASN:CB	2:C:504:HOH:O	2.50	0.51
1:A:166:ALA:HA	1:A:169:LEU:HD23	1.93	0.50
1:B:207:GLN:HG3	2:B:845:HOH:O	2.11	0.50
1:A:182:LEU:C	1:A:182:LEU:HD13	2.32	0.50
1:C:264:SER:OG	1:C:265:LYS:N	2.42	0.50
1:B:398:LEU:HD11	1:B:415:LEU:HD11	1.93	0.50
1:A:205:LYS:HD3	1:A:338:ILE:HD13	1.92	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:139:GLN:NE2	1:B:143:ARG:HH22	2.08	0.50
1:C:49:THR:O	1:C:63:ASN:HA	2.11	0.50
1:B:166:ALA:HA	1:B:169:LEU:HD23	1.94	0.50
1:C:118:ASN:HD21	1:C:388:ASN:ND2	2.00	0.50
1:C:260:SER:HB3	2:C:916:HOH:O	2.12	0.50
1:A:57:ALA:O	1:A:60:ILE:HG22	2.12	0.50
1:B:423:VAL:HG13	2:B:680:HOH:O	2.12	0.50
1:C:234:ARG:NH2	2:C:825:HOH:O	2.43	0.50
1:A:86:LEU:HD13	1:A:235:GLU:HG3	1.94	0.50
1:A:182:LEU:O	1:A:182:LEU:HD13	2.12	0.50
1:B:28:PHE:HD2	2:B:852:HOH:O	1.94	0.50
1:A:139:GLN:NE2	1:A:143:ARG:HH22	2.09	0.49
1:C:186:THR:CG2	1:C:188:ASN:H	2.21	0.49
1:A:49:THR:O	1:A:63:ASN:HA	2.12	0.49
1:A:138:ASP:OD2	2:A:818:HOH:O	2.20	0.49
1:B:276:ASP:HB3	2:B:956:HOH:O	2.12	0.49
1:C:397:GLN:HE21	1:C:397:GLN:CA	2.24	0.49
1:B:223:LEU:CD1	2:B:663:HOH:O	2.59	0.49
1:A:400:ILE:HG22	2:A:602:HOH:O	2.11	0.49
1:A:247:THR:CG2	1:A:289:SER:HB3	2.42	0.49
1:A:4:MSE:CG	2:A:700:HOH:O	2.55	0.49
1:B:186:THR:HG21	1:B:190:TYR:CE1	2.47	0.48
1:B:358:MSE:SE	1:B:367:ARG:HH11	2.46	0.48
1:A:241:GLN:HG2	2:A:776:HOH:O	2.13	0.48
1:A:82:ARG:HG2	1:A:239:GLN:HB2	1.95	0.48
1:B:82:ARG:HG2	1:B:239:GLN:HB2	1.95	0.48
1:A:223:LEU:HD11	2:A:801:HOH:O	2.14	0.48
2:A:474:HOH:O	1:C:152:THR:HB	2.13	0.48
1:B:55:ARG:O	1:C:278:ASN:O	2.32	0.48
1:B:165:LEU:HD12	2:B:633:HOH:O	2.13	0.48
1:C:37:PRO:HG2	2:C:688:HOH:O	2.12	0.48
1:A:152:THR:HG21	2:B:432:HOH:O	2.13	0.48
1:B:223:LEU:HD12	2:B:663:HOH:O	2.14	0.48
1:A:334:ILE:HD12	1:A:400:ILE:CD1	2.41	0.48
1:A:99:GLN:NE2	2:A:668:HOH:O	2.46	0.48
1:B:388:ASN:HB2	2:B:597:HOH:O	2.12	0.48
1:C:269:ALA:CB	2:C:888:HOH:O	2.58	0.48
1:C:60:ILE:HD12	1:C:274:TYR:CE1	2.48	0.47
1:C:275:ASP:N	2:C:797:HOH:O	2.47	0.47
1:A:223:LEU:CD1	2:A:801:HOH:O	2.61	0.47
1:B:271:GLY:O	1:B:272:THR:HB	2.13	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:247:THR:CG2	1:C:289:SER:HB3	2.43	0.47
1:A:140:THR:HG22	1:A:154:VAL:HG22	1.96	0.47
1:A:323:VAL:O	1:A:327:VAL:HG13	2.15	0.47
1:C:75:ILE:HG21	1:C:248:LEU:HD12	1.97	0.47
1:B:152:THR:HG21	2:C:431:HOH:O	2.14	0.47
1:A:19:LYS:HE3	1:B:315:GLN:NE2	2.29	0.47
1:A:267:ARG:NH2	1:A:275:ASP:HA	2.29	0.47
1:C:79:SER:CB	2:C:933:HOH:O	2.62	0.47
1:B:250:LEU:HD23	1:B:250:LEU:C	2.35	0.47
1:C:323:VAL:HG12	2:C:807:HOH:O	2.15	0.47
1:A:197:ASN:ND2	1:A:199:GLU:HG2	2.31	0.46
1:A:264:SER:OG	1:A:265:LYS:N	2.49	0.46
1:C:161:TYR:O	1:C:164:VAL:HG12	2.15	0.46
1:C:267:ARG:HB3	1:C:268:GLY:H	1.61	0.46
1:C:8:GLN:OE1	1:C:11:ARG:NH2	2.49	0.46
1:C:397:GLN:HA	1:C:397:GLN:NE2	2.30	0.46
1:C:97:THR:HG22	1:C:225:GLN:HE22	1.75	0.46
1:C:261:TYR:O	1:C:262:SER:HB3	2.15	0.46
1:C:334:ILE:HG13	1:C:396:ASN:HB3	1.97	0.46
1:B:235:GLU:OE2	1:B:238:ARG:NH1	2.49	0.46
1:B:49:THR:O	1:B:63:ASN:HA	2.15	0.45
1:A:267:ARG:HB3	1:A:268:GLY:H	1.68	0.45
1:B:146:VAL:HG22	1:B:146:VAL:O	2.16	0.45
1:B:265:LYS:O	1:B:265:LYS:HG3	2.17	0.45
1:A:381:ASN:ND2	2:A:722:HOH:O	2.44	0.45
1:C:199:GLU:H	1:C:199:GLU:HG2	1.50	0.45
1:C:334:ILE:HD12	1:C:400:ILE:HD12	1.97	0.45
1:A:279:MSE:HE2	2:A:661:HOH:O	2.16	0.45
1:B:265:LYS:CD	2:B:935:HOH:O	2.64	0.45
1:A:94:GLN:NE2	2:A:731:HOH:O	2.50	0.45
1:A:139:GLN:HE21	1:A:143:ARG:NH2	2.13	0.45
1:C:301:GLN:NE2	2:C:730:HOH:O	2.49	0.45
1:A:152:THR:OG1	1:B:367:ARG:NH1	2.50	0.45
1:C:160:GLN:HE21	1:C:160:GLN:HB2	1.35	0.45
1:C:223:LEU:HD13	1:C:227:ARG:NH1	2.32	0.45
1:C:265:LYS:O	1:C:265:LYS:HG3	2.16	0.45
1:C:146:VAL:HG13	1:C:148:LEU:HG	1.99	0.45
1:C:199:GLU:CD	2:C:574:HOH:O	2.56	0.44
1:A:102:GLN:HG2	2:A:598:HOH:O	2.17	0.44
1:C:223:LEU:CD1	1:C:227:ARG:NH1	2.80	0.44
1:A:55:ARG:O	1:B:278:ASN:O	2.35	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:182:LEU:O	1:C:182:LEU:HD13	2.17	0.44
1:C:223:LEU:CD1	2:C:873:HOH:O	2.66	0.44
1:A:278:ASN:HB3	1:C:55:ARG:CZ	2.48	0.44
1:A:339:SER:HB3	1:C:169:LEU:CD1	2.47	0.44
1:B:267:ARG:HB3	1:B:268:GLY:H	1.72	0.44
1:C:46:ALA:HA	1:C:67:ALA:HA	2.00	0.44
1:A:265:LYS:HG3	1:A:265:LYS:O	2.18	0.44
1:B:205:LYS:HD3	1:B:338:ILE:HD13	1.99	0.44
1:C:166:ALA:HA	1:C:169:LEU:HD23	1.99	0.44
1:A:24:ARG:HA	1:A:94:GLN:HG3	1.99	0.43
1:B:143:ARG:HA	1:B:146:VAL:HG12	1.99	0.43
1:C:268:GLY:O	1:C:269:ALA:HB3	2.18	0.43
1:C:359:GLU:OE2	2:C:706:HOH:O	2.21	0.43
1:C:290:LEU:HD22	1:C:291:PRO:HD2	2.01	0.43
1:B:11:ARG:NE	2:B:692:HOH:O	2.52	0.43
1:C:358:MSE:SE	1:C:367:ARG:HD2	2.68	0.43
1:B:24:ARG:HE	1:B:24:ARG:HB3	1.58	0.43
1:B:146:VAL:HG13	1:B:148:LEU:HG	1.99	0.43
1:C:291:PRO:O	1:C:292:ILE:HB	2.18	0.43
1:B:103:GLN:HG3	1:B:407:LEU:HB3	2.00	0.43
1:B:214:LYS:HB3	1:B:214:LYS:HE3	1.84	0.43
1:C:75:ILE:HB	1:C:248:LEU:O	2.18	0.43
1:B:264:SER:OG	1:B:265:LYS:N	2.52	0.43
1:A:8:GLN:OE1	1:A:11:ARG:NH2	2.52	0.43
1:A:319:ALA:O	1:A:323:VAL:HG13	2.19	0.43
1:A:421:LYS:HA	1:A:422:PRO:HD3	1.93	0.43
1:C:235:GLU:OE2	1:C:238:ARG:NH1	2.52	0.43
1:A:75:ILE:HB	1:A:248:LEU:O	2.19	0.43
1:B:358:MSE:SE	1:B:367:ARG:HD2	2.69	0.43
1:C:24:ARG:NH1	2:C:764:HOH:O	2.52	0.42
1:C:197:ASN:ND2	1:C:200:ASN:H	2.17	0.42
1:A:358:MSE:SE	1:A:371:ASP:HB3	2.70	0.42
1:B:323:VAL:O	1:B:327:VAL:HG13	2.18	0.42
1:A:152:THR:CG2	2:B:432:HOH:O	2.67	0.42
1:A:47:ASP:HB3	1:B:287:SER:HA	2.00	0.42
1:C:55:ARG:O	1:C:56:ASP:HB3	2.20	0.42
1:A:330:SER:HB2	1:A:400:ILE:HG13	2.01	0.42
1:A:421:LYS:HG3	2:A:787:HOH:O	2.20	0.42
1:B:137:LEU:HD21	1:B:158:ARG:CZ	2.49	0.42
1:B:223:LEU:HD12	1:B:223:LEU:C	2.40	0.42
1:B:289:SER:HB2	2:B:775:HOH:O	2.20	0.42

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:365:GLY:HA2	2:C:543:HOH:O	2.18	0.42
1:B:160:GLN:HE21	1:B:160:GLN:HB2	1.42	0.42
1:B:320:HIS:CG	2:B:681:HOH:O	2.73	0.42
1:C:205:LYS:HD2	2:C:673:HOH:O	2.20	0.42
1:A:42:LEU:HD12	1:A:70:GLN:O	2.19	0.42
1:A:46:ALA:HA	1:A:67:ALA:HA	2.01	0.42
1:B:86:LEU:HD13	1:B:235:GLU:CG	2.50	0.42
1:B:152:THR:CG2	2:C:431:HOH:O	2.67	0.42
1:B:270:ALA:HB1	1:B:274:TYR:CD2	2.55	0.42
1:C:54:TYR:O	2:C:695:HOH:O	2.22	0.42
1:C:86:LEU:HD13	1:C:235:GLU:CG	2.50	0.42
1:B:170:THR:CG2	2:C:546:HOH:O	2.66	0.41
1:B:207:GLN:NE2	2:B:815:HOH:O	2.51	0.41
1:C:86:LEU:HD13	1:C:235:GLU:HG3	2.02	0.41
1:A:8:GLN:HG3	2:A:778:HOH:O	2.19	0.41
1:B:75:ILE:HG21	1:B:248:LEU:HD12	2.02	0.41
1:C:68:SER:HB3	1:C:255:GLY:HA3	2.02	0.41
1:C:130:LYS:NZ	2:C:755:HOH:O	2.53	0.41
1:A:80:LYS:HE2	2:A:570:HOH:O	2.20	0.41
1:A:166:ALA:HA	1:A:169:LEU:CD2	2.49	0.41
1:A:271:GLY:O	1:A:272:THR:HB	2.19	0.41
1:A:367:ARG:HH12	1:C:156:ASN:ND2	2.05	0.41
1:B:4:MSE:SE	2:B:704:HOH:O	2.88	0.41
1:B:47:ASP:HB3	1:C:287:SER:HA	2.02	0.41
1:B:365:GLY:HA2	2:B:647:HOH:O	2.20	0.41
1:C:79:SER:CA	2:C:933:HOH:O	2.47	0.41
1:A:42:LEU:O	1:B:291:PRO:O	2.38	0.41
1:B:270:ALA:HB1	1:B:274:TYR:HD2	1.86	0.41
1:C:79:SER:HB2	2:C:933:HOH:O	2.21	0.41
1:C:223:LEU:HD11	2:C:873:HOH:O	2.20	0.41
1:C:274:TYR:CE2	2:C:896:HOH:O	2.57	0.41
1:C:82:ARG:HG2	1:C:239:GLN:HA	2.02	0.41
1:B:8:GLN:OE1	1:B:11:ARG:NH2	2.54	0.41
1:C:302:VAL:O	1:C:306:GLN:HG3	2.21	0.41
1:C:421:LYS:NZ	2:C:663:HOH:O	2.53	0.41
1:A:68:SER:HB3	1:A:255:GLY:HA3	2.02	0.41
1:A:219:ARG:CD	2:A:571:HOH:O	2.60	0.41
1:B:60:ILE:HD12	1:B:274:TYR:CE1	2.56	0.41
1:C:214:LYS:HB3	1:C:214:LYS:HE3	1.88	0.41
1:A:11:ARG:NH1	1:A:409:GLU:OE2	2.54	0.41
1:A:24:ARG:HE	1:A:24:ARG:HB3	1.61	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:250:LEU:C	1:A:250:LEU:HD23	2.41	0.41
1:A:291:PRO:O	1:C:42:LEU:O	2.39	0.41
1:A:294:GLN:HB3	1:C:41:GLN:NE2	2.36	0.41
2:A:547:HOH:O	1:C:170:THR:HG22	2.20	0.41
1:A:160:GLN:NE2	2:A:525:HOH:O	2.53	0.40
1:B:219:ARG:HB2	1:B:404:LEU:O	2.22	0.40
1:A:359:GLU:HB3	2:A:622:HOH:O	2.22	0.40
1:B:398:LEU:HD11	1:B:415:LEU:CD1	2.51	0.40
1:C:358:MSE:SE	1:C:367:ARG:NH1	2.99	0.40
1:B:75:ILE:HB	1:B:248:LEU:O	2.20	0.40
1:B:163:THR:HG23	2:B:803:HOH:O	2.20	0.40
1:C:32:ASN:ND2	1:C:35:ARG:HH22	2.15	0.40
1:C:223:LEU:C	1:C:223:LEU:HD12	2.41	0.40
1:A:84:LEU:O	1:A:88:GLU:HG3	2.22	0.40
1:B:388:ASN:CB	2:B:597:HOH:O	2.69	0.40
1:C:297:MSE:C	1:C:298:VAL:O	2.55	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:A:773:HOH:O	2:C:709:HOH:O[9_554]	2.11	0.09
2:A:683:HOH:O	2:B:797:HOH:O[9_554]	2.15	0.05

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	426/428 (100%)	403 (95%)	19 (4%)	4 (1%)	14	11
1	B	426/428 (100%)	403 (95%)	19 (4%)	4 (1%)	14	11
1	C	426/428 (100%)	397 (93%)	25 (6%)	4 (1%)	14	11

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
All	All	1278/1284 (100%)	1203 (94%)	63 (5%)	12 (1%)	14	11

All (12) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	259	THR
1	B	279	MSE
1	A	259	THR
1	C	259	THR
1	C	279	MSE
1	A	55	ARG
1	A	279	MSE
1	B	55	ARG
1	C	268	GLY
1	C	55	ARG
1	B	268	GLY
1	A	268	GLY

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	358/353 (101%)	316 (88%)	42 (12%)	4	2
1	B	358/353 (101%)	325 (91%)	33 (9%)	7	5
1	C	358/353 (101%)	319 (89%)	39 (11%)	5	3
All	All	1074/1059 (101%)	960 (89%)	114 (11%)	5	3

All (114) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	12	LEU
1	A	17	LEU
1	A	47	ASP
1	A	51	SER

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	60	ILE
1	A	65	THR
1	A	71	LEU
1	A	79	SER
1	A	86	LEU
1	A	97	THR
1	A	139	GLN
1	A	142	GLN
1	A	152	THR
1	A	160	GLN
1	A	169	LEU
1	A	170	THR
1	A	186	THR
1	A	197	ASN
1	A	199	GLU
1	A	200	ASN
1	A	217	GLU
1	A	223	LEU
1	A	247	THR
1	A	256	ILE
1	A	259	THR
1	A	262	SER
1	A	265	LYS
1	A	266	THR
1	A	277	SER
1	A	279	MSE
1	A	281	GLN
1	A	290	LEU
1	A	310	VAL
1	A	316	LEU
1	A	323	VAL
1	A	327	VAL
1	A	397	GLN
1	A	398	LEU
1	A	400	ILE
1	A	401	LYS
1	A	407	LEU
1	A	412	LEU
1	B	12	LEU
1	B	17	LEU
1	B	51	SER
1	B	60	ILE

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	71	LEU
1	B	86	LEU
1	B	97	THR
1	B	142	GLN
1	B	152	THR
1	B	160	GLN
1	B	170	THR
1	B	186	THR
1	B	197	ASN
1	B	199	GLU
1	B	217	GLU
1	B	223	LEU
1	B	247	THR
1	B	256	ILE
1	B	262	SER
1	B	265	LYS
1	B	266	THR
1	B	277	SER
1	B	279	MSE
1	B	281	GLN
1	B	290	LEU
1	B	316	LEU
1	B	323	VAL
1	B	353	SER
1	B	397	GLN
1	B	398	LEU
1	B	401	LYS
1	B	407	LEU
1	B	412	LEU
1	C	12	LEU
1	C	17	LEU
1	C	47	ASP
1	C	51	SER
1	C	60	ILE
1	C	71	LEU
1	C	86	LEU
1	C	97	THR
1	C	139	GLN
1	C	142	GLN
1	C	146	VAL
1	C	149	VAL
1	C	152	THR

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	160	GLN
1	C	170	THR
1	C	186	THR
1	C	197	ASN
1	C	199	GLU
1	C	200	ASN
1	C	217	GLU
1	C	223	LEU
1	C	247	THR
1	C	251	THR
1	C	256	ILE
1	C	262	SER
1	C	265	LYS
1	C	266	THR
1	C	277	SER
1	C	279	MSE
1	C	281	GLN
1	C	290	LEU
1	C	316	LEU
1	C	323	VAL
1	C	353	SER
1	C	397	GLN
1	C	398	LEU
1	C	401	LYS
1	C	407	LEU
1	C	412	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (87) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	32	ASN
1	A	41	GLN
1	A	61	ASN
1	A	103	GLN
1	A	108	ASN
1	A	115	ASN
1	A	127	GLN
1	A	139	GLN
1	A	142	GLN
1	A	155	GLN
1	A	156	ASN
1	A	160	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	174	ASN
1	A	197	ASN
1	A	207	GLN
1	A	210	ASN
1	A	220	ASN
1	A	225	GLN
1	A	281	GLN
1	A	301	GLN
1	A	315	GLN
1	A	320	HIS
1	A	332	ASN
1	A	342	ASN
1	A	346	GLN
1	A	381	ASN
1	A	388	ASN
1	A	392	ASN
1	A	397	GLN
1	A	399	ASN
1	A	417	ASN
1	B	32	ASN
1	B	41	GLN
1	B	61	ASN
1	B	103	GLN
1	B	108	ASN
1	B	127	GLN
1	B	139	GLN
1	B	142	GLN
1	B	155	GLN
1	B	156	ASN
1	B	160	GLN
1	B	174	ASN
1	B	197	ASN
1	B	207	GLN
1	B	210	ASN
1	B	220	ASN
1	B	225	GLN
1	B	281	GLN
1	B	301	GLN
1	B	342	ASN
1	B	346	GLN
1	B	381	ASN
1	B	388	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	392	ASN
1	B	397	GLN
1	B	399	ASN
1	B	417	ASN
1	C	32	ASN
1	C	41	GLN
1	C	61	ASN
1	C	103	GLN
1	C	108	ASN
1	C	115	ASN
1	C	127	GLN
1	C	139	GLN
1	C	142	GLN
1	C	155	GLN
1	C	156	ASN
1	C	160	GLN
1	C	174	ASN
1	C	197	ASN
1	C	207	GLN
1	C	210	ASN
1	C	220	ASN
1	C	225	GLN
1	C	281	GLN
1	C	301	GLN
1	C	320	HIS
1	C	332	ASN
1	C	342	ASN
1	C	381	ASN
1	C	388	ASN
1	C	392	ASN
1	C	397	GLN
1	C	399	ASN
1	C	417	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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

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	423/428 (98%)	0.82	72 (17%) 5 5	25, 48, 81, 84	0
1	B	423/428 (98%)	0.94	75 (17%) 4 5	24, 47, 81, 84	0
1	C	423/428 (98%)	0.92	81 (19%) 4 4	24, 47, 81, 84	0
All	All	1269/1284 (98%)	0.89	228 (17%) 4 5	24, 47, 81, 84	0

All (228) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	274	TYR	8.6
1	B	264	SER	8.4
1	B	268	GLY	8.0
1	B	270	ALA	7.9
1	C	270	ALA	7.8
1	B	59	GLY	7.7
1	C	269	ALA	7.1
1	B	263	GLY	7.1
1	B	269	ALA	7.0
1	B	267	ARG	6.8
1	B	60	ILE	6.5
1	B	54	TYR	6.4
1	C	268	GLY	6.1
1	A	264	SER	5.9
1	B	274	TYR	5.9
1	C	271	GLY	5.8
1	C	266	THR	5.7
1	B	53	GLY	5.6
1	B	275	ASP	5.6
1	C	273	GLN	5.5
1	C	63	ASN	5.5
1	B	50	TYR	5.4
1	B	48	TYR	5.3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	B	272	THR	5.3
1	C	262	SER	5.2
1	C	280	GLY	5.2
1	B	271	GLY	5.1
1	A	263	GLY	5.0
1	C	48	TYR	4.9
1	C	261	TYR	4.9
1	A	63	ASN	4.9
1	C	260	SER	4.8
1	B	273	GLN	4.7
1	B	266	THR	4.7
1	B	57	ALA	4.6
1	B	284	VAL	4.6
1	C	59	GLY	4.5
1	A	267	ARG	4.5
1	C	65	THR	4.5
1	C	267	ARG	4.5
1	C	256	ILE	4.4
1	B	63	ASN	4.4
1	C	263	GLY	4.4
1	C	428	GLU	4.4
1	B	1	GLU	4.3
1	C	169	LEU	4.2
1	C	54	TYR	4.2
1	C	281	GLN	4.2
1	B	61	ASN	4.2
1	B	189	TYR	4.1
1	B	256	ILE	4.0
1	C	60	ILE	4.0
1	B	262	SER	4.0
1	A	65	THR	4.0
1	C	272	THR	4.0
1	A	60	ILE	3.9
1	C	259	THR	3.9
1	A	69	LEU	3.9
1	B	58	ASN	3.9
1	C	257	SER	3.9
1	C	67	ALA	3.8
1	B	280	GLY	3.8
1	C	255	GLY	3.8
1	B	169	LEU	3.8
1	A	256	ILE	3.8

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	66	SER	3.8
1	B	12	LEU	3.8
1	C	142	GLN	3.7
1	C	1	GLU	3.7
1	C	275	ASP	3.7
1	B	46	ALA	3.7
1	A	271	GLY	3.6
1	B	65	THR	3.6
1	C	49	THR	3.6
1	A	46	ALA	3.6
1	A	48	TYR	3.6
1	C	57	ALA	3.6
1	C	64	ALA	3.5
1	C	278	ASN	3.5
1	A	52	ASN	3.5
1	A	284	VAL	3.5
1	A	278	ASN	3.5
1	A	55	ARG	3.4
1	C	55	ARG	3.4
1	A	62	SER	3.4
1	A	250	LEU	3.4
1	C	50	TYR	3.4
1	B	259	THR	3.3
1	C	69	LEU	3.3
1	B	265	LYS	3.3
1	A	280	GLY	3.3
1	A	200	ASN	3.3
1	A	169	LEU	3.3
1	A	262	SER	3.3
1	A	64	ALA	3.3
1	B	52	ASN	3.3
1	A	259	THR	3.3
1	C	283	LYS	3.3
1	A	254	THR	3.3
1	B	69	LEU	3.3
1	B	257	SER	3.3
1	A	67	ALA	3.2
1	B	255	GLY	3.2
1	C	56	ASP	3.2
1	C	139	GLN	3.2
1	C	265	LYS	3.2
1	A	223	LEU	3.1

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	57	ALA	3.1
1	C	286	LEU	3.1
1	A	50	TYR	3.1
1	B	64	ALA	3.1
1	A	292	ILE	3.1
1	C	264	SER	3.1
1	A	202	LYS	3.1
1	C	146	VAL	3.1
1	B	278	ASN	3.0
1	B	286	LEU	3.0
1	B	258	ASP	3.0
1	C	75	ILE	3.0
1	B	250	LEU	3.0
1	A	266	THR	3.0
1	A	49	THR	2.9
1	C	53	GLY	2.9
1	B	42	LEU	2.9
1	B	71	LEU	2.9
1	C	68	SER	2.9
1	A	281	GLN	2.9
1	A	59	GLY	2.9
1	A	252	ALA	2.9
1	C	282	ASN	2.9
1	C	254	THR	2.9
1	A	248	LEU	2.8
1	C	58	ASN	2.8
1	B	261	TYR	2.8
1	C	189	TYR	2.8
1	C	276	ASP	2.8
1	C	52	ASN	2.8
1	A	286	LEU	2.8
1	B	81	TRP	2.8
1	A	277	SER	2.8
1	B	252	ALA	2.7
1	A	428	GLU	2.7
1	A	257	SER	2.7
1	B	281	GLN	2.7
1	A	261	TYR	2.7
1	B	248	LEU	2.7
1	A	285	GLY	2.7
1	B	75	ILE	2.7
1	B	428	GLU	2.7

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	A	420	SER	2.7
1	B	223	LEU	2.7
1	C	253	SER	2.7
1	B	49	THR	2.7
1	B	413	LEU	2.6
1	C	148	LEU	2.6
1	C	47	ASP	2.6
1	C	62	SER	2.6
1	C	287	SER	2.6
1	C	223	LEU	2.6
1	A	54	TYR	2.6
1	B	260	SER	2.6
1	C	295	GLY	2.6
1	A	237	ILE	2.6
1	C	299	ASN	2.6
1	C	38	LEU	2.6
1	C	71	LEU	2.6
1	A	258	ASP	2.5
1	A	255	GLY	2.5
1	C	292	ILE	2.5
1	A	247	THR	2.5
1	A	298	VAL	2.5
1	A	245	LEU	2.5
1	C	412	LEU	2.5
1	C	8	GLN	2.5
1	A	32	ASN	2.5
1	A	282	ASN	2.5
1	B	44	LEU	2.4
1	A	269	ALA	2.4
1	B	62	SER	2.4
1	B	295	GLY	2.4
1	B	276	ASP	2.4
1	B	38	LEU	2.4
1	B	39	LEU	2.4
1	C	248	LEU	2.4
1	B	199	GLU	2.4
1	A	291	PRO	2.4
1	B	47	ASP	2.4
1	A	71	LEU	2.3
1	B	34	ALA	2.3
1	B	251	THR	2.3
1	A	260	SER	2.3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
1	C	277	SER	2.3
1	A	61	ASN	2.3
1	C	12	LEU	2.3
1	B	288	PHE	2.3
1	A	274	TYR	2.3
1	C	388	ASN	2.3
1	A	287	SER	2.3
1	A	265	LYS	2.3
1	B	221	LEU	2.3
1	C	258	ASP	2.2
1	A	268	GLY	2.2
1	C	147	GLY	2.2
1	A	283	LYS	2.2
1	A	75	ILE	2.2
1	C	37	PRO	2.2
1	B	214	LYS	2.2
1	C	217	GLU	2.2
1	B	283	LYS	2.2
1	C	285	GLY	2.2
1	A	76	PHE	2.2
1	A	189	TYR	2.2
1	C	291	PRO	2.2
1	B	200	ASN	2.2
1	B	292	ILE	2.1
1	C	413	LEU	2.1
1	A	44	LEU	2.1
1	A	232	LEU	2.1
1	A	288	PHE	2.1
1	A	290	LEU	2.1
1	A	413	LEU	2.1
1	C	221	LEU	2.1
1	B	234	ARG	2.1
1	A	243	GLY	2.0
1	A	270	ALA	2.0
1	B	388	ASN	2.0
1	C	249	ASP	2.0
1	B	55	ARG	2.0

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

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.