



Full wwPDB X-ray Structure Validation Report ⓘ

Dec 17, 2023 – 09:36 am GMT

PDB ID : 4P1A
Title : Thallium-bound inward-facing state of the glutamate transporter homologue GltPh
Authors : Verdon, G.; Boudker, O.
Deposited on : 2014-02-25
Resolution : 3.75 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
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

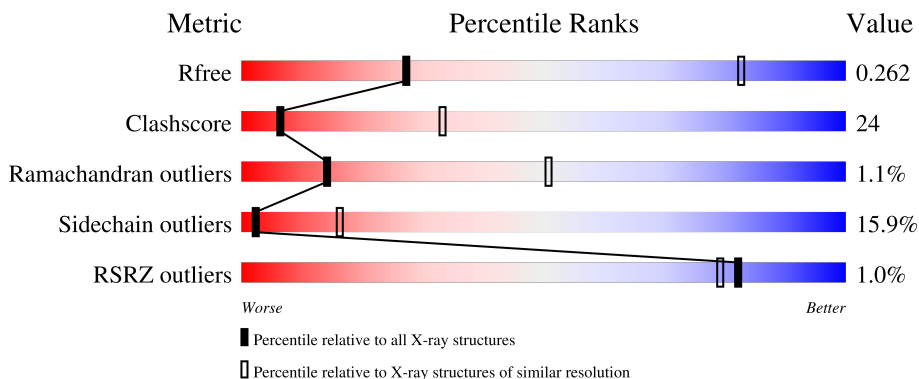
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.75 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	1039 (3.94-3.58)
Clashscore	141614	1051 (3.92-3.60)
Ramachandran outliers	138981	1015 (3.92-3.60)
Sidechain outliers	138945	1011 (3.92-3.60)
RSRZ outliers	127900	1050 (3.96-3.56)

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	422	
1	B	422	
1	C	422	

2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 9123 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 GltPh.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	413	3051	2006	492	535	18	0	0	0
1	B	408	3015	1983	487	527	18	0	0	0
1	C	413	3048	2003	492	535	18	0	0	0

There are 45 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	37	HIS	ASP	engineered mutation	UNP O59010
A	40	HIS	LYS	engineered mutation	UNP O59010
A	55	CYS	LYS	engineered mutation	UNP O59010
A	125	HIS	LYS	engineered mutation	UNP O59010
A	132	HIS	LYS	engineered mutation	UNP O59010
A	223	HIS	LYS	engineered mutation	UNP O59010
A	264	HIS	LYS	engineered mutation	UNP O59010
A	321	ALA	CYS	engineered mutation	UNP O59010
A	364	CYS	ALA	engineered mutation	UNP O59010
A	368	HIS	GLU	engineered mutation	UNP O59010
A	418	THR	-	expression tag	UNP O59010
A	419	LEU	-	expression tag	UNP O59010
A	420	VAL	-	expression tag	UNP O59010
A	421	PRO	-	expression tag	UNP O59010
A	422	ARG	-	expression tag	UNP O59010
B	37	HIS	ASP	engineered mutation	UNP O59010
B	40	HIS	LYS	engineered mutation	UNP O59010
B	55	CYS	LYS	engineered mutation	UNP O59010
B	125	HIS	LYS	engineered mutation	UNP O59010
B	132	HIS	LYS	engineered mutation	UNP O59010
B	223	HIS	LYS	engineered mutation	UNP O59010
B	264	HIS	LYS	engineered mutation	UNP O59010
B	321	ALA	CYS	engineered mutation	UNP O59010

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Chain	Residue	Modelled	Actual	Comment	Reference
B	364	CYS	ALA	engineered mutation	UNP O59010
B	368	HIS	GLU	engineered mutation	UNP O59010
B	418	THR	-	expression tag	UNP O59010
B	419	LEU	-	expression tag	UNP O59010
B	420	VAL	-	expression tag	UNP O59010
B	421	PRO	-	expression tag	UNP O59010
B	422	ARG	-	expression tag	UNP O59010
C	37	HIS	ASP	engineered mutation	UNP O59010
C	40	HIS	LYS	engineered mutation	UNP O59010
C	55	CYS	LYS	engineered mutation	UNP O59010
C	125	HIS	LYS	engineered mutation	UNP O59010
C	132	HIS	LYS	engineered mutation	UNP O59010
C	223	HIS	LYS	engineered mutation	UNP O59010
C	264	HIS	LYS	engineered mutation	UNP O59010
C	321	ALA	CYS	engineered mutation	UNP O59010
C	364	CYS	ALA	engineered mutation	UNP O59010
C	368	HIS	GLU	engineered mutation	UNP O59010
C	418	THR	-	expression tag	UNP O59010
C	419	LEU	-	expression tag	UNP O59010
C	420	VAL	-	expression tag	UNP O59010
C	421	PRO	-	expression tag	UNP O59010
C	422	ARG	-	expression tag	UNP O59010

- Molecule 2 is THALLIUM (I) ION (three-letter code: TL) (formula: Tl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	2	Total Tl 2 2	0	0
2	B	2	Total Tl 2 2	0	0
2	C	2	Total Tl 2 2	0	0

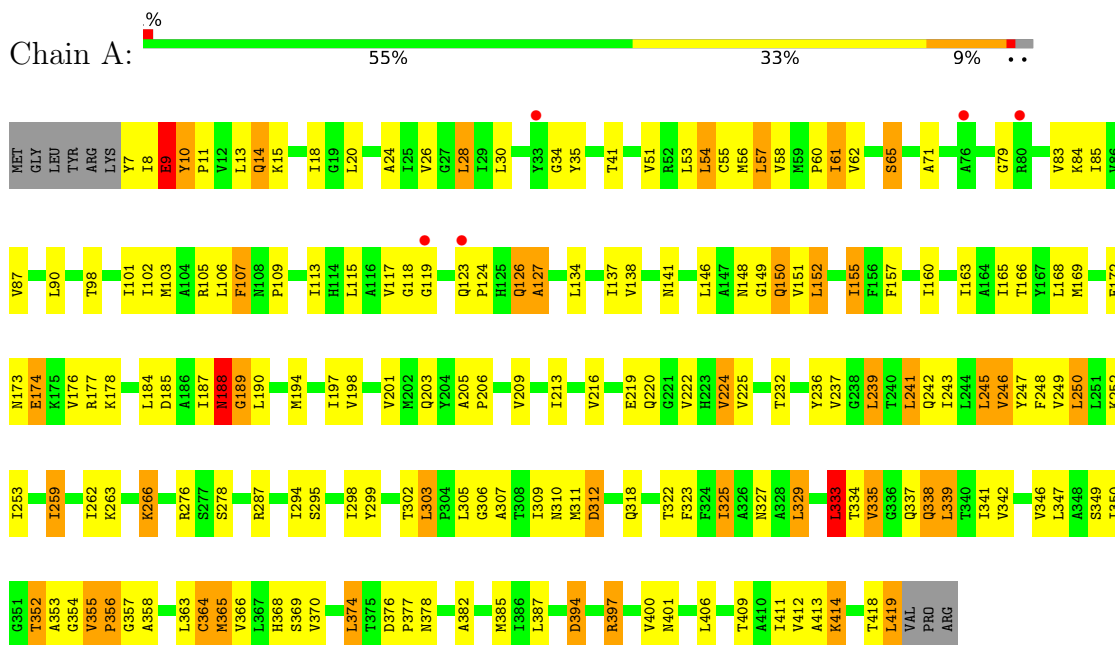
- Molecule 3 is MERCURY (II) ION (three-letter code: HG) (formula: Hg).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Hg 1 1	0	0
3	B	1	Total Hg 1 1	0	0
3	C	1	Total Hg 1 1	0	0

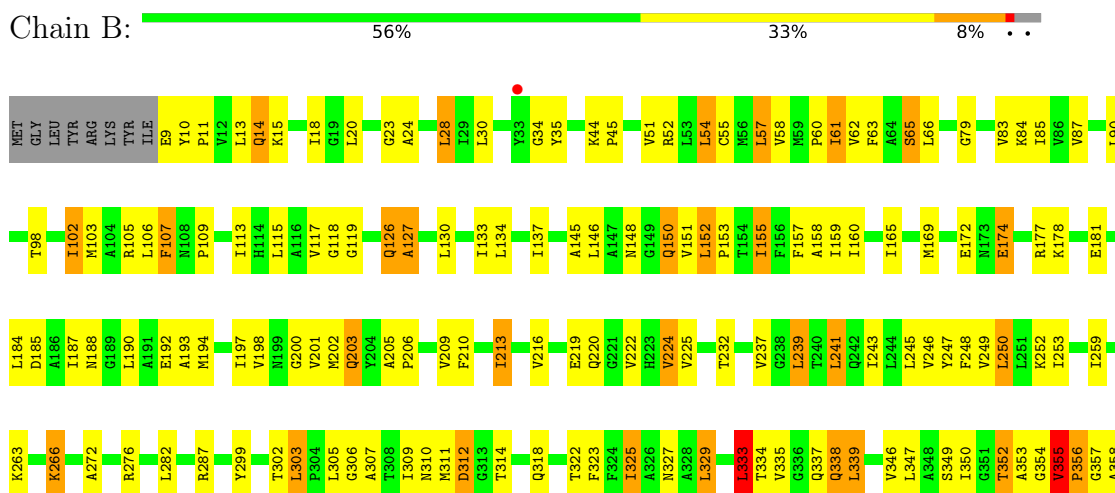
3 Residue-property plots

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: GltPh

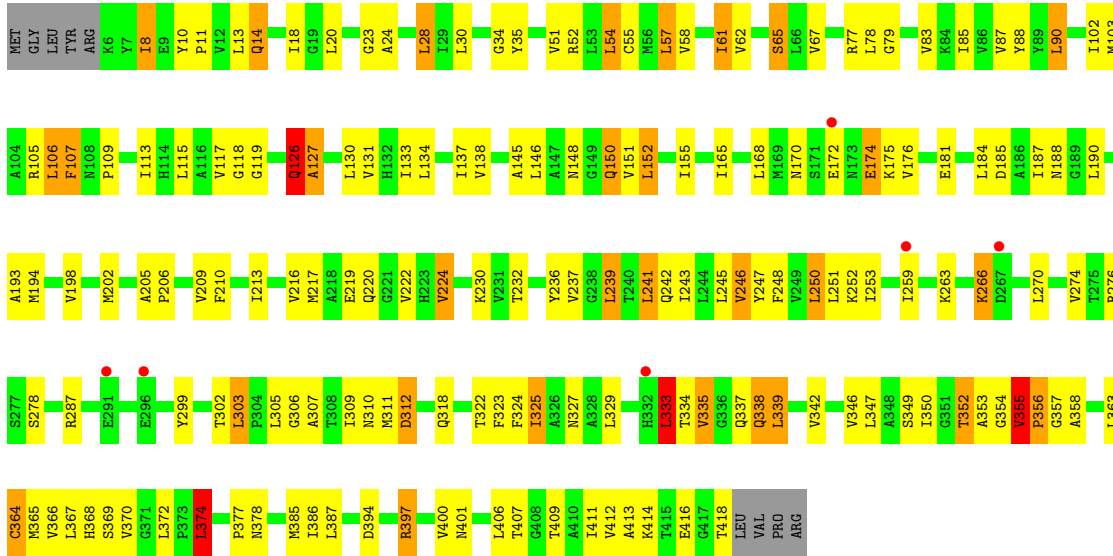


- Molecule 1: GltPh





● Molecule 1: GltPh



4 Data and refinement statistics i

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α , β , γ	106.98Å 196.56Å 206.50Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	15.00 – 3.75 14.99 – 3.75	Depositor EDS
% Data completeness (in resolution range)	99.7 (15.00-3.75) 99.9 (14.99-3.75)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.42 (at 3.77Å)	Xtrriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.230 , 0.257 0.231 , 0.262	Depositor DCC
R_{free} test set	1136 reflections (5.10%)	wwPDB-VP
Wilson B-factor (Å ²)	128.0	Xtrriage
Anisotropy	0.500	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.29 , 97.9	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtrriage
Estimated twinning fraction	0.028 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.039 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	9123	wwPDB-VP
Average B, all atoms (Å ²)	141.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.34% 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 [i](#)

5.1 Standard geometry [i](#)

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

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	0.68	1/3110 (0.0%)	0.95	12/4244 (0.3%)
1	B	0.68	0/3074	0.92	8/4195 (0.2%)
1	C	0.60	0/3107	0.84	6/4240 (0.1%)
All	All	0.65	1/9291 (0.0%)	0.91	26/12679 (0.2%)

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	1
1	C	0	2
All	All	0	3

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	188	ASN	C-O	-5.36	1.13	1.23

All (26) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	339	LEU	CA-CB-CG	7.14	131.73	115.30
1	B	333	LEU	CA-CB-CG	7.13	131.69	115.30
1	A	333	LEU	CA-CB-CG	6.87	131.09	115.30
1	B	127	ALA	N-CA-C	-6.69	92.93	111.00
1	A	146	LEU	CB-CG-CD2	-6.41	100.10	111.00
1	A	9	GLU	N-CA-C	-6.41	93.70	111.00
1	A	126	GLN	C-N-CA	6.38	137.66	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	127	ALA	N-CA-C	-6.38	93.77	111.00
1	A	115	LEU	CA-CB-CG	6.17	129.50	115.30
1	C	333	LEU	CA-CB-CG	5.96	129.00	115.30
1	A	339	LEU	CA-CB-CG	5.94	128.96	115.30
1	C	339	LEU	CA-CB-CG	5.92	128.92	115.30
1	B	374	LEU	CA-CB-CG	-5.88	101.77	115.30
1	B	126	GLN	C-N-CA	5.87	136.38	121.70
1	B	115	LEU	CA-CB-CG	5.74	128.50	115.30
1	C	115	LEU	CA-CB-CG	5.71	128.44	115.30
1	B	146	LEU	CB-CG-CD2	-5.70	101.31	111.00
1	C	374	LEU	CA-CB-CG	-5.46	102.74	115.30
1	A	276	ARG	NE-CZ-NH1	5.44	123.02	120.30
1	A	10	TYR	N-CA-C	-5.36	96.53	111.00
1	C	146	LEU	CB-CG-CD2	-5.32	101.95	111.00
1	A	188	ASN	CA-C-N	5.28	126.75	116.20
1	B	414	LYS	CA-CB-CG	5.22	124.88	113.40
1	A	53	LEU	CB-CG-CD1	-5.16	102.22	111.00
1	A	419	LEU	CA-CB-CG	-5.09	103.59	115.30
1	C	372	LEU	CB-CG-CD2	-5.09	102.35	111.00

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	7	TYR	Peptide
1	C	126	GLN	Mainchain,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	3051	0	3218	162	0
1	B	3015	0	3180	145	0
1	C	3048	0	3209	151	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	2	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	1	0	0	1	0
3	B	1	0	0	1	0
3	C	1	0	0	0	0
All	All	9123	0	9607	449	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 24.

All (449) 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:145:ALA:HA	1:B:150:GLN:HG3	1.35	1.07
1:A:298:ILE:CD1	1:A:418:THR:HG21	1.85	1.06
1:C:145:ALA:HA	1:C:150:GLN:HG3	1.40	1.04
1:A:298:ILE:HD12	1:A:418:THR:HG21	1.04	1.03
1:B:57:LEU:O	1:B:61:ILE:HG12	1.60	1.01
1:C:57:LEU:O	1:C:61:ILE:HG12	1.63	0.98
1:A:307:ALA:O	1:A:353:ALA:HB3	1.64	0.96
1:A:295:SER:HB2	1:A:418:THR:OG1	1.66	0.94
1:B:61:ILE:O	1:B:65:SER:HB2	1.66	0.94
1:A:298:ILE:HD12	1:A:418:THR:CG2	1.97	0.94
1:B:368:HIS:HE1	1:B:374:LEU:HB2	1.31	0.94
1:B:117:VAL:CG2	1:B:377:PRO:HB2	1.98	0.93
1:C:61:ILE:O	1:C:65:SER:HB2	1.69	0.92
1:B:51:VAL:O	1:B:55:CYS:SG	2.28	0.91
1:B:355:VAL:CG1	1:B:358:ALA:HB2	1.99	0.91
1:A:57:LEU:O	1:A:61:ILE:HG12	1.70	0.91
1:C:368:HIS:HE1	1:C:374:LEU:HB2	1.37	0.90
1:B:85:ILE:HD13	1:B:302:THR:HB	1.54	0.89
1:C:117:VAL:CG2	1:C:377:PRO:HB2	2.05	0.86
1:B:117:VAL:HG21	1:B:377:PRO:HB2	1.56	0.86
1:A:85:ILE:HD13	1:A:302:THR:HB	1.56	0.85
1:B:358:ALA:HB3	1:B:397:ARG:NH2	1.91	0.85
1:A:355:VAL:CG1	1:A:358:ALA:HB2	2.06	0.84
1:A:188:ASN:O	1:A:190:LEU:N	2.10	0.84
1:B:358:ALA:HB3	1:B:397:ARG:HH22	1.43	0.83
1:B:355:VAL:HG13	1:B:358:ALA:HB2	1.60	0.82
1:C:51:VAL:O	1:C:55:CYS:SG	2.37	0.82
1:A:62:VAL:HG21	1:A:365:MET:HG3	1.61	0.81
1:B:368:HIS:CE1	1:B:374:LEU:HB2	2.14	0.81
1:C:85:ILE:HD13	1:C:302:THR:HB	1.62	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:323:PHE:O	1:B:327:ASN:HB2	1.80	0.80
1:A:323:PHE:O	1:A:327:ASN:HB2	1.80	0.80
1:C:30:LEU:O	1:C:34:GLY:HA3	1.80	0.80
1:C:117:VAL:HG21	1:C:377:PRO:HB2	1.63	0.80
1:A:368:HIS:HE1	1:A:374:LEU:HB2	1.47	0.80
1:C:134:LEU:O	1:C:137:ILE:HG12	1.82	0.79
1:C:368:HIS:CE1	1:C:374:LEU:HB2	2.16	0.79
1:A:414:LYS:HB2	1:A:419:LEU:HD12	1.65	0.79
1:A:117:VAL:CG2	1:A:377:PRO:HB2	2.12	0.78
1:A:61:ILE:O	1:A:65:SER:HB2	1.82	0.78
1:B:62:VAL:HG21	1:B:365:MET:HG3	1.66	0.77
1:C:323:PHE:O	1:C:327:ASN:HB2	1.84	0.77
1:C:155:ILE:HD11	1:C:365:MET:HE2	1.65	0.77
1:A:414:LYS:CB	1:A:419:LEU:HD12	2.16	0.76
1:A:117:VAL:HG21	1:A:377:PRO:HB2	1.67	0.75
1:C:105:ARG:HH22	1:C:334:THR:C	1.91	0.74
1:A:24:ALA:O	1:A:28:LEU:HB2	1.88	0.74
1:B:307:ALA:O	1:B:353:ALA:HB3	1.88	0.74
1:B:355:VAL:HG11	1:B:358:ALA:HB2	1.68	0.74
1:A:216:VAL:HG13	1:A:220:GLN:HG3	1.69	0.73
1:A:295:SER:CB	1:A:418:THR:OG1	2.37	0.73
1:A:333:LEU:HD13	1:A:337:GLN:HB2	1.69	0.73
1:A:310:ASN:ND2	1:A:401:ASN:HA	2.04	0.73
1:B:364:CYS:SG	3:B:503:HG:HG	2.05	0.73
1:C:241:LEU:O	1:C:245:LEU:HB2	1.87	0.73
1:C:306:GLY:O	1:C:310:ASN:HB2	1.89	0.73
1:B:105:ARG:HH22	1:B:334:THR:C	1.90	0.72
1:B:155:ILE:HD11	1:B:365:MET:HE2	1.70	0.72
1:B:216:VAL:HG13	1:B:220:GLN:HG3	1.70	0.72
1:A:105:ARG:HH22	1:A:334:THR:C	1.92	0.72
1:B:349:SER:O	1:B:352:THR:HG23	1.90	0.72
1:A:51:VAL:O	1:A:55:CYS:SG	2.48	0.72
1:A:355:VAL:HG11	1:A:358:ALA:HB2	1.70	0.72
1:B:155:ILE:HD11	1:B:365:MET:CE	2.19	0.71
1:A:355:VAL:HG13	1:A:358:ALA:HB2	1.70	0.71
1:B:105:ARG:HH21	1:B:338:GLN:HG3	1.55	0.71
1:B:117:VAL:HG21	1:B:377:PRO:CB	2.21	0.71
1:B:117:VAL:HG23	1:B:377:PRO:HB2	1.72	0.71
1:A:333:LEU:CD1	1:A:337:GLN:HB2	2.21	0.70
1:A:358:ALA:HB3	1:A:397:ARG:NH2	2.07	0.70
1:B:30:LEU:O	1:B:34:GLY:HA3	1.92	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:241:LEU:O	1:A:245:LEU:HB2	1.92	0.70
1:B:310:ASN:ND2	1:B:401:ASN:HA	2.06	0.70
1:A:354:GLY:HA2	1:A:355:VAL:HG12	1.75	0.69
1:B:24:ALA:O	1:B:28:LEU:HB2	1.92	0.69
1:C:24:ALA:O	1:C:28:LEU:HB2	1.92	0.69
1:C:307:ALA:O	1:C:353:ALA:HB3	1.93	0.68
1:B:306:GLY:O	1:B:310:ASN:HB2	1.94	0.67
1:C:117:VAL:HG23	1:C:377:PRO:HB2	1.76	0.67
1:C:239:LEU:HG	1:C:400:VAL:HG21	1.76	0.67
1:A:134:LEU:O	1:A:137:ILE:HG12	1.93	0.67
1:B:14:GLN:O	1:B:18:ILE:HG12	1.94	0.67
1:C:310:ASN:ND2	1:C:401:ASN:HA	2.10	0.66
1:A:138:VAL:O	1:C:52:ARG:NH2	2.22	0.66
1:A:299:TYR:HB2	1:A:303:LEU:HD22	1.77	0.66
1:C:105:ARG:HH21	1:C:338:GLN:HG3	1.60	0.66
1:A:364:CYS:SG	3:A:503:HG:HG	2.15	0.65
1:B:10:TYR:HE2	1:B:14:GLN:HB3	1.59	0.65
1:C:83:VAL:O	1:C:87:VAL:HG23	1.96	0.65
1:C:416:GLU:HG3	1:C:418:THR:HG23	1.79	0.65
1:C:352:THR:O	1:C:355:VAL:CG2	2.43	0.65
1:B:197:ILE:O	1:B:201:VAL:HG23	1.97	0.65
1:A:413:ALA:O	1:A:418:THR:HG22	1.97	0.65
1:B:57:LEU:HB3	1:B:194:MET:CE	2.26	0.65
1:C:10:TYR:HE2	1:C:14:GLN:HB3	1.61	0.65
1:B:354:GLY:HA2	1:B:355:VAL:O	1.96	0.65
1:A:105:ARG:HH21	1:A:338:GLN:HG3	1.60	0.65
1:A:354:GLY:HA2	1:A:355:VAL:O	1.98	0.64
1:A:368:HIS:CE1	1:A:374:LEU:HB2	2.30	0.64
1:B:224:VAL:HG12	1:B:385:MET:CE	2.27	0.64
1:B:224:VAL:HG12	1:B:385:MET:HE1	1.80	0.64
1:C:237:VAL:O	1:C:241:LEU:HB2	1.98	0.64
1:B:241:LEU:O	1:B:245:LEU:HB2	1.97	0.64
1:C:370:VAL:HG12	1:C:370:VAL:O	1.98	0.63
1:A:354:GLY:CA	1:A:355:VAL:HG12	2.28	0.63
1:A:358:ALA:HB3	1:A:397:ARG:HH22	1.60	0.63
1:B:105:ARG:NH2	1:B:335:VAL:HA	2.13	0.63
1:B:333:LEU:CD1	1:B:337:GLN:HB2	2.29	0.63
1:B:117:VAL:HG21	1:B:377:PRO:C	2.19	0.63
1:A:237:VAL:O	1:A:241:LEU:HB2	1.98	0.63
1:A:10:TYR:HE2	1:A:14:GLN:HB3	1.63	0.63
1:B:354:GLY:HA2	1:B:355:VAL:HG12	1.81	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:57:LEU:HB3	1:A:194:MET:CE	2.30	0.62
1:A:363:LEU:O	1:A:366:VAL:HG12	2.00	0.62
1:C:305:LEU:HD23	1:C:309:ILE:HD11	1.82	0.62
1:C:358:ALA:HB3	1:C:397:ARG:NH2	2.14	0.62
1:B:107:PHE:O	1:B:109:PRO:HD3	2.00	0.62
1:C:239:LEU:HG	1:C:400:VAL:CG2	2.30	0.62
1:A:224:VAL:HG12	1:A:385:MET:CE	2.30	0.61
1:B:61:ILE:O	1:B:65:SER:CB	2.43	0.61
1:B:354:GLY:CA	1:B:355:VAL:HG12	2.30	0.61
1:C:363:LEU:O	1:C:366:VAL:HG12	2.01	0.61
1:C:333:LEU:CD1	1:C:337:GLN:HB2	2.30	0.61
1:C:312:ASP:OD2	1:C:312:ASP:N	2.30	0.61
1:B:193:ALA:O	1:B:197:ILE:HG13	2.00	0.61
1:B:352:THR:O	1:B:355:VAL:HG11	2.01	0.61
1:C:216:VAL:HG13	1:C:220:GLN:HG3	1.81	0.61
1:B:134:LEU:O	1:B:137:ILE:HG12	2.01	0.61
1:A:30:LEU:O	1:A:34:GLY:HA3	2.01	0.60
1:A:236:TYR:HD2	1:A:239:LEU:HD22	1.66	0.60
1:A:117:VAL:HG21	1:A:377:PRO:C	2.22	0.60
1:B:299:TYR:HB2	1:B:303:LEU:HD22	1.83	0.60
1:C:8:ILE:HD13	1:C:8:ILE:H	1.67	0.60
1:C:117:VAL:HG21	1:C:377:PRO:C	2.21	0.60
1:A:306:GLY:O	1:A:310:ASN:HB2	2.01	0.60
1:B:52:ARG:NH2	1:C:138:VAL:O	2.25	0.60
1:B:57:LEU:O	1:B:61:ILE:CG1	2.44	0.60
1:B:83:VAL:O	1:B:87:VAL:HG23	2.00	0.60
1:A:250:LEU:O	1:A:253:ILE:HG22	2.02	0.59
1:C:10:TYR:CG	1:C:11:PRO:HD2	2.38	0.59
1:C:61:ILE:HG23	1:C:194:MET:HB3	1.83	0.59
1:A:61:ILE:O	1:A:65:SER:CB	2.50	0.59
1:B:237:VAL:O	1:B:241:LEU:HB2	2.01	0.59
1:B:352:THR:O	1:B:355:VAL:CG1	2.50	0.59
1:C:117:VAL:HG23	1:C:118:GLY:N	2.17	0.59
1:B:117:VAL:HG23	1:B:118:GLY:N	2.18	0.59
1:C:333:LEU:HD13	1:C:337:GLN:HB2	1.85	0.59
1:A:311:MET:CE	1:A:346:VAL:HG12	2.33	0.59
1:C:352:THR:O	1:C:355:VAL:HG21	2.02	0.59
1:A:117:VAL:HG23	1:A:377:PRO:HB2	1.83	0.59
1:A:295:SER:HB2	1:A:418:THR:CG2	2.33	0.59
1:C:57:LEU:HB3	1:C:194:MET:CE	2.32	0.59
1:C:61:ILE:O	1:C:65:SER:CB	2.46	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:157:PHE:HA	1:A:160:ILE:HG22	1.85	0.58
1:C:20:LEU:HD12	1:C:213:ILE:HG12	1.85	0.58
1:C:155:ILE:HD11	1:C:365:MET:CE	2.32	0.58
1:A:263:LYS:HA	1:A:266:LYS:HD2	1.84	0.58
1:A:311:MET:HE3	1:A:346:VAL:HG12	1.85	0.58
1:C:145:ALA:HA	1:C:150:GLN:CG	2.24	0.58
1:C:299:TYR:HB2	1:C:303:LEU:HD22	1.86	0.58
1:C:117:VAL:HG21	1:C:377:PRO:CB	2.32	0.58
1:B:333:LEU:HD13	1:B:337:GLN:HB2	1.86	0.58
1:B:174:GLU:OE1	1:B:174:GLU:HA	2.03	0.58
1:A:178:LYS:NZ	1:C:185:ASP:OD1	2.30	0.57
1:B:65:SER:OG	1:B:352:THR:HG22	2.04	0.57
1:A:101:ILE:HG23	1:A:338:GLN:OE1	2.05	0.57
1:A:198:VAL:CG1	1:A:356:PRO:HG2	2.34	0.57
1:B:165:ILE:HG21	1:B:184:LEU:HB2	1.87	0.57
1:C:61:ILE:HG23	1:C:194:MET:CB	2.35	0.57
1:A:188:ASN:O	1:A:189:GLY:C	2.41	0.56
1:C:130:LEU:HA	1:C:133:ILE:HG22	1.86	0.56
1:A:117:VAL:C	1:A:119:GLY:H	2.08	0.56
1:A:298:ILE:CD1	1:A:418:THR:CG2	2.68	0.56
1:C:14:GLN:O	1:C:18:ILE:HG12	2.05	0.56
1:B:312:ASP:OD2	1:B:312:ASP:N	2.35	0.56
1:C:62:VAL:HG21	1:C:365:MET:HG3	1.86	0.56
1:C:358:ALA:HB3	1:C:397:ARG:HH22	1.68	0.56
1:A:295:SER:HB2	1:A:418:THR:HG1	1.67	0.56
1:C:224:VAL:HG12	1:C:385:MET:CE	2.36	0.56
1:A:352:THR:O	1:A:355:VAL:HG11	2.06	0.56
1:A:165:ILE:HG21	1:A:184:LEU:HB2	1.87	0.56
1:C:10:TYR:CE2	1:C:14:GLN:HB3	2.41	0.56
1:C:105:ARG:NH2	1:C:335:VAL:HA	2.21	0.56
1:C:126:GLN:HG3	1:C:127:ALA:HB3	1.87	0.56
1:B:305:LEU:HD23	1:B:309:ILE:HD11	1.89	0.55
1:C:58:VAL:HG21	1:C:364:CYS:SG	2.46	0.55
1:B:157:PHE:HA	1:B:160:ILE:HG22	1.88	0.55
1:A:61:ILE:HG23	1:A:194:MET:HB3	1.88	0.55
1:A:117:VAL:HG21	1:A:377:PRO:CB	2.37	0.55
1:C:107:PHE:O	1:C:109:PRO:HD3	2.06	0.55
1:A:107:PHE:O	1:A:109:PRO:HD3	2.06	0.55
1:B:406:LEU:HA	1:B:409:THR:HG22	1.89	0.55
1:C:67:VAL:HG11	1:C:187:ILE:HD13	1.89	0.55
1:A:354:GLY:HA2	1:A:355:VAL:CG1	2.37	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:98:THR:HG22	1:B:102:ILE:HD12	1.89	0.54
1:B:310:ASN:HD21	1:B:401:ASN:HA	1.70	0.54
1:A:243:ILE:HA	1:A:247:TYR:CD2	2.42	0.54
1:C:107:PHE:HD1	1:C:107:PHE:H	1.55	0.54
1:A:187:ILE:O	1:A:188:ASN:O	2.25	0.54
1:C:349:SER:O	1:C:352:THR:HG23	2.07	0.54
1:C:370:VAL:O	1:C:370:VAL:CG1	2.55	0.54
1:B:263:LYS:HA	1:B:266:LYS:HD2	1.89	0.54
1:B:55:CYS:O	1:B:58:VAL:HG12	2.08	0.54
1:C:107:PHE:CD1	1:C:107:PHE:N	2.76	0.54
1:B:61:ILE:HG23	1:B:194:MET:HB3	1.90	0.54
1:B:239:LEU:HG	1:B:400:VAL:HG21	1.89	0.54
1:C:354:GLY:HA2	1:C:355:VAL:O	2.08	0.54
1:A:107:PHE:CD1	1:A:107:PHE:N	2.76	0.53
1:C:311:MET:HE3	1:C:346:VAL:HG12	1.89	0.53
1:C:174:GLU:HA	1:C:174:GLU:OE1	2.08	0.53
1:A:352:THR:O	1:A:355:VAL:CG1	2.57	0.53
1:C:54:LEU:HD23	1:C:387:LEU:HD11	1.89	0.53
1:A:414:LYS:HB3	1:A:419:LEU:HD12	1.89	0.53
1:A:141:ASN:OD1	1:A:141:ASN:C	2.47	0.53
1:B:10:TYR:CG	1:B:11:PRO:HD2	2.44	0.53
1:B:318:GLN:O	1:B:322:THR:HB	2.09	0.53
1:A:168:LEU:HD11	1:C:193:ALA:HA	1.91	0.52
1:A:224:VAL:HG12	1:A:385:MET:HE1	1.90	0.52
1:B:10:TYR:CE2	1:B:14:GLN:HB3	2.41	0.52
1:C:57:LEU:HD13	1:C:198:VAL:HG22	1.91	0.52
1:A:224:VAL:HG12	1:A:385:MET:HE3	1.91	0.52
1:C:8:ILE:H	1:C:8:ILE:CD1	2.23	0.52
1:A:370:VAL:HG12	1:A:370:VAL:O	2.08	0.52
1:A:310:ASN:HD21	1:A:401:ASN:HA	1.72	0.52
1:A:236:TYR:CD2	1:A:239:LEU:HD22	2.45	0.52
1:B:117:VAL:C	1:B:119:GLY:H	2.12	0.51
1:B:363:LEU:O	1:B:366:VAL:HG12	2.10	0.51
1:A:107:PHE:HD1	1:A:107:PHE:H	1.56	0.51
1:C:165:ILE:HG21	1:C:184:LEU:HB2	1.93	0.51
1:A:409:THR:HA	1:A:412:VAL:HG12	1.92	0.51
1:A:105:ARG:NH2	1:A:335:VAL:HA	2.26	0.51
1:A:349:SER:O	1:A:352:THR:HG23	2.10	0.51
1:A:356:PRO:HG2	1:A:357:GLY:H	1.75	0.51
1:C:354:GLY:CA	1:C:355:VAL:HG23	2.40	0.51
1:B:105:ARG:NH2	1:B:338:GLN:HG3	2.23	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:205:ALA:N	1:A:206:PRO:HD2	2.26	0.51
1:A:174:GLU:HA	1:A:174:GLU:OE1	2.11	0.51
1:C:205:ALA:N	1:C:206:PRO:HD2	2.26	0.51
1:A:20:LEU:HD12	1:A:213:ILE:HG12	1.93	0.50
1:B:105:ARG:HH22	1:B:335:VAL:N	2.08	0.50
1:C:28:LEU:HD11	1:C:222:VAL:HG22	1.93	0.50
1:C:406:LEU:HA	1:C:409:THR:HG22	1.92	0.50
1:A:10:TYR:CG	1:A:11:PRO:HD2	2.46	0.50
1:A:295:SER:HB2	1:A:418:THR:CB	2.41	0.50
1:A:185:ASP:OD1	1:B:178:LYS:NZ	2.35	0.50
1:B:107:PHE:CD1	1:B:107:PHE:N	2.79	0.50
1:C:311:MET:CE	1:C:346:VAL:HG12	2.42	0.50
1:B:354:GLY:N	1:B:355:VAL:HG12	2.27	0.49
1:B:57:LEU:HD13	1:B:198:VAL:HG22	1.94	0.49
1:C:117:VAL:HG23	1:C:118:GLY:H	1.77	0.49
1:C:198:VAL:CG1	1:C:356:PRO:HG2	2.42	0.49
1:C:8:ILE:HG12	1:C:8:ILE:O	2.13	0.49
1:B:239:LEU:HG	1:B:400:VAL:CG2	2.42	0.49
1:A:248:PHE:O	1:A:252:LYS:HB2	2.13	0.49
1:A:79:GLY:O	1:A:83:VAL:HG23	2.13	0.49
1:C:105:ARG:HH22	1:C:335:VAL:N	2.10	0.49
1:C:305:LEU:HD23	1:C:309:ILE:CD1	2.41	0.49
1:A:10:TYR:CE2	1:A:14:GLN:HB3	2.45	0.48
1:A:117:VAL:HG23	1:A:118:GLY:N	2.27	0.48
1:B:61:ILE:HG23	1:B:194:MET:CB	2.43	0.48
1:B:155:ILE:HD11	1:B:365:MET:HE1	1.95	0.48
1:C:310:ASN:HD21	1:C:401:ASN:HA	1.74	0.48
1:A:57:LEU:HD13	1:A:198:VAL:HG22	1.93	0.48
1:B:243:ILE:HA	1:B:247:TYR:CD2	2.49	0.48
1:A:294:ILE:HG13	1:A:419:LEU:HD21	1.95	0.48
1:B:9:GLU:N	1:B:15:LYS:HZ1	2.12	0.48
1:B:222:VAL:O	1:B:225:VAL:HG12	2.12	0.48
1:C:10:TYR:CD1	1:C:11:PRO:HD2	2.47	0.48
1:C:236:TYR:HD2	1:C:239:LEU:HD22	1.79	0.48
1:C:354:GLY:HA2	1:C:355:VAL:HG23	1.94	0.48
1:A:61:ILE:HG23	1:A:194:MET:CB	2.43	0.48
1:C:188:ASN:O	1:C:190:LEU:N	2.47	0.48
1:A:194:MET:O	1:A:198:VAL:HG23	2.13	0.47
1:A:406:LEU:HA	1:A:409:THR:HG22	1.96	0.47
1:B:151:VAL:HG11	1:B:369:SER:HB3	1.96	0.47
1:B:355:VAL:HG13	1:B:358:ALA:CB	2.38	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:30:LEU:O	1:C:34:GLY:CA	2.55	0.47
1:B:354:GLY:HA2	1:B:355:VAL:CG1	2.43	0.47
1:A:10:TYR:CE2	1:A:11:PRO:HG2	2.49	0.47
1:B:250:LEU:O	1:B:253:ILE:HG22	2.15	0.47
1:C:105:ARG:NH1	1:C:335:VAL:HG22	2.29	0.47
1:C:151:VAL:HG11	1:C:369:SER:HB3	1.96	0.47
1:B:28:LEU:HD11	1:B:222:VAL:HG22	1.95	0.47
1:B:66:LEU:HD22	1:B:159:ILE:HD11	1.97	0.47
1:C:224:VAL:HG12	1:C:385:MET:HE1	1.97	0.47
1:A:249:VAL:O	1:A:253:ILE:HB	2.14	0.47
1:B:303:LEU:HA	1:B:303:LEU:HD12	1.66	0.47
1:B:314:THR:HA	1:B:397:ARG:HD3	1.96	0.47
1:C:79:GLY:O	1:C:83:VAL:HG23	2.15	0.47
1:B:106:LEU:HD22	1:B:106:LEU:HA	1.76	0.47
1:A:198:VAL:HG12	1:A:356:PRO:HG2	1.96	0.47
1:A:414:LYS:HB3	1:A:419:LEU:CD1	2.45	0.47
1:C:117:VAL:HG21	1:C:378:ASN:N	2.30	0.47
1:A:102:ILE:HG22	1:A:103:MET:HE3	1.96	0.46
1:C:306:GLY:O	1:C:310:ASN:CB	2.62	0.46
1:B:248:PHE:O	1:B:252:LYS:HB2	2.15	0.46
1:C:324:PHE:CD2	1:C:386:ILE:HD11	2.51	0.46
1:B:23:GLY:HA2	1:B:210:PHE:CE2	2.50	0.46
1:C:243:ILE:HA	1:C:247:TYR:CD2	2.51	0.46
1:B:224:VAL:HG12	1:B:385:MET:HE3	1.98	0.46
1:C:250:LEU:O	1:C:253:ILE:HG22	2.16	0.46
1:B:60:PRO:HB2	1:B:194:MET:HG3	1.98	0.46
1:C:152:LEU:HD12	1:C:152:LEU:HA	1.83	0.46
1:A:14:GLN:O	1:A:18:ILE:HG12	2.15	0.46
1:A:26:VAL:HG12	1:A:30:LEU:HD12	1.96	0.46
1:B:54:LEU:HD23	1:B:387:LEU:HD11	1.97	0.46
1:B:272:ALA:HB2	1:B:402:VAL:HG21	1.97	0.46
1:C:181:GLU:O	1:C:185:ASP:HB2	2.15	0.46
1:B:79:GLY:O	1:B:83:VAL:HG23	2.16	0.46
1:A:54:LEU:HD23	1:A:387:LEU:HD11	1.96	0.46
1:B:325:ILE:HG21	1:B:367:LEU:HD21	1.98	0.46
1:C:117:VAL:C	1:C:119:GLY:H	2.17	0.46
1:A:239:LEU:HG	1:A:400:VAL:HG21	1.98	0.46
1:B:187:ILE:O	1:B:190:LEU:HB3	2.15	0.46
1:B:107:PHE:HD1	1:B:107:PHE:H	1.64	0.45
1:C:224:VAL:HG12	1:C:385:MET:HE3	1.98	0.45
1:A:370:VAL:O	1:A:370:VAL:CG1	2.64	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:311:MET:CE	1:B:346:VAL:HG12	2.47	0.45
1:A:242:GLN:O	1:A:246:VAL:HG23	2.16	0.45
1:B:63:PHE:CD1	1:B:158:ALA:HB2	2.52	0.45
1:B:152:LEU:HD12	1:B:152:LEU:HA	1.87	0.45
1:C:107:PHE:HB3	1:C:230:LYS:HD3	1.97	0.45
1:A:169:MET:HA	1:A:177:ARG:HG3	1.98	0.45
1:B:356:PRO:HG2	1:B:357:GLY:H	1.81	0.45
1:A:354:GLY:N	1:A:355:VAL:HG12	2.31	0.45
1:B:117:VAL:HG22	1:B:378:ASN:CG	2.37	0.45
1:B:311:MET:HE3	1:B:346:VAL:HG12	1.99	0.45
1:A:9:GLU:CD	1:A:9:GLU:C	2.75	0.45
1:A:28:LEU:HD11	1:A:222:VAL:HG22	1.99	0.45
1:C:278:SER:HB3	1:C:307:ALA:HA	1.99	0.45
1:C:303:LEU:HD12	1:C:303:LEU:HA	1.74	0.45
1:A:197:ILE:O	1:A:201:VAL:HG23	2.16	0.45
1:B:188:ASN:HD21	1:C:175:LYS:HE3	1.82	0.45
1:B:205:ALA:N	1:B:206:PRO:HD2	2.31	0.44
1:C:217:MET:SD	1:C:224:VAL:CG2	3.05	0.44
1:B:30:LEU:O	1:B:34:GLY:CA	2.64	0.44
1:C:263:LYS:HA	1:C:266:LYS:HD2	1.99	0.44
1:A:58:VAL:HG21	1:A:364:CYS:SG	2.57	0.44
1:A:299:TYR:O	1:A:303:LEU:HB2	2.17	0.44
1:A:394:ASP:HA	1:A:397:ARG:HB2	1.99	0.44
1:B:310:ASN:ND2	1:B:401:ASN:CA	2.79	0.44
1:C:117:VAL:HG22	1:C:378:ASN:CG	2.37	0.44
1:C:409:THR:HA	1:C:412:VAL:HG12	1.98	0.44
1:A:60:PRO:HB2	1:A:194:MET:HG3	1.99	0.44
1:A:325:ILE:HD11	1:A:382:ALA:C	2.38	0.44
1:A:418:THR:HG23	1:A:418:THR:O	2.18	0.44
1:C:248:PHE:O	1:C:252:LYS:HB2	2.18	0.44
1:C:318:GLN:O	1:C:322:THR:HB	2.18	0.44
1:B:200:GLY:O	1:B:203:GLN:HB2	2.18	0.44
1:A:305:LEU:HD23	1:A:309:ILE:HD11	2.00	0.44
1:B:203:GLN:HA	1:B:203:GLN:NE2	2.33	0.44
1:C:352:THR:O	1:C:355:VAL:HG23	2.18	0.44
1:A:83:VAL:O	1:A:87:VAL:HG23	2.17	0.44
1:A:341:ILE:HG22	1:A:342:VAL:N	2.32	0.44
1:B:63:PHE:HD1	1:B:158:ALA:HB2	1.82	0.44
1:C:78:LEU:HD23	1:C:83:VAL:HG22	1.99	0.44
1:C:187:ILE:C	1:C:188:ASN:O	2.54	0.44
1:A:15:LYS:NZ	1:A:203:GLN:OE1	2.51	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:198:VAL:HG11	1:A:356:PRO:HG2	1.98	0.43
1:B:58:VAL:HG21	1:B:364:CYS:SG	2.58	0.43
1:A:325:ILE:HD13	1:A:382:ALA:HB1	1.99	0.43
1:C:354:GLY:N	1:C:355:VAL:HG23	2.34	0.43
1:A:117:VAL:HG21	1:A:378:ASN:N	2.34	0.43
1:B:57:LEU:HB3	1:B:194:MET:HE3	1.98	0.43
1:B:137:ILE:O	1:B:153:PRO:HA	2.19	0.43
1:C:10:TYR:CE2	1:C:11:PRO:HG2	2.53	0.43
1:C:106:LEU:HD22	1:C:106:LEU:HA	1.82	0.43
1:C:409:THR:O	1:C:413:ALA:HB2	2.18	0.43
1:A:28:LEU:HD21	1:A:222:VAL:HG13	2.00	0.43
1:A:355:VAL:HG13	1:A:358:ALA:CB	2.44	0.43
1:B:103:MET:HE3	1:B:103:MET:HA	2.00	0.43
1:A:151:VAL:HG11	1:A:369:SER:HB3	1.99	0.43
1:B:57:LEU:HB3	1:B:194:MET:HE2	2.01	0.43
1:A:155:ILE:HD11	1:A:365:MET:CE	2.48	0.43
1:A:278:SER:HB3	1:A:307:ALA:HA	2.01	0.43
1:A:173:ASN:HD22	1:A:176:VAL:HG23	1.84	0.43
1:A:57:LEU:HB3	1:A:194:MET:HE2	2.01	0.43
1:A:222:VAL:O	1:A:225:VAL:HG12	2.18	0.43
1:A:239:LEU:HG	1:A:400:VAL:CG2	2.49	0.43
1:A:248:PHE:HZ	1:A:262:ILE:HG13	1.84	0.43
1:A:318:GLN:O	1:A:322:THR:HB	2.19	0.43
1:A:409:THR:O	1:A:413:ALA:HB2	2.19	0.43
1:B:299:TYR:O	1:B:303:LEU:HB2	2.19	0.42
1:A:259:ILE:O	1:A:263:LYS:HG2	2.19	0.42
1:A:310:ASN:HD22	1:A:401:ASN:HA	1.83	0.42
1:B:202:MET:HE3	1:B:276:ARG:HH22	1.84	0.42
1:C:274:VAL:HG12	1:C:274:VAL:O	2.20	0.42
1:C:299:TYR:O	1:C:303:LEU:HB2	2.18	0.42
1:B:130:LEU:HA	1:B:133:ILE:HG22	2.01	0.42
1:B:192:GLU:HG2	1:C:176:VAL:HG13	2.01	0.42
1:B:202:MET:CE	1:B:276:ARG:HH22	2.32	0.42
1:C:23:GLY:HA2	1:C:210:PHE:CE2	2.54	0.42
1:C:194:MET:O	1:C:198:VAL:HG23	2.19	0.42
1:A:71:ALA:HA	1:A:166:THR:HG21	2.02	0.42
1:A:168:LEU:HD11	1:C:193:ALA:CA	2.50	0.42
1:B:249:VAL:O	1:B:253:ILE:HB	2.18	0.42
1:B:198:VAL:CG1	1:B:356:PRO:HG2	2.49	0.41
1:C:103:MET:HA	1:C:103:MET:CE	2.50	0.41
1:A:117:VAL:HG22	1:A:378:ASN:CG	2.41	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:117:VAL:HG21	1:B:378:ASN:N	2.34	0.41
1:B:169:MET:HA	1:B:177:ARG:HG3	2.02	0.41
1:A:163:ILE:O	1:A:166:THR:OG1	2.31	0.41
1:A:312:ASP:OD2	1:A:312:ASP:N	2.36	0.41
1:B:20:LEU:HD12	1:B:213:ILE:HG12	2.02	0.41
1:B:44:LYS:N	1:B:45:PRO:CD	2.83	0.41
1:C:137:ILE:HG13	1:C:138:VAL:N	2.35	0.41
1:C:217:MET:SD	1:C:224:VAL:HG23	2.61	0.41
1:C:363:LEU:HD12	1:C:363:LEU:HA	1.93	0.41
1:A:105:ARG:HH22	1:A:335:VAL:N	2.19	0.41
1:B:10:TYR:CE2	1:B:11:PRO:HG2	2.55	0.41
1:C:325:ILE:HG21	1:C:367:LEU:HD21	2.03	0.41
1:A:152:LEU:HD12	1:A:152:LEU:HA	1.87	0.41
1:B:181:GLU:O	1:B:185:ASP:HB2	2.20	0.41
1:C:28:LEU:HD21	1:C:222:VAL:HG13	2.02	0.41
1:C:61:ILE:HG12	1:C:61:ILE:H	1.79	0.41
1:C:30:LEU:C	1:C:34:GLY:HA3	2.41	0.41
1:B:370:VAL:O	1:B:370:VAL:HG12	2.21	0.41
1:C:85:ILE:O	1:C:88:TYR:HB3	2.20	0.41
1:C:202:MET:CE	1:C:276:ARG:HH22	2.34	0.41
1:A:103:MET:CE	1:A:103:MET:HA	2.50	0.41
1:B:193:ALA:HA	1:C:168:LEU:HD11	2.03	0.41
1:C:90:LEU:HD12	1:C:90:LEU:HA	1.94	0.41
1:C:242:GLN:O	1:C:246:VAL:HG23	2.20	0.41
1:C:251:LEU:HG	1:C:407:THR:HG23	2.03	0.41
1:A:117:VAL:C	1:A:119:GLY:N	2.72	0.41
1:A:155:ILE:HD11	1:A:365:MET:HE2	2.03	0.41
1:A:376:ASP:HA	1:A:377:PRO:HD3	1.93	0.41
1:B:57:LEU:HB2	1:B:61:ILE:HD11	2.02	0.41
1:B:102:ILE:HG22	1:B:103:MET:N	2.36	0.41
1:B:282:LEU:HD11	1:B:303:LEU:HB3	2.02	0.41
1:B:329:LEU:HA	1:B:329:LEU:HD12	1.74	0.41
1:B:337:GLN:H	1:B:337:GLN:HG3	1.63	0.41
1:B:359:GLY:H	1:B:397:ARG:HH21	1.69	0.41
1:C:102:ILE:HG22	1:C:103:MET:HE3	2.03	0.41
1:C:202:MET:HE2	1:C:276:ARG:HH12	1.85	0.41
1:C:57:LEU:HB3	1:C:194:MET:HE2	2.02	0.40
1:A:98:THR:HG22	1:A:102:ILE:HD12	2.03	0.40
1:A:123:GLN:HA	1:A:124:PRO:HD2	1.93	0.40
1:A:329:LEU:HA	1:A:329:LEU:HD12	1.81	0.40
1:C:57:LEU:HB3	1:C:194:MET:HE3	2.04	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:54:LEU:C	1:A:56:MET:H	2.24	0.40
1:A:57:LEU:HB3	1:A:194:MET:HE3	2.02	0.40
1:C:236:TYR:CD2	1:C:239:LEU:HD22	2.57	0.40
1:C:338:GLN:O	1:C:342:VAL:HG23	2.21	0.40
1:A:355:VAL:HA	1:A:356:PRO:HD2	1.87	0.40
1:B:117:VAL:C	1:B:119:GLY:N	2.75	0.40
1:C:77:ARG:NH1	1:C:170:ASN:OD1	2.51	0.40
1:C:107:PHE:HB3	1:C:230:LYS:CD	2.52	0.40
1:C:356:PRO:HG2	1:C:357:GLY:H	1.86	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	411/422 (97%)	380 (92%)	24 (6%)	7 (2%)	9	43
1	B	406/422 (96%)	376 (93%)	27 (7%)	3 (1%)	22	59
1	C	411/422 (97%)	382 (93%)	25 (6%)	4 (1%)	15	52
All	All	1228/1266 (97%)	1138 (93%)	76 (6%)	14 (1%)	14	51

All (14) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	188	ASN
1	A	189	GLY
1	C	355	VAL
1	A	150	GLN
1	A	127	ALA
1	A	149	GLY
1	A	355	VAL
1	B	355	VAL

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Mol	Chain	Res	Type
1	C	127	ALA
1	A	356	PRO
1	B	127	ALA
1	B	356	PRO
1	C	356	PRO
1	C	131	VAL

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
1	A	321/330 (97%)	268 (84%)	53 (16%)	2 14
1	B	317/330 (96%)	267 (84%)	50 (16%)	2 17
1	C	320/330 (97%)	271 (85%)	49 (15%)	2 17
All	All	958/990 (97%)	806 (84%)	152 (16%)	2 16

All (152) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	ILE
1	A	9	GLU
1	A	13	LEU
1	A	14	GLN
1	A	28	LEU
1	A	35	TYR
1	A	41	THR
1	A	54	LEU
1	A	57	LEU
1	A	61	ILE
1	A	65	SER
1	A	84	LYS
1	A	90	LEU
1	A	106	LEU
1	A	107	PHE
1	A	113	ILE

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Mol	Chain	Res	Type
1	A	126	GLN
1	A	148	ASN
1	A	150	GLN
1	A	152	LEU
1	A	155	ILE
1	A	172	GLU
1	A	174	GLU
1	A	209	VAL
1	A	219	GLU
1	A	224	VAL
1	A	232	THR
1	A	239	LEU
1	A	241	LEU
1	A	245	LEU
1	A	246	VAL
1	A	250	LEU
1	A	259	ILE
1	A	266	LYS
1	A	287	ARG
1	A	303	LEU
1	A	312	ASP
1	A	325	ILE
1	A	329	LEU
1	A	333	LEU
1	A	335	VAL
1	A	338	GLN
1	A	339	LEU
1	A	347	LEU
1	A	350	ILE
1	A	352	THR
1	A	364	CYS
1	A	365	MET
1	A	374	LEU
1	A	394	ASP
1	A	397	ARG
1	A	411	ILE
1	A	414	LYS
1	B	13	LEU
1	B	14	GLN
1	B	28	LEU
1	B	35	TYR
1	B	54	LEU

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Mol	Chain	Res	Type
1	B	57	LEU
1	B	61	ILE
1	B	65	SER
1	B	84	LYS
1	B	90	LEU
1	B	102	ILE
1	B	107	PHE
1	B	113	ILE
1	B	126	GLN
1	B	148	ASN
1	B	150	GLN
1	B	152	LEU
1	B	155	ILE
1	B	172	GLU
1	B	174	GLU
1	B	203	GLN
1	B	209	VAL
1	B	213	ILE
1	B	219	GLU
1	B	224	VAL
1	B	232	THR
1	B	239	LEU
1	B	241	LEU
1	B	246	VAL
1	B	250	LEU
1	B	259	ILE
1	B	266	LYS
1	B	287	ARG
1	B	303	LEU
1	B	312	ASP
1	B	325	ILE
1	B	329	LEU
1	B	333	LEU
1	B	338	GLN
1	B	339	LEU
1	B	347	LEU
1	B	350	ILE
1	B	352	THR
1	B	355	VAL
1	B	364	CYS
1	B	374	LEU
1	B	394	ASP

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Mol	Chain	Res	Type
1	B	397	ARG
1	B	411	ILE
1	B	414	LYS
1	C	8	ILE
1	C	13	LEU
1	C	14	GLN
1	C	28	LEU
1	C	35	TYR
1	C	54	LEU
1	C	57	LEU
1	C	61	ILE
1	C	65	SER
1	C	90	LEU
1	C	106	LEU
1	C	107	PHE
1	C	113	ILE
1	C	126	GLN
1	C	148	ASN
1	C	150	GLN
1	C	152	LEU
1	C	172	GLU
1	C	174	GLU
1	C	209	VAL
1	C	219	GLU
1	C	224	VAL
1	C	232	THR
1	C	239	LEU
1	C	241	LEU
1	C	246	VAL
1	C	250	LEU
1	C	259	ILE
1	C	266	LYS
1	C	270	LEU
1	C	287	ARG
1	C	303	LEU
1	C	312	ASP
1	C	325	ILE
1	C	329	LEU
1	C	333	LEU
1	C	335	VAL
1	C	338	GLN
1	C	339	LEU

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Mol	Chain	Res	Type
1	C	347	LEU
1	C	350	ILE
1	C	352	THR
1	C	355	VAL
1	C	364	CYS
1	C	374	LEU
1	C	394	ASP
1	C	397	ARG
1	C	411	ILE
1	C	414	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	132	HIS
1	A	223	HIS
1	A	310	ASN
1	A	327	ASN
1	A	368	HIS
1	B	108	ASN
1	B	132	HIS
1	B	223	HIS
1	B	310	ASN
1	B	368	HIS
1	C	108	ASN
1	C	223	HIS
1	C	310	ASN
1	C	327	ASN
1	C	368	HIS

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 9 ligands modelled in this entry, 9 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 [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	413/422 (97%)	-0.63	5 (1%) 79 75	85, 131, 173, 234	0
1	B	408/422 (96%)	-0.67	1 (0%) 95 95	90, 123, 174, 224	0
1	C	413/422 (97%)	-0.53	6 (1%) 73 69	96, 156, 235, 295	0
All	All	1234/1266 (97%)	-0.61	12 (0%) 82 79	85, 134, 207, 295	0

All (12) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	80	ARG	3.2
1	B	33	TYR	3.1
1	C	267	ASP	2.8
1	C	172	GLU	2.7
1	A	33	TYR	2.5
1	C	296	GLU	2.5
1	C	332	HIS	2.5
1	A	76	ALA	2.4
1	C	259	ILE	2.1
1	C	291	GLU	2.1
1	A	119	GLY	2.1
1	A	123	GLN	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
2	TL	C	501	1/1	0.94	0.13	210,210,210,210	1
2	TL	A	501	1/1	0.95	0.12	191,191,191,191	1
3	HG	A	503	1/1	0.96	0.08	140,140,140,140	1
2	TL	B	501	1/1	0.97	0.13	162,162,162,162	1
3	HG	B	503	1/1	0.98	0.05	150,150,150,150	1
3	HG	C	503	1/1	0.98	0.08	158,158,158,158	1
2	TL	B	502	1/1	0.99	0.12	157,157,157,157	1
2	TL	A	502	1/1	0.99	0.12	184,184,184,184	1
2	TL	C	502	1/1	0.99	0.09	180,180,180,180	1

6.5 Other polymers [i](#)

There are no such residues in this entry.