



Full wwPDB X-ray Structure Validation Report ⓘ

Aug 5, 2021 – 06:08 PM EDT

PDB ID : 7JR1
Title : Crystal structure of the R64F mutant of Bauhinia Bauhinioides Kallikrein Inhibitor complexed with Bovine Trypsin
Authors : Li, M.; Wlodawer, A.; Gustchina, A.
Deposited on : 2020-08-11
Resolution : 2.05 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 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)
Xtriage (Phenix) : 1.13
EDS : 2.23.1
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) : 2.23.1

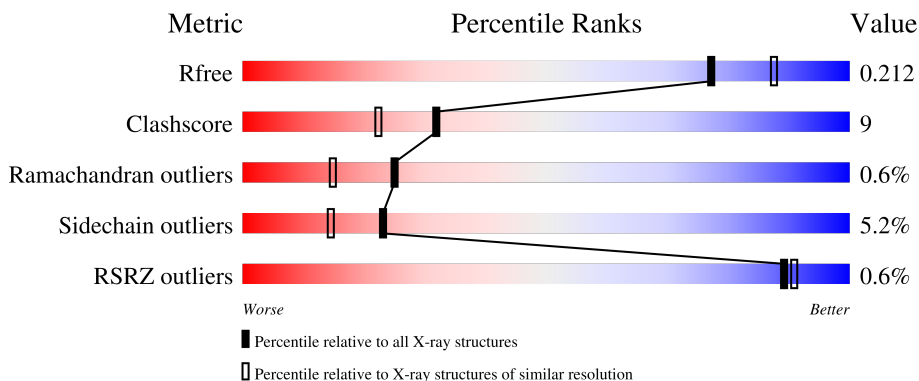
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.05 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1692 (2.04-2.04)
Clashscore	141614	1773 (2.04-2.04)
Ramachandran outliers	138981	1752 (2.04-2.04)
Sidechain outliers	138945	1752 (2.04-2.04)
RSRZ outliers	127900	1672 (2.04-2.04)

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	223	 82% 17%
1	B	223	 74% 23%
1	C	223	 78% 20%
1	D	223	 83% 15%
1	E	223	 79% 19%

Continued on next page...

Continued from previous page...

Mol	Chain	Length	Quality of chain
1	F	223	 83% 16% .
2	G	164	 78% 18% ..
2	H	164	 77% 20% ...
2	I	164	 76% 21% ..
2	J	164	 78% 20% ..
2	K	164	 79% 20% ..
2	L	164	 77% 18% ..

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 18035 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 Cationic trypsin.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	223	Total 1631	C 1013	N 279	O 325	S 14	0	1	0
1	B	223	Total 1640	C 1020	N 280	O 326	S 14	0	2	0
1	C	223	Total 1629	C 1012	N 279	O 324	S 14	0	0	0
1	D	223	Total 1629	C 1012	N 279	O 324	S 14	0	0	0
1	E	223	Total 1631	C 1013	N 279	O 325	S 14	0	1	0
1	F	223	Total 1637	C 1019	N 279	O 325	S 14	0	2	0

- Molecule 2 is a protein called Kunitz-type inhibitor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	G	163	Total 1265	C 813	N 214	O 237	S 1	0	1	0
2	H	163	Total 1265	C 813	N 214	O 237	S 1	0	1	0
2	I	163	Total 1265	C 813	N 214	O 237	S 1	0	1	0
2	J	163	Total 1265	C 813	N 214	O 237	S 1	0	1	0
2	K	163	Total 1260	C 810	N 214	O 235	S 1	0	0	0
2	L	163	Total 1265	C 813	N 214	O 237	S 1	0	1	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	0	GLY	-	expression tag	UNP Q6VEQ7

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
G	64	PHE	ARG	engineered mutation	UNP Q6VEQ7
H	0	GLY	-	expression tag	UNP Q6VEQ7
H	64	PHE	ARG	engineered mutation	UNP Q6VEQ7
I	0	GLY	-	expression tag	UNP Q6VEQ7
I	64	PHE	ARG	engineered mutation	UNP Q6VEQ7
J	0	GLY	-	expression tag	UNP Q6VEQ7
J	64	PHE	ARG	engineered mutation	UNP Q6VEQ7
K	0	GLY	-	expression tag	UNP Q6VEQ7
K	64	PHE	ARG	engineered mutation	UNP Q6VEQ7
L	0	GLY	-	expression tag	UNP Q6VEQ7
L	64	PHE	ARG	engineered mutation	UNP Q6VEQ7

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total O S 5 4 1	0	0
3	G	1	Total O S 5 4 1	0	0
3	B	1	Total O S 5 4 1	0	0
3	C	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0
3	D	1	Total O S 5 4 1	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	E	1	Total O S 5 4 1	0	0
3	E	1	Total O S 5 4 1	0	0
3	E	1	Total O S 5 4 1	0	0
3	F	1	Total O S 5 4 1	0	0
3	F	1	Total O S 5 4 1	0	0
3	I	1	Total O S 5 4 1	0	0
3	J	1	Total O S 5 4 1	0	0
3	K	1	Total O S 5 4 1	0	0
3	L	1	Total O S 5 4 1	0	0
3	L	1	Total O S 5 4 1	0	0

- Molecule 4 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	1	Total Na 1 1	0	0
4	E	1	Total Na 1 1	0	0
4	I	1	Total Na 1 1	0	0
4	L	1	Total Na 1 1	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	60	Total O 60 60	0	0
5	G	36	Total O 36 36	0	0
5	B	41	Total O 41 41	0	0

Continued on next page...

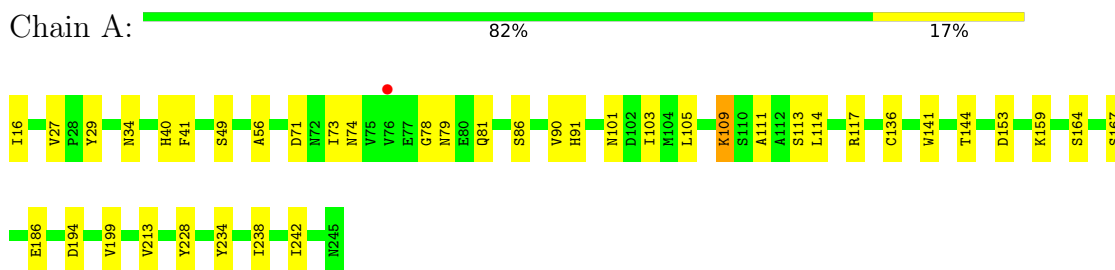
Continued from previous page...

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	47	Total O 47 47	0	0
5	D	51	Total O 51 51	0	0
5	E	82	Total O 82 82	0	0
5	F	74	Total O 74 74	0	0
5	H	27	Total O 27 27	0	0
5	I	28	Total O 28 28	0	0
5	J	30	Total O 30 30	0	0
5	K	51	Total O 51 51	0	0
5	L	42	Total O 42 42	0	0

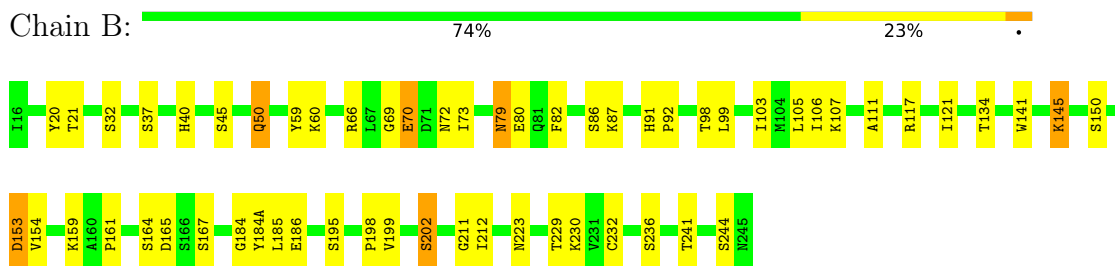
3 Residue-property plots

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.

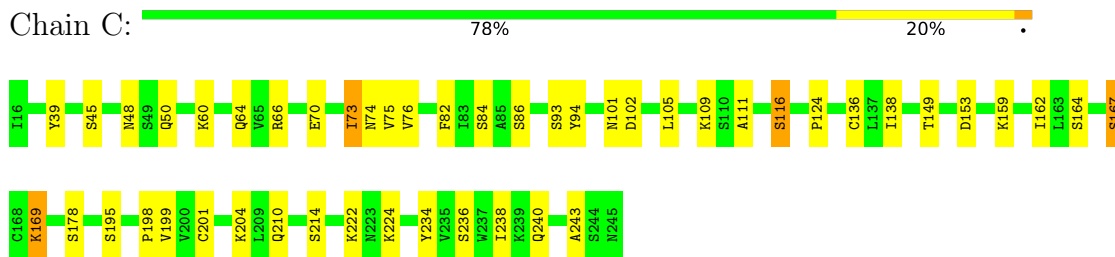
- Molecule 1: Cationic trypsin



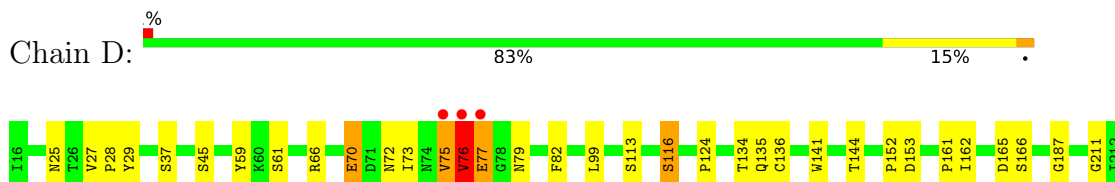
- Molecule 1: Cationic trypsin



- Molecule 1: Cationic trypsin



- Molecule 1: Cationic trypsin





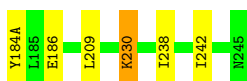
- Molecule 1: Cationic trypsin

Chain E: 79% 19%



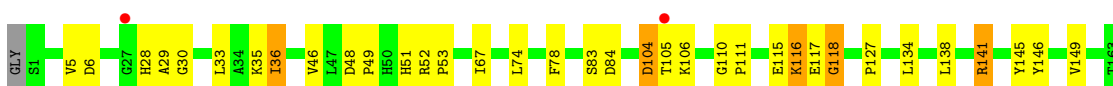
- Molecule 1: Cationic trypsin

Chain F: 83% 16%



- Molecule 2: Kunitz-type inhibitor

Chain G: 78% 18%



- Molecule 2: Kunitz-type inhibitor

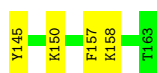
Chain H: 77% 20%



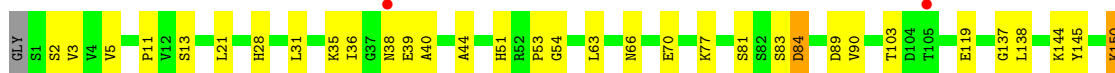
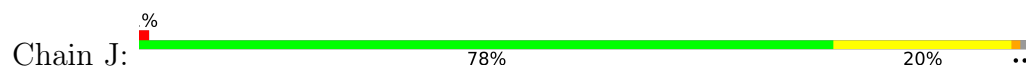
- Molecule 2: Kunitz-type inhibitor

Chain I: 76% 21%

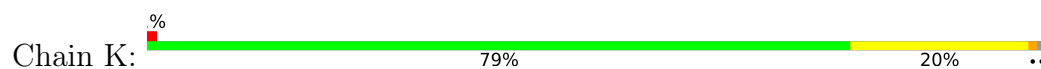




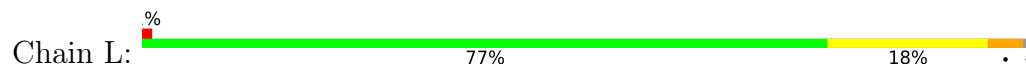
- Molecule 2: Kunitz-type inhibitor



- Molecule 2: Kunitz-type inhibitor



- Molecule 2: Kunitz-type inhibitor



4 Data and refinement statistics i

Property	Value	Source
Space group	P 64	Depositor
Cell constants a, b, c, α , β , γ	207.06Å 207.06Å 107.23Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	89.66 – 2.05 89.66 – 2.05	Depositor EDS
% Data completeness (in resolution range)	100.0 (89.66-2.05) 100.0 (89.66-2.05)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.49 (at 2.05Å)	Xtrriage
Refinement program	REFMAC 5.8.0258	Depositor
R, R_{free}	0.172 , 0.220 0.173 , 0.212	Depositor DCC
R_{free} test set	1522 reflections (0.93%)	wwPDB-VP
Wilson B-factor (Å ²)	41.5	Xtrriage
Anisotropy	0.089	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 38.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.488 for h,-h-k,-l	Xtrriage
Reported twinning fraction	0.500 for H, K, L 0.500 for -K, -H, -L	Depositor
Outliers	9 of 163637 reflections (0.005%)	Xtrriage
F_o, F_c correlation	0.98	EDS
Total number of atoms	18035	wwPDB-VP
Average B, all atoms (Å ²)	50.0	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 71.68 % 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 2.5200e-06. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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 i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: SO4, NA

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	0.72	0/1666	0.89	1/2258 (0.0%)
1	B	0.70	0/1677	0.85	0/2272
1	C	0.69	0/1660	0.85	0/2250
1	D	0.71	0/1660	0.88	1/2250 (0.0%)
1	E	0.76	0/1666	0.88	0/2258
1	F	0.72	0/1674	0.88	0/2269
2	G	0.69	0/1300	0.89	0/1767
2	H	0.67	0/1300	0.90	1/1767 (0.1%)
2	I	0.69	0/1300	0.86	0/1767
2	J	0.71	0/1300	0.89	0/1767
2	K	0.74	0/1292	0.96	0/1756
2	L	0.74	0/1300	0.92	2/1767 (0.1%)
All	All	0.71	0/17795	0.89	5/24148 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	E	0	1
2	H	0	2
2	K	0	2
All	All	0	5

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	D	79	ASN	CB-CA-C	5.63	121.66	110.40

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	L	72	TYR	CB-CG-CD1	5.39	124.24	121.00
2	L	162	ALA	C-N-CA	5.22	134.74	121.70
1	A	79	ASN	CB-CA-C	5.14	120.68	110.40
2	H	52	ARG	CG-CD-NE	5.09	122.49	111.80

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	E	77	GLU	Peptide
2	H	157	PHE	Peptide
2	H	74	LEU	Peptide
2	K	47	LEU	Peptide
2	K	74	LEU	Peptide

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	1631	0	1589	24	0
1	B	1640	0	1605	38	0
1	C	1629	0	1587	23	0
1	D	1629	0	1588	40	0
1	E	1631	0	1589	27	0
1	F	1637	0	1604	25	0
2	G	1265	0	1265	23	0
2	H	1265	0	1265	25	0
2	I	1265	0	1265	22	1
2	J	1265	0	1265	25	0
2	K	1260	0	1261	21	0
2	L	1265	0	1265	28	0
3	A	5	0	0	0	0
3	B	5	0	0	1	0
3	C	5	0	0	0	0
3	D	10	0	0	0	0
3	E	15	0	0	0	0
3	F	10	0	0	0	0

Continued on next page...

Continued from previous page...

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	G	5	0	0	0	0
3	I	5	0	0	1	0
3	J	5	0	0	0	0
3	K	5	0	0	0	0
3	L	10	0	0	1	0
4	C	1	0	0	0	0
4	E	1	0	0	0	0
4	I	1	0	0	0	0
4	L	1	0	0	0	0
5	A	60	0	0	4	0
5	B	41	0	0	4	0
5	C	47	0	0	3	0
5	D	51	0	0	19	0
5	E	82	0	0	5	0
5	F	74	0	0	10	0
5	G	36	0	0	6	0
5	H	27	0	0	2	0
5	I	28	0	0	1	0
5	J	30	0	0	5	0
5	K	51	0	0	6	0
5	L	42	0	0	6	0
All	All	18035	0	17148	309	1

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 9.

All (309) 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:E:61:SER:HB2	5:E:423:HOH:O	1.57	1.04
1:D:77:GLU:HA	5:D:406:HOH:O	1.61	0.99
1:D:61:SER:HB2	5:D:410:HOH:O	1.65	0.93
1:D:72:ASN:CG	1:D:75:VAL:HG13	1.88	0.93
1:D:76:VAL:HG13	5:D:411:HOH:O	1.68	0.92
1:D:76:VAL:HA	5:D:411:HOH:O	1.76	0.86
1:D:29:TYR:CD2	5:D:401:HOH:O	2.29	0.84
2:I:85:SER:HA	2:I:104:ASP:HA	1.63	0.81
2:J:35:LYS:HE2	2:J:40:ALA:O	1.81	0.79
2:K:163:THR:HB	5:K:336:HOH:O	1.80	0.79
2:L:28:HIS:O	2:L:49:PRO:HA	1.83	0.79
2:H:51:HIS:ND1	2:H:54:GLY:HA2	1.98	0.78

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:77:GLU:CA	5:D:406:HOH:O	2.25	0.76
2:H:52:ARG:HG2	2:H:52:ARG:HH11	1.51	0.75
1:E:221(A):GLN:HG3	5:E:479:HOH:O	1.84	0.75
1:D:76:VAL:CA	5:D:411:HOH:O	2.32	0.74
1:D:72:ASN:ND2	1:D:75:VAL:HG13	2.03	0.72
2:L:10:GLN:CD	5:L:302:HOH:O	2.26	0.72
1:B:145:LYS:HD2	1:B:150:SER:HB2	1.72	0.71
1:D:72:ASN:ND2	1:D:75:VAL:CG1	2.53	0.70
1:C:50:GLN:HE21	1:C:111:ALA:HB2	1.56	0.70
2:L:162:ALA:HB2	5:L:339:HOH:O	1.91	0.69
1:A:74:ASN:ND2	1:A:153:ASP:OD1	2.27	0.68
2:I:28:HIS:O	2:I:49:PRO:HA	1.93	0.67
2:G:67:ILE:HA	5:G:312:HOH:O	1.94	0.67
1:F:70:GLU:OE2	1:F:80:GLU:OE2	2.12	0.67
1:D:77:GLU:O	1:D:77:GLU:HG3	1.95	0.66
2:I:115:GLU:OE2	2:I:126:TYR:OH	2.14	0.66
1:B:79:ASN:C	1:B:79:ASN:HD22	2.01	0.65
2:L:107:SER:HB2	5:L:329:HOH:O	1.96	0.65
2:L:131:GLN:HB2	5:L:301:HOH:O	1.97	0.65
1:D:165:ASP:HB2	5:D:451:HOH:O	1.96	0.64
1:D:27:VAL:C	5:D:401:HOH:O	2.36	0.63
1:C:164:SER:HG	1:C:167:SER:HG	1.45	0.63
1:B:134:THR:O	1:B:161:PRO:HA	1.99	0.62
1:D:76:VAL:CG1	5:D:411:HOH:O	2.36	0.62
1:F:66:ARG:NH2	1:F:70:GLU:OE2	2.30	0.62
2:J:51:HIS:ND1	2:J:54:GLY:HA2	2.14	0.62
1:B:45:SER:OG	1:B:198:PRO:HB3	1.99	0.62
1:F:99:LEU:CD1	5:F:451:HOH:O	2.47	0.62
2:L:35:LYS:HE2	2:L:40:ALA:O	2.00	0.61
1:D:73:ILE:HG23	1:D:141:TRP:CE2	2.34	0.61
2:L:35:LYS:CE	2:L:40:ALA:O	2.49	0.61
1:B:70:GLU:HB2	5:B:407:HOH:O	1.99	0.61
2:H:28:HIS:ND1	5:H:201:HOH:O	2.31	0.61
1:A:136:CYS:O	1:A:159:LYS:HA	2.01	0.60
2:H:150:LYS:HG2	2:H:153:GLU:HB2	1.83	0.60
1:B:202:SER:O	1:C:204:LYS:NZ	2.35	0.59
1:C:240:GLN:HG3	5:C:445:HOH:O	2.03	0.59
1:E:184(A):TYR:HB3	1:E:186:GLU:CD	2.23	0.59
2:L:36:ILE:CG1	2:L:44:ALA:HB2	2.33	0.59
1:D:66:ARG:HD3	1:D:82:PHE:CE1	2.38	0.58
1:F:99:LEU:HD12	5:F:451:HOH:O	2.03	0.58

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:67:ILE:C	2:L:67:ILE:HD12	2.24	0.58
1:E:69:GLY:O	1:E:117:ARG:NH1	2.36	0.58
1:D:72:ASN:OD1	1:D:75:VAL:HG13	2.03	0.57
1:E:185:LEU:HD22	1:E:223:ASN:HA	1.85	0.57
1:D:72:ASN:HA	1:D:153:ASP:O	2.04	0.57
1:B:69:GLY:O	1:B:117:ARG:NH1	2.38	0.57
2:I:59:PHE:HB3	2:I:74:LEU:HD13	1.87	0.57
2:J:160:ARG:NH2	5:J:302:HOH:O	2.37	0.57
2:G:115:GLU:HG2	5:G:305:HOH:O	2.03	0.57
2:H:83:SER:OG	2:H:85:SER:OG	2.21	0.57
2:H:28:HIS:CB	2:H:52:ARG:NH1	2.68	0.57
2:K:47:LEU:C	5:K:301:HOH:O	2.43	0.57
2:G:67:ILE:HG22	5:G:312:HOH:O	2.03	0.56
2:L:36:ILE:HG13	2:L:44:ALA:HB2	1.88	0.56
1:C:73:ILE:HD11	5:C:412:HOH:O	2.05	0.56
1:D:28:PRO:N	5:D:401:HOH:O	2.37	0.56
1:A:73:ILE:HD11	5:A:419:HOH:O	2.04	0.56
1:B:21:THR:HG23	1:B:154:VAL:HG21	1.88	0.56
2:H:150:LYS:NZ	2:H:153:GLU:OE1	2.38	0.56
1:F:73[A]:ILE:HD11	5:F:406:HOH:O	2.06	0.56
1:B:145:LYS:HD2	1:B:150:SER:CB	2.35	0.55
2:K:46:VAL:HB	5:K:301:HOH:O	2.06	0.55
1:B:79:ASN:O	1:B:79:ASN:ND2	2.39	0.55
1:B:195:SER:OG	2:H:64:PHE:C	2.45	0.55
1:E:51:TRP:CH2	1:E:107:LYS:HB2	2.41	0.55
2:J:151:ASP:OD2	2:K:151:ASP:OD2	2.24	0.55
1:B:50:GLN:HE21	1:B:111:ALA:N	2.05	0.54
1:C:195:SER:OG	2:I:64:PHE:C	2.46	0.54
2:L:35:LYS:O	2:L:146:TYR:OH	2.16	0.54
2:K:150:LYS:HG2	2:K:153:GLU:HB2	1.88	0.54
2:L:36:ILE:HD11	2:L:101:LYS:HE3	1.90	0.54
1:A:16:ILE:N	1:A:194:ASP:OD2	2.41	0.54
1:B:99:LEU:HB3	5:B:428:HOH:O	2.07	0.54
2:H:28:HIS:HB2	2:H:52:ARG:NH1	2.22	0.54
1:F:184(A):TYR:HE1	5:F:413:HOH:O	1.89	0.54
1:B:70:GLU:HA	1:B:80:GLU:OE2	2.08	0.54
1:B:212:ILE:HB	1:B:229:THR:HB	1.90	0.54
1:E:195:SER:OG	2:K:64:PHE:C	2.47	0.54
2:H:84:ASP:C	2:H:84:ASP:OD1	2.46	0.54
1:E:81:GLN:NE2	5:E:402:HOH:O	2.40	0.53
2:L:117:GLU:O	2:L:118:GLY:C	2.46	0.53

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:41:PHE:O	5:A:401:HOH:O	2.19	0.53
2:L:162:ALA:CB	5:L:339:HOH:O	2.52	0.53
1:B:230:LYS:HE3	1:B:232:CYS:SG	2.49	0.53
2:J:2:SER:HB2	2:J:70:GLU:OE2	2.08	0.53
2:I:43:ARG:NH1	3:I:202:SO4:O2	2.37	0.53
2:K:18:ALA:HB1	2:K:56:PRO:HB2	1.91	0.53
2:L:114:VAL:HG22	2:L:123:ILE:CD1	2.39	0.53
1:E:72:ASN:HA	1:E:153:ASP:O	2.08	0.53
2:J:36:ILE:HG13	2:J:44:ALA:HB2	1.91	0.52
2:H:59:PHE:CE1	2:H:114:VAL:HG21	2.44	0.52
1:E:184(A):TYR:HB3	1:E:186:GLU:HG2	1.90	0.52
1:A:105:LEU:HD11	1:A:238:ILE:HA	1.90	0.52
1:E:73:ILE:HG23	1:E:141:TRP:CE2	2.45	0.52
2:K:51:HIS:ND1	2:L:52:ARG:NH1	2.56	0.52
1:C:66:ARG:HD3	1:C:70:GLU:OE2	2.09	0.52
1:F:64:GLN:OE1	1:F:82:PHE:HB3	2.10	0.52
1:F:99:LEU:HD11	5:F:451:HOH:O	2.10	0.52
1:F:121:ILE:HD12	5:F:465:HOH:O	2.09	0.52
2:J:150:LYS:HD3	5:J:305:HOH:O	2.09	0.52
1:C:74:ASN:ND2	1:C:153:ASP:OD1	2.42	0.52
2:K:163:THR:CB	5:K:336:HOH:O	2.45	0.52
1:B:159:LYS:NZ	5:B:405:HOH:O	2.43	0.52
1:C:136:CYS:O	1:C:159:LYS:HA	2.09	0.52
2:L:163:THR:HG22	5:L:324:HOH:O	2.10	0.51
1:C:45:SER:OG	1:C:198:PRO:HB3	2.11	0.51
1:F:21:THR:OG1	1:F:156:LYS:NZ	2.44	0.51
1:F:163:LEU:HD11	1:F:184:GLY:O	2.11	0.51
2:G:138:LEU:HB3	2:G:145:TYR:HB3	1.92	0.51
1:B:66:ARG:HD3	1:B:82:PHE:CE1	2.45	0.51
2:G:134:LEU:HB3	2:G:149:VAL:HG13	1.92	0.51
1:D:187:GLY:C	5:D:423:HOH:O	2.48	0.51
2:I:22:VAL:HB	2:I:158:LYS:HG2	1.93	0.51
2:L:28:HIS:O	2:L:49:PRO:CA	2.55	0.51
2:I:29:ALA:HA	2:I:48:ASP:O	2.11	0.51
1:A:71:ASP:HB3	1:A:117:ARG:HH22	1.76	0.51
2:G:53:PRO:HD2	2:H:53:PRO:HD2	1.92	0.51
1:D:61:SER:CB	5:D:410:HOH:O	2.40	0.51
2:H:51:HIS:CE1	2:H:54:GLY:HA2	2.46	0.51
1:B:164:SER:OG	5:B:401:HOH:O	2.20	0.51
1:D:73:ILE:HG12	1:D:141:TRP:CD1	2.46	0.50
2:J:138:LEU:HB3	2:J:145:TYR:HB3	1.93	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:116:LYS:HD2	2:I:120:GLY:O	2.11	0.50
2:K:47:LEU:O	5:K:301:HOH:O	2.19	0.50
2:J:84:ASP:OD2	2:J:84:ASP:C	2.50	0.50
1:C:64:GLN:NE2	1:C:82:PHE:HD2	2.10	0.50
2:G:74:LEU:O	2:G:110:GLY:HA3	2.11	0.50
1:B:59:TYR:O	2:H:69:LYS:NZ	2.27	0.50
1:B:105:LEU:HD12	1:B:241:THR:HG21	1.94	0.50
1:F:105:LEU:HD11	1:F:238:ILE:HA	1.93	0.50
1:F:230:LYS:NZ	5:F:407:HOH:O	2.44	0.50
1:D:29:TYR:CG	5:D:401:HOH:O	2.60	0.49
1:E:211:GLY:HA2	1:E:229:THR:O	2.12	0.49
2:H:28:HIS:HB3	2:H:52:ARG:NH1	2.27	0.49
1:E:135:GLN:HB3	1:E:159:LYS:CE	2.42	0.49
1:F:91:HIS:HB2	1:F:103:ILE:HG23	1.94	0.49
2:K:30:GLY:HA3	2:K:51:HIS:O	2.13	0.49
2:L:35:LYS:HE3	2:L:40:ALA:O	2.13	0.49
2:G:5:VAL:HG12	2:G:6:ASP:O	2.12	0.49
1:B:50:GLN:NE2	1:B:111:ALA:N	2.60	0.49
1:E:33:LEU:HG	5:E:417:HOH:O	2.13	0.49
1:C:105:LEU:HD11	1:C:238:ILE:HA	1.95	0.49
2:H:140:HIS:HB2	2:H:145:TYR:CE1	2.47	0.49
2:K:51:HIS:CD2	2:K:54:GLY:HA2	2.48	0.49
2:H:131:GLN:HB2	5:H:210:HOH:O	2.12	0.48
2:J:77:LYS:HE3	2:J:83:SER:O	2.13	0.48
2:I:53:PRO:HD2	2:J:53:PRO:HD2	1.95	0.48
1:E:184(A):TYR:HB3	1:E:186:GLU:CG	2.43	0.48
1:F:136:CYS:O	1:F:159:LYS:HA	2.14	0.48
2:J:137:GLY:HA3	2:J:150:LYS:HB3	1.95	0.48
1:D:70:GLU:HG2	1:D:73:ILE:HA	1.96	0.48
2:I:36:ILE:HG13	2:I:44:ALA:HB2	1.96	0.48
2:H:87:VAL:O	2:H:102:VAL:HA	2.13	0.48
2:K:163:THR:C	5:K:320:HOH:O	2.52	0.48
1:A:56:ALA:HB1	1:A:90:VAL:HG13	1.94	0.48
1:B:91:HIS:CG	1:B:92:PRO:HD2	2.48	0.48
1:C:124:PRO:HB3	1:C:210:GLN:NE2	2.29	0.48
1:F:75:VAL:HB	1:F:77:GLU:O	2.14	0.48
2:J:89[A]:ASP:OD1	5:J:301:HOH:O	2.20	0.48
2:L:1:SER:O	2:L:1:SER:OG	2.31	0.48
2:H:21:LEU:HD12	2:H:31:LEU:HD11	1.96	0.48
2:J:77:LYS:CE	2:J:83:SER:O	2.61	0.48
2:G:33:LEU:HD21	2:G:78:PHE:CE2	2.49	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:167:SER:HB3	1:B:185:LEU:HD11	1.97	0.47
2:G:36:ILE:HD12	2:G:36:ILE:H	1.80	0.47
2:G:30:GLY:HA3	2:G:51:HIS:O	2.14	0.47
2:G:115:GLU:CG	5:G:305:HOH:O	2.62	0.47
1:C:149:THR:HG21	2:I:16:ALA:CB	2.45	0.47
1:D:25:ASN:OD1	1:D:116:SER:OG	2.32	0.47
1:F:124:PRO:HD3	1:F:209:LEU:O	2.15	0.47
1:A:164:SER:O	1:A:167[B]:SER:OG	2.28	0.47
2:K:87:VAL:O	2:K:102:VAL:HA	2.15	0.47
2:J:77:LYS:NZ	2:J:83:SER:O	2.48	0.46
2:I:104:ASP:N	2:I:104:ASP:OD1	2.47	0.46
2:K:141:ARG:NH1	2:K:142:ASN:OD1	2.48	0.46
2:L:17:ASP:CG	2:L:161:LYS:HE2	2.36	0.46
1:B:98:THR:O	1:B:99:LEU:HB2	2.15	0.46
1:C:169:LYS:HG2	5:C:421:HOH:O	2.14	0.46
1:A:101:ASN:HA	1:A:234:TYR:OH	2.15	0.46
1:D:215:TRP:CH2	1:D:227:VAL:HG21	2.51	0.46
1:E:185:LEU:O	1:E:222:LYS:HA	2.15	0.46
2:G:28:HIS:O	2:G:49:PRO:O	2.34	0.46
2:G:127:PRO:HD2	5:G:314:HOH:O	2.16	0.46
1:B:20:TYR:CE2	1:C:116:SER:HB2	2.51	0.46
1:D:29:TYR:CE2	5:D:401:HOH:O	2.61	0.46
2:H:28:HIS:CD2	2:H:28:HIS:H	2.31	0.46
2:H:32:ALA:HB3	2:H:48:ASP:HB2	1.97	0.46
2:K:39:GLU:OE1	2:K:101:LYS:NZ	2.42	0.45
2:L:104:ASP:OD2	2:L:104:ASP:N	2.49	0.45
2:G:141:ARG:HG3	5:G:332:HOH:O	2.16	0.45
2:L:46:VAL:HG12	2:L:146:TYR:HA	1.98	0.45
1:B:79:ASN:C	1:B:79:ASN:ND2	2.69	0.45
2:K:47:LEU:HD12	2:K:138:LEU:HD21	1.97	0.45
1:E:135:GLN:HB3	1:E:159:LYS:HE3	1.97	0.45
1:A:16:ILE:O	1:A:144:THR:HG22	2.16	0.45
1:D:59:TYR:CZ	5:D:430:HOH:O	2.56	0.45
1:C:48:ASN:OD1	1:C:48:ASN:C	2.55	0.45
1:A:27:VAL:HG13	1:A:29:TYR:CZ	2.51	0.45
2:J:13:SER:HA	2:J:66:ASN:O	2.16	0.45
1:C:102:ASP:OD2	1:C:214:SER:OG	2.29	0.44
2:H:121:TYR:N	2:H:157:PHE:O	2.42	0.44
2:G:35:LYS:O	2:G:146:TYR:OH	2.24	0.44
1:D:72:ASN:ND2	1:D:75:VAL:HG11	2.30	0.44
2:J:21:LEU:HD12	2:J:31:LEU:HD11	2.00	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:99:LEU:HD22	2:J:63:LEU:HD21	1.99	0.44
1:E:45:SER:OG	1:E:198:PRO:HB3	2.18	0.44
1:E:50:GLN:HG3	1:E:111:ALA:HA	2.00	0.44
1:D:77:GLU:N	5:D:406:HOH:O	2.45	0.44
1:E:146:SER:HB3	1:E:221:ALA:HB3	2.00	0.44
1:A:40:HIS:HB2	5:A:420:HOH:O	2.18	0.44
1:B:121:ILE:HD12	1:B:121:ILE:HA	1.91	0.44
2:K:162:ALA:C	2:K:163:THR:HG23	2.38	0.44
1:D:72:ASN:CG	1:D:75:VAL:CG1	2.73	0.44
1:D:134:THR:O	1:D:161:PRO:HA	2.17	0.44
1:F:16:ILE:O	1:F:144:THR:HA	2.18	0.44
2:I:65:ILE:HG12	2:I:67:ILE:HG13	2.00	0.44
1:A:81:GLN:NE2	1:A:113:SER:O	2.44	0.44
1:A:238:ILE:HG22	1:A:242:ILE:HD12	1.98	0.44
2:I:22:VAL:O	2:I:157:PHE:HA	2.17	0.44
1:A:114:LEU:N	1:A:114:LEU:HD22	2.33	0.43
1:E:43:GLY:C	5:E:417:HOH:O	2.55	0.43
1:E:83:ILE:HG21	1:E:108:LEU:HB3	2.00	0.43
1:B:60:LYS:NZ	3:B:301:SO4:O3	2.50	0.43
1:B:184:GLY:C	1:B:184(A):TYR:CD2	2.92	0.43
1:E:72:ASN:HB3	1:E:75:VAL:HG22	2.00	0.43
1:A:199:VAL:HG21	1:A:228:TYR:CD1	2.54	0.43
2:H:73:PHE:CE1	2:H:129:ARG:HG2	2.53	0.43
1:A:49:SER:HB2	1:A:111:ALA:HB1	1.99	0.43
1:B:73:ILE:HG12	1:B:141:TRP:CD1	2.54	0.43
1:E:27:VAL:HG13	1:E:29:TYR:CZ	2.54	0.43
1:A:159:LYS:NZ	5:A:409:HOH:O	2.51	0.43
2:I:142:ASN:CG	2:I:142:ASN:O	2.56	0.43
2:I:131:GLN:HB2	5:I:308:HOH:O	2.17	0.43
2:L:134:LEU:HB3	2:L:149:VAL:HG13	2.01	0.43
1:B:103:ILE:HB	1:B:229:THR:HG21	2.00	0.42
2:I:144:LYS:HE2	2:I:144:LYS:HB3	1.64	0.42
1:A:73:ILE:HG23	1:A:141:TRP:CE2	2.54	0.42
2:G:117:GLU:O	2:G:118:GLY:C	2.58	0.42
1:F:73[B]:ILE:HD11	5:F:404:HOH:O	2.20	0.42
2:H:19:TYR:O	2:H:56:PRO:HA	2.19	0.42
1:D:211:GLY:HA2	1:D:229:THR:O	2.20	0.42
1:B:87:LYS:HB2	1:B:107:LYS:HB3	2.02	0.42
1:F:121:ILE:HA	5:F:465:HOH:O	2.19	0.42
1:B:72:ASN:ND2	1:B:153:ASP:OD2	2.53	0.42
2:G:29:ALA:HA	2:G:48:ASP:O	2.19	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:36:ILE:O	2:J:39:GLU:HB2	2.20	0.41
2:L:36:ILE:HD12	2:L:36:ILE:H	1.84	0.41
1:C:101:ASN:HA	1:C:234:TYR:OH	2.19	0.41
2:J:89[B]:ASP:OD2	2:J:103:THR:HG21	2.19	0.41
2:L:43:ARG:NH1	3:L:203:SO4:O1	2.46	0.41
1:A:91:HIS:HB2	1:A:103:ILE:HG23	2.02	0.41
1:C:138:ILE:HG12	1:C:199:VAL:HG13	2.03	0.41
1:D:213:VAL:HA	1:D:228:TYR:CD1	2.54	0.41
1:F:230:LYS:HE3	5:F:463:HOH:O	2.21	0.41
2:J:3:VAL:HG11	2:J:11:PRO:HB3	2.02	0.41
1:A:213:VAL:HA	1:A:228:TYR:CD1	2.56	0.41
1:D:29:TYR:N	5:D:401:HOH:O	2.30	0.41
1:E:66:ARG:HD3	1:E:82:PHE:CE1	2.56	0.41
1:E:91:HIS:CG	1:E:92:PRO:HD2	2.55	0.41
2:J:28:HIS:CE1	5:J:329:HOH:O	2.74	0.41
2:J:89[A]:ASP:CG	2:J:90:VAL:H	2.23	0.41
2:G:116:LYS:HE2	2:G:118:GLY:O	2.20	0.41
1:B:32:SER:OG	1:B:40:HIS:ND1	2.40	0.41
1:C:240:GLN:O	1:C:243:ALA:HB3	2.21	0.41
1:D:136:CYS:SG	1:D:162:ILE:HG13	2.59	0.41
1:F:238:ILE:HG22	1:F:242:ILE:HD12	2.02	0.41
2:L:90:VAL:HB	2:L:125:TYR:CZ	2.56	0.41
1:B:87:LYS:O	1:B:106:ILE:HA	2.21	0.41
1:A:56:ALA:CB	1:A:90:VAL:HG13	2.51	0.41
1:B:185:LEU:O	1:B:223:ASN:N	2.51	0.41
2:G:46:VAL:HG12	2:G:146:TYR:HA	2.03	0.41
2:G:48:ASP:HB3	2:G:51:HIS:HB3	2.03	0.41
1:C:222:LYS:O	1:C:224:LYS:HG2	2.21	0.41
1:D:215:TRP:CZ2	1:D:227:VAL:HG21	2.56	0.41
1:F:73[A]:ILE:HG23	1:F:141:TRP:NE1	2.36	0.41
2:I:28:HIS:O	2:I:49:PRO:O	2.39	0.41
2:I:36:ILE:H	2:I:36:ILE:HD12	1.85	0.41
2:J:31:LEU:HD23	2:J:31:LEU:HA	1.95	0.41
2:L:101:LYS:HB3	2:L:101:LYS:HE2	1.80	0.41
1:D:144:THR:HG23	1:D:152:PRO:HD3	2.03	0.40
2:G:105:THR:HG22	2:G:106:LYS:N	2.36	0.40
2:K:46:VAL:HG12	2:K:146:TYR:HA	2.03	0.40
1:C:93:SER:O	1:C:94:TYR:C	2.58	0.40
1:D:135:GLN:HG2	5:D:440:HOH:O	2.21	0.40
1:E:145:LYS:HB3	1:E:147:SER:O	2.22	0.40
1:F:173:PRO:O	1:F:175:GLN:HG2	2.22	0.40

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:2:SER:HB2	2:H:70:GLU:OE2	2.21	0.40
2:J:119:GLU:CG	5:J:325:HOH:O	2.68	0.40
2:K:28:HIS:O	2:K:52:ARG:NE	2.55	0.40
1:A:86:SER:HB3	1:A:109:LYS:HG3	2.02	0.40
2:K:70:GLU:O	2:K:113:LYS:HD3	2.21	0.40
2:G:84:ASP:O	2:G:104:ASP:C	2.60	0.40
1:B:199:VAL:HB	1:B:211:GLY:HA3	2.03	0.40
1:F:27:VAL:HG13	1:F:29:TYR:CZ	2.57	0.40
2:I:26:HIS:CD2	2:I:145:TYR:CZ	3.10	0.40
2:I:41:GLU:OE1	2:I:42:PRO:HD2	2.22	0.40

All (1) 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:I:96:ILE:O	2:I:131:GLN:NE2[4_655]	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	222/223 (100%)	214 (96%)	7 (3%)	1 (0%)	29 18
1	B	223/223 (100%)	212 (95%)	9 (4%)	2 (1%)	17 8
1	C	221/223 (99%)	209 (95%)	11 (5%)	1 (0%)	29 18
1	D	221/223 (99%)	208 (94%)	12 (5%)	1 (0%)	29 18
1	E	222/223 (100%)	213 (96%)	8 (4%)	1 (0%)	29 18
1	F	223/223 (100%)	212 (95%)	9 (4%)	2 (1%)	17 8
2	G	162/164 (99%)	150 (93%)	10 (6%)	2 (1%)	13 5
2	H	162/164 (99%)	155 (96%)	7 (4%)	0	100 100

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	I	162/164 (99%)	151 (93%)	9 (6%)	2 (1%)	13	5
2	J	162/164 (99%)	151 (93%)	10 (6%)	1 (1%)	25	15
2	K	161/164 (98%)	150 (93%)	10 (6%)	1 (1%)	25	15
2	L	162/164 (99%)	155 (96%)	6 (4%)	1 (1%)	25	15
All	All	2303/2322 (99%)	2180 (95%)	108 (5%)	15 (1%)	25	12

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	165[A]	ASP
1	B	165[B]	ASP
1	A	78	GLY
2	G	118	GLY
2	I	118	GLY
2	L	118	GLY
2	G	83	SER
1	F	62	GLY
2	J	38	ASN
1	E	77	GLU
1	F	80	GLU
2	I	83	SER
1	C	39	TYR
1	D	76	VAL
2	K	27	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	185/184 (100%)	182 (98%)	3 (2%)	62	59
1	B	186/184 (101%)	175 (94%)	11 (6%)	19	11
1	C	184/184 (100%)	170 (92%)	14 (8%)	13	6
1	D	184/184 (100%)	174 (95%)	10 (5%)	22	13

Continued on next page...

Continued from previous page...

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	E	185/184 (100%)	177 (96%)	8 (4%)	29	22
1	F	186/184 (101%)	177 (95%)	9 (5%)	25	18
2	G	138/137 (101%)	132 (96%)	6 (4%)	29	22
2	H	138/137 (101%)	130 (94%)	8 (6%)	20	11
2	I	138/137 (101%)	128 (93%)	10 (7%)	14	7
2	J	138/137 (101%)	133 (96%)	5 (4%)	35	28
2	K	137/137 (100%)	129 (94%)	8 (6%)	20	11
2	L	138/137 (101%)	128 (93%)	10 (7%)	14	7
All	All	1937/1926 (101%)	1835 (95%)	102 (5%)	23	14

All (102) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	ASN
1	A	109	LYS
1	A	186	GLU
2	G	36	ILE
2	G	52	ARG
2	G	104	ASP
2	G	111	PRO
2	G	116	LYS
2	G	141	ARG
1	B	37	SER
1	B	50	GLN
1	B	70	GLU
1	B	79	ASN
1	B	86	SER
1	B	145	LYS
1	B	153	ASP
1	B	186	GLU
1	B	202	SER
1	B	236	SER
1	B	244	SER
1	C	60	LYS
1	C	73	ILE
1	C	75	VAL
1	C	76	VAL
1	C	84	SER
1	C	86	SER

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	C	109	LYS
1	C	116	SER
1	C	162	ILE
1	C	167	SER
1	C	169	LYS
1	C	178	SER
1	C	201	CYS
1	C	236	SER
1	D	37	SER
1	D	45	SER
1	D	70	GLU
1	D	75	VAL
1	D	76	VAL
1	D	77	GLU
1	D	113	SER
1	D	116	SER
1	D	124	PRO
1	D	166	SER
1	E	49	SER
1	E	120	SER
1	E	139	SER
1	E	146	SER
1	E	147	SER
1	E	167[A]	SER
1	E	167[B]	SER
1	E	236	SER
1	F	74	ASN
1	F	75	VAL
1	F	125	THR
1	F	164[A]	SER
1	F	164[B]	SER
1	F	165	ASP
1	F	167	SER
1	F	186	GLU
1	F	230	LYS
2	H	25	SER
2	H	28	HIS
2	H	39	GLU
2	H	52	ARG
2	H	84	ASP
2	H	104	ASP
2	H	107	SER

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
2	H	143	ASP
2	I	2	SER
2	I	36	ILE
2	I	83	SER
2	I	103	THR
2	I	104	ASP
2	I	132	THR
2	I	141	ARG
2	I	143	ASP
2	I	144	LYS
2	I	150	LYS
2	J	5	VAL
2	J	81	SER
2	J	84	ASP
2	J	144	LYS
2	J	150	LYS
2	K	5	VAL
2	K	25	SER
2	K	36	ILE
2	K	41	GLU
2	K	107	SER
2	K	143	ASP
2	K	144	LYS
2	K	163	THR
2	L	1	SER
2	L	36	ILE
2	L	50	HIS
2	L	81	SER
2	L	83	SER
2	L	103	THR
2	L	104	ASP
2	L	107	SER
2	L	119	GLU
2	L	132	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	50	GLN
1	A	74	ASN
1	A	175	GLN
2	G	66	ASN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	B	50	GLN
1	B	79	ASN
1	C	50	GLN
1	C	64	GLN
1	C	175	GLN
1	E	81	GLN
1	E	233	ASN
1	F	135	GLN
1	F	240	GLN
2	H	28	HIS
2	I	66	ASN
2	K	10	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 20 ligands modelled in this entry, 4 are monoatomic - leaving 16 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	SO4	L	202	-	4,4,4	0.35	0	6,6,6	0.09	0
3	SO4	D	302	-	4,4,4	0.37	0	6,6,6	0.07	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
3	SO4	E	303	-	4,4,4	0.40	0	6,6,6	0.07	0
3	SO4	C	302	-	4,4,4	0.29	0	6,6,6	0.11	0
3	SO4	D	301	-	4,4,4	0.39	0	6,6,6	0.09	0
3	SO4	F	301	-	4,4,4	0.39	0	6,6,6	0.11	0
3	SO4	I	202	-	4,4,4	0.39	0	6,6,6	0.05	0
3	SO4	K	201	-	4,4,4	0.40	0	6,6,6	0.07	0
3	SO4	L	203	-	4,4,4	0.40	0	6,6,6	0.06	0
3	SO4	G	201	-	4,4,4	0.35	0	6,6,6	0.06	0
3	SO4	J	201	-	4,4,4	0.38	0	6,6,6	0.07	0
3	SO4	A	301	-	4,4,4	0.40	0	6,6,6	0.07	0
3	SO4	E	302	-	4,4,4	0.35	0	6,6,6	0.12	0
3	SO4	B	301	-	4,4,4	0.37	0	6,6,6	0.06	0
3	SO4	F	302	-	4,4,4	0.45	0	6,6,6	0.09	0
3	SO4	E	304	-	4,4,4	0.36	0	6,6,6	0.05	0

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.

3 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	I	202	SO4	1	0
3	L	203	SO4	1	0
3	B	301	SO4	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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled ‘#RSRZ > 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q < 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	223/223 (100%)	-0.18	1 (0%) 92 93	31, 45, 62, 98	0
1	B	223/223 (100%)	-0.14	0 100 100	31, 51, 74, 91	0
1	C	223/223 (100%)	-0.16	0 100 100	35, 50, 67, 94	0
1	D	223/223 (100%)	-0.17	3 (1%) 77 79	30, 47, 61, 106	0
1	E	223/223 (100%)	-0.19	0 100 100	29, 42, 57, 86	0
1	F	223/223 (100%)	-0.12	0 100 100	30, 49, 68, 85	0
2	G	163/164 (99%)	-0.09	2 (1%) 79 81	33, 50, 82, 103	0
2	H	163/164 (99%)	-0.09	2 (1%) 79 81	34, 55, 83, 98	0
2	I	163/164 (99%)	-0.08	2 (1%) 79 81	33, 52, 84, 102	0
2	J	163/164 (99%)	-0.15	2 (1%) 79 81	32, 48, 76, 100	0
2	K	163/164 (99%)	-0.11	2 (1%) 79 81	28, 46, 76, 92	0
2	L	163/164 (99%)	-0.10	1 (0%) 89 91	30, 48, 75, 87	0
All	All	2316/2322 (99%)	-0.14	15 (0%) 89 91	28, 48, 75, 106	0

All (15) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	J	38	ASN	5.4
2	I	105	THR	4.5
2	L	105	THR	4.4
2	G	105	THR	4.2
2	G	27	GLY	3.5
2	H	105	THR	3.2
1	D	75	VAL	2.9
2	I	27	GLY	2.7
2	K	38	ASN	2.5
1	A	76	VAL	2.3
2	H	38	ASN	2.3

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	RSRZ
2	J	105	THR	2.2
2	K	37	GLY	2.1
1	D	77	GLU	2.0
1	D	76	VAL	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

6.3 Carbohydrates [i](#)

There are no monosaccharides in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	SO4	K	201	5/5	0.79	0.26	64,64,67,68	5
3	SO4	J	201	5/5	0.94	0.12	46,47,50,53	5
3	SO4	E	304	5/5	0.94	0.15	58,59,61,63	5
3	SO4	F	302	5/5	0.95	0.12	38,38,41,44	5
3	SO4	D	301	5/5	0.96	0.20	44,45,50,50	5
3	SO4	B	301	5/5	0.97	0.06	61,62,64,65	5
3	SO4	A	301	5/5	0.97	0.20	33,34,36,37	5
3	SO4	D	302	5/5	0.97	0.09	44,45,48,48	5
3	SO4	E	302	5/5	0.97	0.14	28,28,32,33	5
3	SO4	L	202	5/5	0.97	0.12	67,71,79,84	0
3	SO4	L	203	5/5	0.97	0.12	66,70,71,72	0
4	NA	I	201	1/1	0.97	0.16	46,46,46,46	0
3	SO4	F	301	5/5	0.98	0.15	40,42,44,45	5
3	SO4	E	303	5/5	0.98	0.09	56,57,60,67	0
3	SO4	I	202	5/5	0.98	0.09	76,78,78,84	0
3	SO4	C	302	5/5	0.98	0.08	49,49,56,59	0
4	NA	C	301	1/1	0.99	0.14	38,38,38,38	0
4	NA	E	301	1/1	0.99	0.21	40,40,40,40	0
3	SO4	G	201	5/5	0.99	0.08	65,66,69,76	0

Continued on next page...

Continued from previous page...

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(\AA^2)	Q<0.9
4	NA	L	201	1/1	0.99	0.11	39,39,39,39	0

6.5 Other polymers [i](#)

There are no such residues in this entry.