W O R L D W I D E
wwPDB
P R O T E I N D A T A B A N K

Full wwPDB X-ray Structure Validation Report ⓘ

Dec 17, 2023 – 06:18 am GMT

PDB ID	:	4P19
Title	:	Closed, apo inward-facing state of the glutamate transporter homologue GltPh
Authors	:	Verdon, G.; Boudker, O.
Deposited on	:	2014-02-25
Resolution	:	3.25 Å(reported)

The following versions of software and data (see references ⓘ) were used in the production of this report:

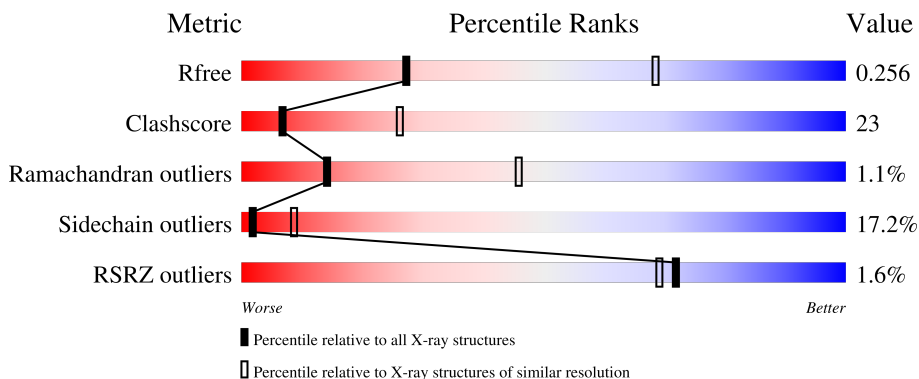|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation 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 3.25 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	Percentile Ranks	Value
Rfree		0.256
Clashscore		23
Ramachandran outliers		1.1%
Sidechain outliers		17.2%
RSRZ outliers		1.6%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1191 (3.30-3.22)
Clashscore	141614	1251 (3.30-3.22)
Ramachandran outliers	138981	1229 (3.30-3.22)
Sidechain outliers	138945	1228 (3.30-3.22)
RSRZ outliers	127900	1154 (3.30-3.22)

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 <=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	.% 58% 32% 7% ··
1	B	422	.% 57% 31% 9% ·
1	C	422	2% 59% 30% 9% ·

2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 9124 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 425aa long hypothetical proton glutamate symport protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	414	Total	C	N	O	S	0	0	0
			3058	2011	493	536	18			
1	B	408	Total	C	N	O	S	0	0	0
			3015	1983	487	527	18			
1	C	413	Total	C	N	O	S	0	0	0
			3048	2003	492	535	18			

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

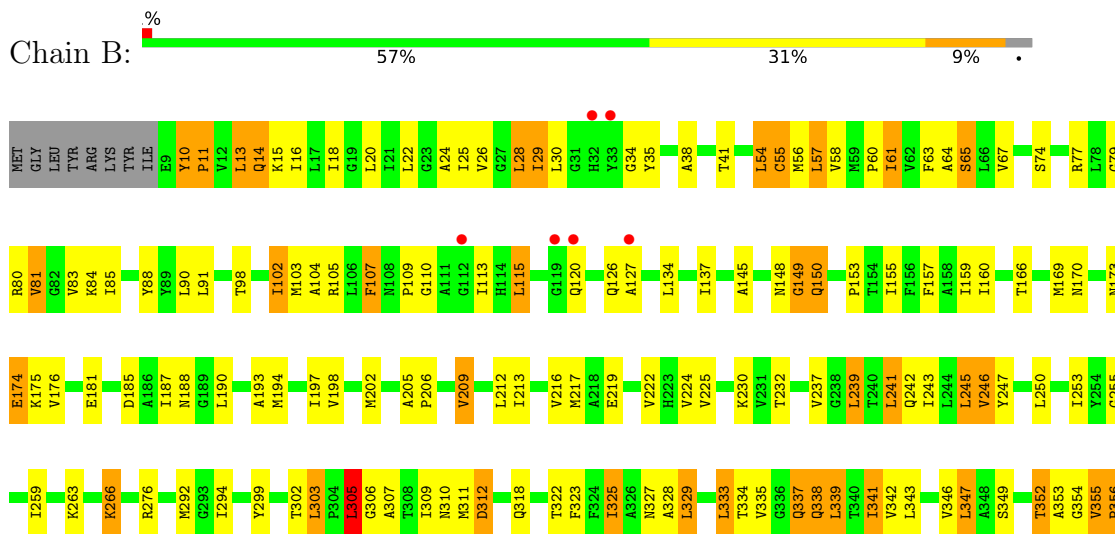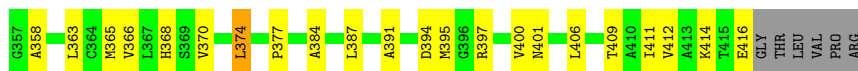| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Hg	0	0
			1	1		
2	B	1	Total	Hg	0	0
			1	1		
2	C	1	Total	Hg	0	0
			1	1		

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: 425aa long hypothetical proton glutamate symport protein
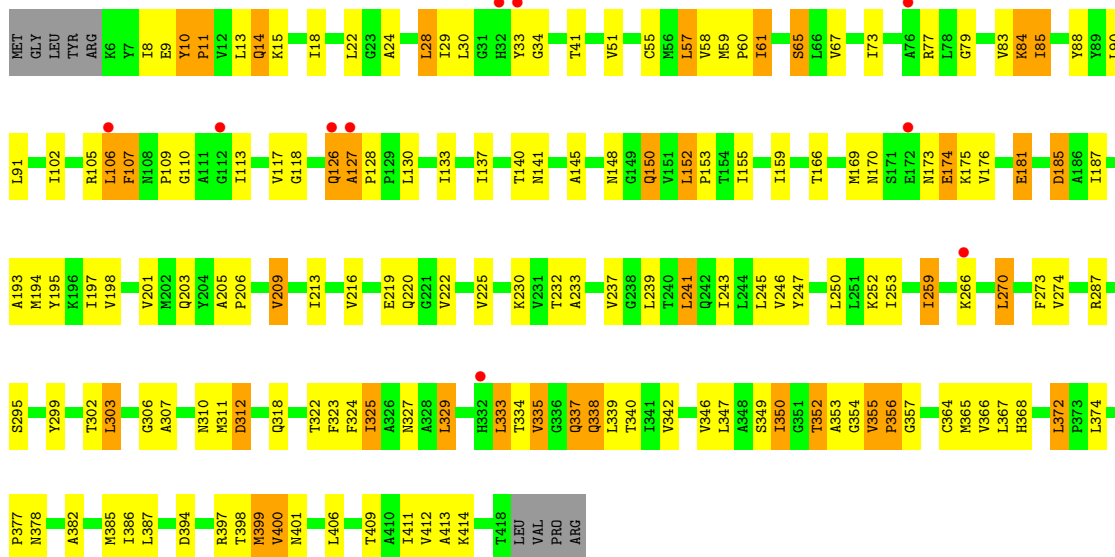

Chain A:

• Molecule 1: 425aa long hypothetical proton glutamate symport protein

Chain B:

G357 A358 L363 C364 M365 V366 L367 H368 S369 V370 L374 P377 A384 L387 A391 D394 M395 G396 R397 V400 N401 L406 T409 A410 I411 V412 A413 K414 T415 E416 GLY THR LEU VAL PRO ARG

• Molecule 1: 425aa long hypothetical proton glutamate symport protein

Chain C:

2%

59%   30%   9%   •

MET GLY LEU TYR ARG K6 Y7 I8 E9 Y10 P11 V12 L13 Q14 K15 I18 L22 G23 A24 L28 I29 L30 G31 H32 Y33 G34 T41 V51 C55 M56 L57 V58 M59 P60 I61 S65 L66 V67 I73 A76 R77 L78 G79 V83 K84 I85 Y88 Y89 L90

L91 I102 R105 L106 F107 N108 P109 G110 A111 G112 I113 V117 G118 Q126 A127 P128 P129 L130 I133 I137 T140 N141 A145 N148 G149 Q150 V151 L152 P153 T154 I155 I159 T166 M169 N170 S171 E172 N173 E174 K175 V176 E181 D185 A186 I187

A193 M194 Y195 K196 I197 V198 V201 M202 Q203 Y204 A205 P206 V209 I213 V216 E219 Q220 G221 V222 V225 K230 V231 T232 A233 V237 G238 L239 T240 L241 Q242 I243 L244 L245 V246 Y247 L250 L251 K252 I253 I259 K266 L270 F273 V274 R287

S295 Y299 T302 L303 G306 A307 N310 M311 D312 Q318 T322 F323 F324 I325 A326 N327 A328 L329 H332 L333 T334 V335 G336 Q337 Q338 L339 T340 I341 V342 V346 L347 A348 S349 I350 G351 T352 A353 G354 V355 P356 G357 C364 M365 V366 L367 H368 L372 P373 L374

P377 N378 A382 M385 I386 L387 D394 R397 T398 M399 V400 N401 L406 T409 A410 I411 V412 A413 K414 T418 LEU VAL PRO ARG

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, α, β, γ	109.93Å 201.81Å 207.14Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	15.00 – 3.25 15.00 – 3.25	Depositor EDS
% Data completeness (in resolution range)	99.0 (15.00-3.25) 99.2 (15.00-3.25)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.27 (at 3.25Å)	Xtriage
Refinement program	REFMAC 5.7.0029	Depositor
R, R_{free}	0.222 , 0.258 0.223 , 0.256	Depositor DCC
R_{free} test set	1803 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å²)	109.9	Xtriage
Anisotropy	0.222	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.31 , 79.9	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.020 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.028 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	9124	wwPDB-VP
Average B, all atoms (Å²)	108.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.65% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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 ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: 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	0.49	0/3117	0.80	4/4254 (0.1%)
1	B	0.52	0/3074	0.82	4/4195 (0.1%)
1	C	0.52	0/3107	0.79	0/4240
All	All	0.51	0/9298	0.80	8/12689 (0.1%)

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	C	0	1

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	10	TYR	N-CA-C	-7.06	91.94	111.00
1	A	9	GLU	N-CA-C	-6.69	92.93	111.00
1	A	127	ALA	N-CA-C	-6.22	94.21	111.00
1	B	115	LEU	CA-CB-CG	6.07	129.27	115.30
1	B	305	LEU	CB-CG-CD1	-5.65	101.39	111.00
1	B	159	ILE	CG1-CB-CG2	-5.50	99.30	111.40
1	B	149	GLY	N-CA-C	5.22	126.14	113.10
1	A	115	LEU	CA-CB-CG	5.10	127.04	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	126	GLN	Peptide

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	3058	0	3227	146	0
1	B	3015	0	3180	165	0
1	C	3048	0	3209	130	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
All	All	9124	0	9616	436	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 23.

All (436) 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:355:VAL:CG1	1:B:358:ALA:HB2	1.72	1.18
1:B:349:SER:O	1:B:352:THR:HG23	1.43	1.17
1:A:355:VAL:CG1	1:A:358:ALA:HB2	1.75	1.14
1:A:155:ILE:HD11	1:A:365:MET:HE2	1.23	1.06
1:A:155:ILE:HD11	1:A:365:MET:CE	1.85	1.06
1:B:355:VAL:HG11	1:B:358:ALA:HB2	1.30	1.06
1:B:105:ARG:NH2	1:B:335:VAL:HA	1.70	1.05
1:A:355:VAL:HG11	1:A:358:ALA:HB2	1.11	1.04
1:B:333:LEU:HD13	1:B:337:GLN:HG3	1.38	1.03
1:A:333:LEU:HD11	1:A:337:GLN:HB3	1.42	1.02
1:A:61:ILE:O	1:A:65:SER:HB2	1.62	1.00
1:C:333:LEU:CD1	1:C:337:GLN:HB3	1.93	0.98
1:C:333:LEU:HD11	1:C:337:GLN:HB3	1.46	0.97
1:C:61:ILE:O	1:C:65:SER:HB2	1.63	0.96
1:B:333:LEU:CD1	1:B:337:GLN:HG3	1.94	0.96
1:B:155:ILE:HD11	1:B:365:MET:CE	1.97	0.94
1:B:368:HIS:CE1	1:B:374:LEU:HB2	2.03	0.93

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:311:MET:HE3	1:A:346:VAL:HG12	1.51	0.93
1:A:349:SER:O	1:A:352:THR:HG23	1.69	0.92
1:B:57:LEU:O	1:B:61:ILE:HG12	1.70	0.90
1:B:368:HIS:HE1	1:B:374:LEU:HB2	1.35	0.89
1:A:57:LEU:O	1:A:61:ILE:HG12	1.73	0.88
1:B:145:ALA:HA	1:B:150:GLN:HG3	1.56	0.87
1:A:355:VAL:HG12	1:A:355:VAL:O	1.73	0.86
1:A:10:TYR:HE2	1:A:14:GLN:HB3	1.40	0.86
1:B:355:VAL:HG12	1:B:355:VAL:O	1.75	0.86
1:C:57:LEU:O	1:C:61:ILE:HG12	1.75	0.85
1:B:339:LEU:HD11	1:B:343:LEU:HD11	1.59	0.85
1:C:84:LYS:HD3	1:C:412:VAL:HG23	1.57	0.85
1:B:105:ARG:HH22	1:B:334:THR:C	1.79	0.85
1:C:354:GLY:HA2	1:C:355:VAL:HB	1.58	0.84
1:B:61:ILE:O	1:B:65:SER:HB2	1.76	0.84
1:A:307:ALA:O	1:A:353:ALA:HB3	1.77	0.84
1:B:311:MET:HE3	1:B:346:VAL:HG12	1.60	0.83
1:A:355:VAL:HG11	1:A:358:ALA:CB	2.04	0.83
1:A:10:TYR:CE2	1:A:14:GLN:HB3	2.14	0.83
1:C:10:TYR:HE2	1:C:14:GLN:HB3	1.39	0.83
1:A:105:ARG:HH22	1:A:334:THR:C	1.83	0.81
1:B:323:PHE:O	1:B:327:ASN:HB2	1.80	0.81
1:A:198:VAL:HG11	1:A:356:PRO:HG2	1.63	0.81
1:C:30:LEU:O	1:C:34:GLY:HA3	1.80	0.80
1:C:105:ARG:HH22	1:C:334:THR:C	1.83	0.79
1:B:10:TYR:CG	1:B:11:PRO:HD2	2.18	0.79
1:C:306:GLY:O	1:C:310:ASN:HB2	1.82	0.79
1:B:105:ARG:HH22	1:B:335:VAL:N	1.80	0.78
1:B:355:VAL:HG13	1:B:358:ALA:HB2	1.63	0.78
1:C:349:SER:O	1:C:352:THR:HG23	1.81	0.78
1:B:155:ILE:HD11	1:B:365:MET:HE3	1.63	0.78
1:B:311:MET:CE	1:B:346:VAL:HG12	2.13	0.78
1:C:198:VAL:HG11	1:C:356:PRO:HG2	1.67	0.77
1:A:420:VAL:HG12	1:A:420:VAL:O	1.84	0.76
1:B:105:ARG:NH2	1:B:335:VAL:CA	2.49	0.76
1:A:333:LEU:HD11	1:A:337:GLN:CB	2.16	0.76
1:B:10:TYR:CE2	1:B:11:PRO:HG2	2.21	0.76
1:B:355:VAL:CG1	1:B:355:VAL:O	2.33	0.75
1:C:55:CYS:O	1:C:58:VAL:HG12	1.85	0.75
1:A:299:TYR:HB2	1:A:303:LEU:HD22	1.69	0.75
1:C:145:ALA:HA	1:C:150:GLN:HG3	1.67	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:339:LEU:HD11	1:B:343:LEU:CD1	2.15	0.74
1:B:355:VAL:CG1	1:B:358:ALA:CB	2.62	0.73
1:B:355:VAL:HG11	1:B:358:ALA:CB	2.14	0.73
1:B:310:ASN:ND2	1:B:401:ASN:HA	2.02	0.73
1:B:370:VAL:HG12	1:B:370:VAL:O	1.88	0.73
1:C:333:LEU:HD13	1:C:337:GLN:HB3	1.71	0.73
1:B:105:ARG:HH22	1:B:335:VAL:HA	1.54	0.73
1:A:323:PHE:O	1:A:327:ASN:HB2	1.89	0.73
1:A:355:VAL:CG1	1:A:355:VAL:O	2.36	0.73
1:A:333:LEU:CD1	1:A:337:GLN:HB3	2.19	0.72
1:A:9:GLU:CD	1:A:9:GLU:C	2.47	0.72
1:B:337:GLN:O	1:B:341:ILE:HG22	1.89	0.71
1:A:107:PHE:HD1	1:A:107:PHE:H	1.35	0.71
1:A:418:THR:O	1:A:419:LEU:HD22	1.91	0.71
1:B:352:THR:O	1:B:355:VAL:HG11	1.91	0.71
1:C:299:TYR:HB2	1:C:303:LEU:HD22	1.70	0.71
1:C:241:LEU:O	1:C:245:LEU:HB2	1.90	0.70
1:B:10:TYR:O	1:B:15:LYS:HE3	1.91	0.70
1:C:57:LEU:HD13	1:C:198:VAL:HG22	1.73	0.70
1:B:85:ILE:HD13	1:B:302:THR:HB	1.72	0.70
1:B:198:VAL:HG11	1:B:356:PRO:HG2	1.74	0.70
1:C:198:VAL:HG11	1:C:356:PRO:CG	2.21	0.70
1:B:239:LEU:HG	1:B:400:VAL:HG21	1.72	0.70
1:C:239:LEU:HG	1:C:400:VAL:CG2	2.22	0.70
1:B:354:GLY:HA2	1:B:355:VAL:HG12	1.73	0.70
1:C:10:TYR:CE2	1:C:11:PRO:HG2	2.27	0.70
1:A:105:ARG:HH21	1:A:338:GLN:HG3	1.56	0.69
1:A:333:LEU:CD1	1:A:337:GLN:CB	2.70	0.69
1:B:337:GLN:O	1:B:341:ILE:CG2	2.41	0.69
1:C:198:VAL:CG1	1:C:356:PRO:HG3	2.22	0.69
1:B:155:ILE:HD11	1:B:365:MET:HE2	1.75	0.69
1:B:241:LEU:O	1:B:245:LEU:HB2	1.93	0.69
1:A:54:LEU:HD23	1:A:387:LEU:HD11	1.74	0.69
1:C:155:ILE:HD11	1:C:365:MET:CE	2.23	0.68
1:B:107:PHE:HB3	1:B:230:LYS:HD3	1.75	0.68
1:C:85:ILE:HD13	1:C:302:THR:HB	1.75	0.68
1:B:363:LEU:O	1:B:366:VAL:HG12	1.92	0.68
1:B:250:LEU:O	1:B:253:ILE:HG22	1.93	0.68
1:C:10:TYR:CE2	1:C:14:GLN:HB3	2.26	0.68
1:C:110:GLY:O	1:C:113:ILE:HG22	1.94	0.68
1:B:24:ALA:O	1:B:28:LEU:HB2	1.93	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:105:ARG:HH22	1:B:335:VAL:CA	2.05	0.67
1:C:323:PHE:O	1:C:327:ASN:HB2	1.94	0.67
1:B:105:ARG:HH21	1:B:338:GLN:HG3	1.60	0.67
1:C:406:LEU:HA	1:C:409:THR:HG22	1.77	0.67
1:A:73:ILE:HD12	1:A:350:ILE:HD12	1.76	0.67
1:A:107:PHE:CD1	1:A:107:PHE:N	2.63	0.66
1:B:54:LEU:HD23	1:B:387:LEU:HD11	1.77	0.66
1:A:217:MET:SD	1:A:224:VAL:CG2	2.84	0.66
1:A:107:PHE:O	1:A:109:PRO:HD3	1.95	0.66
1:A:107:PHE:HZ	1:A:237:VAL:HG21	1.59	0.66
1:B:339:LEU:CD1	1:B:343:LEU:CD1	2.74	0.66
1:B:84:LYS:HD3	1:B:412:VAL:HG23	1.78	0.65
1:C:105:ARG:HH21	1:C:338:GLN:HG3	1.60	0.65
1:C:107:PHE:HD1	1:C:107:PHE:H	1.45	0.65
1:A:57:LEU:HB3	1:A:194:MET:CE	2.26	0.65
1:A:198:VAL:HG11	1:A:356:PRO:CG	2.27	0.65
1:B:174:GLU:OE1	1:B:174:GLU:HA	1.97	0.65
1:B:60:PRO:HB2	1:B:194:MET:HG3	1.79	0.65
1:B:354:GLY:HA2	1:B:355:VAL:CB	2.27	0.64
1:A:10:TYR:HE2	1:A:14:GLN:CB	2.08	0.64
1:B:126:GLN:HB2	1:B:127:ALA:HB2	1.78	0.64
1:A:85:ILE:HD13	1:A:302:THR:HB	1.78	0.64
1:A:20:LEU:HD12	1:A:213:ILE:HG12	1.80	0.63
1:C:364:CYS:SG	1:C:368:HIS:CD2	2.91	0.63
1:C:174:GLU:HA	1:C:174:GLU:OE1	1.98	0.63
1:B:310:ASN:HD21	1:B:401:ASN:HA	1.62	0.63
1:B:10:TYR:HE2	1:B:14:GLN:HB3	1.64	0.63
1:A:150:GLN:HG2	1:A:153:PRO:HG2	1.80	0.63
1:B:202:MET:HE2	1:B:276:ARG:HH12	1.62	0.63
1:A:311:MET:CE	1:A:346:VAL:HG12	2.25	0.62
1:A:10:TYR:CE2	1:A:14:GLN:CB	2.81	0.62
1:C:10:TYR:O	1:C:15:LYS:HE3	1.99	0.62
1:A:217:MET:SD	1:A:224:VAL:HG23	2.40	0.62
1:C:333:LEU:HD13	1:C:337:GLN:CB	2.29	0.62
1:A:155:ILE:CD1	1:A:365:MET:HE2	2.16	0.62
1:C:239:LEU:HG	1:C:400:VAL:HG21	1.80	0.61
1:B:74:SER:HB3	1:B:166:THR:HG21	1.82	0.61
1:B:107:PHE:HD1	1:B:107:PHE:H	1.48	0.61
1:C:10:TYR:CG	1:C:11:PRO:HD2	2.35	0.61
1:B:107:PHE:O	1:B:109:PRO:HD3	2.01	0.61
1:A:310:ASN:ND2	1:A:401:ASN:HA	2.16	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:237:VAL:O	1:B:241:LEU:HB2	2.00	0.61
1:A:107:PHE:CZ	1:A:237:VAL:HG21	2.35	0.61
1:B:339:LEU:CD1	1:B:343:LEU:HG	2.31	0.61
1:A:406:LEU:HA	1:A:409:THR:HG22	1.81	0.61
1:A:354:GLY:HA2	1:A:355:VAL:O	2.01	0.61
1:C:85:ILE:O	1:C:88:TYR:HB3	2.00	0.61
1:C:307:ALA:O	1:C:353:ALA:HB3	2.01	0.61
1:A:337:GLN:O	1:A:341:ILE:HD12	2.00	0.60
1:C:198:VAL:HB	1:C:356:PRO:HG3	1.83	0.60
1:C:30:LEU:O	1:C:34:GLY:CA	2.49	0.60
1:C:24:ALA:O	1:C:28:LEU:HB2	2.02	0.60
1:C:51:VAL:O	1:C:55:CYS:SG	2.58	0.60
1:C:117:VAL:CG2	1:C:377:PRO:HB2	2.32	0.60
1:A:30:LEU:O	1:A:34:GLY:HA3	2.01	0.60
1:A:311:MET:CE	1:A:346:VAL:CG1	2.80	0.60
1:B:307:ALA:O	1:B:353:ALA:HB3	2.01	0.59
1:C:84:LYS:HD3	1:C:412:VAL:CG2	2.29	0.59
1:C:198:VAL:CG1	1:C:356:PRO:CG	2.79	0.59
1:A:14:GLN:O	1:A:18:ILE:HG12	2.02	0.59
1:B:217:MET:SD	1:B:224:VAL:HG21	2.41	0.59
1:B:312:ASP:N	1:B:312:ASP:OD2	2.26	0.59
1:C:79:GLY:O	1:C:83:VAL:HG23	2.02	0.59
1:A:51:VAL:O	1:A:55:CYS:SG	2.60	0.59
1:A:98:THR:HG22	1:A:102:ILE:HD12	1.85	0.59
1:A:312:ASP:OD2	1:A:312:ASP:N	2.33	0.59
1:B:239:LEU:HG	1:B:400:VAL:CG2	2.32	0.59
1:B:354:GLY:HA2	1:B:355:VAL:O	2.03	0.59
1:A:364:CYS:SG	1:A:368:HIS:CD2	2.97	0.58
1:C:107:PHE:CD1	1:C:107:PHE:N	2.70	0.58
1:A:336:GLY:HA2	1:A:339:LEU:HD11	1.85	0.58
1:C:155:ILE:HD11	1:C:365:MET:HE2	1.84	0.58
1:B:354:GLY:HA2	1:B:355:VAL:CG1	2.33	0.58
1:A:105:ARG:NH2	1:A:338:GLN:HG3	2.19	0.58
1:C:312:ASP:OD2	1:C:312:ASP:N	2.35	0.57
1:A:217:MET:SD	1:A:224:VAL:HG21	2.43	0.57
1:B:14:GLN:O	1:B:18:ILE:HG12	2.04	0.57
1:B:193:ALA:O	1:B:197:ILE:HG13	2.05	0.57
1:A:174:GLU:HA	1:A:174:GLU:OE1	2.04	0.57
1:B:57:LEU:HD13	1:B:198:VAL:HG22	1.87	0.57
1:A:250:LEU:O	1:A:253:ILE:HG22	2.05	0.56
1:B:79:GLY:O	1:B:83:VAL:HG23	2.05	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:14:GLN:O	1:C:18:ILE:HG12	2.05	0.56
1:A:24:ALA:O	1:A:28:LEU:HB2	2.05	0.56
1:C:216:VAL:O	1:C:220:GLN:HB2	2.06	0.56
1:B:166:THR:HA	1:B:169:MET:HE2	1.87	0.56
1:B:54:LEU:CD2	1:B:387:LEU:HD11	2.36	0.56
1:B:25:ILE:O	1:B:29:ILE:HG12	2.05	0.56
1:B:339:LEU:HD13	1:B:343:LEU:HG	1.86	0.56
1:A:198:VAL:HB	1:A:356:PRO:HG3	1.87	0.55
1:B:318:GLN:O	1:B:322:THR:HB	2.05	0.55
1:A:243:ILE:HA	1:A:247:TYR:CD2	2.42	0.55
1:B:212:LEU:HD11	1:B:387:LEU:HD23	1.88	0.55
1:B:61:ILE:HG23	1:B:194:MET:HB3	1.88	0.55
1:B:212:LEU:HD22	1:B:384:ALA:HB1	1.88	0.55
1:B:310:ASN:HD22	1:B:401:ASN:CG	2.09	0.55
1:C:61:ILE:O	1:C:65:SER:CB	2.47	0.55
1:C:155:ILE:HD11	1:C:365:MET:HE3	1.87	0.55
1:A:241:LEU:O	1:A:245:LEU:HB2	2.07	0.55
1:A:115:LEU:HD23	1:A:328:ALA:O	2.05	0.55
1:C:354:GLY:CA	1:C:355:VAL:HB	2.32	0.55
1:C:354:GLY:HA2	1:C:355:VAL:CB	2.27	0.55
1:A:420:VAL:O	1:A:420:VAL:CG1	2.54	0.55
1:B:107:PHE:CD1	1:B:107:PHE:N	2.75	0.55
1:A:237:VAL:O	1:A:241:LEU:HB2	2.07	0.55
1:B:28:LEU:HD11	1:B:222:VAL:HG22	1.88	0.55
1:B:105:ARG:NH2	1:B:338:GLN:HG3	2.20	0.55
1:B:30:LEU:O	1:B:34:GLY:HA3	2.07	0.54
1:C:354:GLY:HA2	1:C:355:VAL:O	2.08	0.54
1:A:165:ILE:HG21	1:A:184:LEU:HB2	1.87	0.54
1:B:406:LEU:HA	1:B:409:THR:HG22	1.89	0.54
1:B:18:ILE:O	1:B:22:LEU:HB2	2.08	0.53
1:B:20:LEU:HD12	1:B:213:ILE:HG12	1.89	0.53
1:C:239:LEU:HG	1:C:400:VAL:HG23	1.88	0.53
1:C:216:VAL:HG11	1:C:385:MET:HG2	1.91	0.53
1:B:10:TYR:CD1	1:B:11:PRO:HD2	2.43	0.53
1:B:299:TYR:HB2	1:B:303:LEU:HD22	1.91	0.53
1:A:107:PHE:HB3	1:A:230:LYS:HD3	1.91	0.53
1:A:61:ILE:O	1:A:65:SER:CB	2.49	0.53
1:A:10:TYR:CE2	1:A:11:PRO:HG2	2.44	0.52
1:A:333:LEU:HD12	1:A:337:GLN:HB2	1.91	0.52
1:B:338:GLN:O	1:B:342:VAL:HG23	2.09	0.52
1:B:217:MET:SD	1:B:224:VAL:CG2	2.97	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:333:LEU:HD11	1:B:337:GLN:HG3	1.89	0.52
1:A:333:LEU:CD1	1:A:337:GLN:HB2	2.39	0.52
1:B:354:GLY:CA	1:B:355:VAL:HB	2.40	0.52
1:A:57:LEU:HB3	1:A:194:MET:HE2	1.91	0.52
1:A:141:ASN:OD1	1:A:141:ASN:C	2.48	0.52
1:A:409:THR:HA	1:A:412:VAL:HG12	1.91	0.52
1:B:333:LEU:HD13	1:B:337:GLN:CG	2.26	0.52
1:A:57:LEU:HD13	1:A:198:VAL:HG22	1.90	0.52
1:A:335:VAL:O	1:A:339:LEU:HG	2.10	0.52
1:C:77:ARG:NH1	1:C:170:ASN:OD1	2.43	0.51
1:C:198:VAL:CB	1:C:356:PRO:HG3	2.39	0.51
1:B:311:MET:HE2	1:B:346:VAL:HG12	1.93	0.51
1:C:364:CYS:SG	1:C:368:HIS:NE2	2.84	0.51
1:C:194:MET:O	1:C:198:VAL:HG23	2.11	0.51
1:B:306:GLY:O	1:B:310:ASN:HB2	2.10	0.51
1:C:222:VAL:O	1:C:225:VAL:HG12	2.11	0.51
1:B:25:ILE:HG22	1:B:29:ILE:HD11	1.93	0.50
1:A:198:VAL:CG1	1:A:356:PRO:CG	2.89	0.50
1:B:198:VAL:HB	1:B:356:PRO:HG3	1.93	0.50
1:A:130:LEU:HA	1:A:133:ILE:HG22	1.92	0.50
1:C:409:THR:O	1:C:413:ALA:HB2	2.11	0.50
1:B:26:VAL:HG12	1:B:30:LEU:HD12	1.94	0.50
1:A:222:VAL:O	1:A:225:VAL:HG12	2.12	0.49
1:A:370:VAL:HG12	1:A:370:VAL:O	2.12	0.49
1:C:339:LEU:HD12	1:C:340:THR:H	1.77	0.49
1:A:79:GLY:O	1:A:83:VAL:HG23	2.12	0.49
1:C:105:ARG:NH2	1:C:338:GLN:HG3	2.27	0.49
1:B:105:ARG:NH2	1:B:335:VAL:N	2.56	0.49
1:A:198:VAL:CG1	1:A:356:PRO:HG3	2.42	0.49
1:B:222:VAL:O	1:B:225:VAL:HG12	2.13	0.49
1:C:166:THR:HA	1:C:169:MET:HE2	1.95	0.49
1:C:233:ALA:O	1:C:237:VAL:HG22	2.13	0.48
1:B:343:LEU:O	1:B:347:LEU:HB2	2.13	0.48
1:B:354:GLY:CA	1:B:355:VAL:CB	2.90	0.48
1:C:338:GLN:O	1:C:342:VAL:HG23	2.13	0.48
1:A:59:MET:HB2	1:A:60:PRO:HD3	1.95	0.48
1:C:113:ILE:HG23	1:C:113:ILE:O	2.13	0.48
1:C:237:VAL:O	1:C:241:LEU:HB2	2.13	0.48
1:A:306:GLY:O	1:A:310:ASN:HB2	2.14	0.48
1:B:137:ILE:O	1:B:153:PRO:HA	2.14	0.48
1:C:318:GLN:O	1:C:322:THR:HB	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:188:ASN:ND2	1:B:175:LYS:HE3	2.28	0.48
1:C:10:TYR:OH	1:C:14:GLN:HG2	2.14	0.48
1:C:15:LYS:HB3	1:C:206:PRO:HB3	1.96	0.48
1:A:54:LEU:C	1:A:56:MET:H	2.15	0.48
1:B:157:PHE:HA	1:B:160:ILE:HG22	1.96	0.48
1:C:303:LEU:HD11	1:C:409:THR:HG21	1.95	0.48
1:A:57:LEU:O	1:A:61:ILE:CG1	2.56	0.47
1:B:28:LEU:HD21	1:B:222:VAL:HG13	1.95	0.47
1:B:188:ASN:HD21	1:C:175:LYS:HE3	1.79	0.47
1:A:244:LEU:O	1:A:248:PHE:HB2	2.15	0.47
1:A:355:VAL:CG1	1:A:358:ALA:CB	2.69	0.47
1:C:107:PHE:HZ	1:C:237:VAL:HG21	1.80	0.47
1:C:325:ILE:HG12	1:C:386:ILE:HD12	1.97	0.47
1:B:126:GLN:CB	1:B:127:ALA:HB2	2.44	0.47
1:B:311:MET:HE2	1:B:346:VAL:CG1	2.45	0.47
1:B:198:VAL:CG1	1:B:356:PRO:CG	2.93	0.47
1:A:242:GLN:O	1:A:246:VAL:HG23	2.14	0.47
1:B:110:GLY:O	1:B:113:ILE:HG22	2.15	0.47
1:C:61:ILE:HG23	1:C:194:MET:HB3	1.95	0.47
1:C:364:CYS:O	1:C:367:LEU:N	2.48	0.47
1:B:107:PHE:HZ	1:B:237:VAL:HG21	1.80	0.47
1:B:64:ALA:HB2	1:B:190:LEU:HD23	1.96	0.47
1:B:115:LEU:HD23	1:B:328:ALA:O	2.13	0.47
1:B:337:GLN:O	1:B:341:ILE:HG23	2.14	0.47
1:C:67:VAL:HG11	1:C:187:ILE:HD13	1.98	0.46
1:A:8:ILE:HG23	1:A:15:LYS:NZ	2.30	0.46
1:A:194:MET:O	1:A:198:VAL:HG23	2.15	0.46
1:B:352:THR:O	1:B:352:THR:OG1	2.28	0.46
1:A:141:ASN:ND2	1:C:59:MET:HG3	2.29	0.46
1:A:169:MET:HA	1:A:177:ARG:HG3	1.97	0.46
1:B:263:LYS:HA	1:B:266:LYS:HD2	1.96	0.46
1:B:339:LEU:CD1	1:B:343:LEU:CG	2.93	0.46
1:C:270:LEU:O	1:C:274:VAL:HG23	2.15	0.46
1:C:105:ARG:NH2	1:C:335:VAL:HA	2.30	0.46
1:B:85:ILE:O	1:B:88:TYR:HB3	2.16	0.46
1:B:107:PHE:CZ	1:B:237:VAL:HG21	2.50	0.46
1:C:141:ASN:C	1:C:141:ASN:OD1	2.54	0.46
1:C:181:GLU:O	1:C:185:ASP:HB2	2.15	0.46
1:B:205:ALA:N	1:B:206:PRO:HD2	2.30	0.46
1:B:212:LEU:O	1:B:216:VAL:HG23	2.16	0.46
1:B:370:VAL:O	1:B:370:VAL:CG1	2.59	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:243:ILE:HA	1:C:247:TYR:CD2	2.49	0.46
1:C:117:VAL:HG23	1:C:377:PRO:HB2	1.97	0.46
1:A:311:MET:HE2	1:A:346:VAL:CG1	2.46	0.46
1:A:11:PRO:HB2	1:A:14:GLN:NE2	2.30	0.46
1:A:299:TYR:O	1:A:303:LEU:HB2	2.15	0.46
1:A:409:THR:O	1:A:413:ALA:HB2	2.16	0.46
1:A:10:TYR:OH	1:A:14:GLN:HG2	2.15	0.46
1:B:198:VAL:CG1	1:B:356:PRO:HG2	2.43	0.46
1:C:117:VAL:HG23	1:C:118:GLY:N	2.30	0.46
1:C:273:PHE:HB2	1:C:399:MET:HG3	1.98	0.46
1:A:336:GLY:O	1:A:339:LEU:HD12	2.15	0.45
1:C:329:LEU:HD23	1:C:372:LEU:HD21	1.98	0.45
1:A:198:VAL:CB	1:A:356:PRO:HG3	2.46	0.45
1:B:305:LEU:HD23	1:B:309:ILE:HD11	1.97	0.45
1:B:198:VAL:HG11	1:B:356:PRO:CG	2.45	0.45
1:C:51:VAL:HG22	1:C:387:LEU:HD23	1.97	0.45
1:C:117:VAL:HG22	1:C:378:ASN:CG	2.37	0.45
1:A:276:ARG:HD2	1:A:394:ASP:HB3	1.99	0.45
1:B:13:LEU:O	1:B:14:GLN:C	2.53	0.45
1:A:329:LEU:HD12	1:A:329:LEU:HA	1.76	0.45
1:B:205:ALA:O	1:B:209:VAL:HB	2.16	0.45
1:A:17:LEU:HD22	1:A:392:ILE:CD1	2.47	0.45
1:A:105:ARG:NH2	1:A:335:VAL:HA	2.32	0.45
1:B:391:ALA:O	1:B:395:MET:HG3	2.17	0.45
1:A:193:ALA:O	1:A:197:ILE:HG13	2.16	0.45
1:A:251:LEU:HD22	1:A:256:ILE:HG21	1.99	0.45
1:C:107:PHE:O	1:C:109:PRO:HD3	2.17	0.45
1:B:134:LEU:O	1:B:137:ILE:HG12	2.17	0.45
1:B:181:GLU:O	1:B:185:ASP:HB2	2.17	0.45
1:C:311:MET:HB3	1:C:346:VAL:HG13	1.97	0.45
1:C:59:MET:HB2	1:C:60:PRO:HD3	1.99	0.45
1:C:209:VAL:O	1:C:213:ILE:HG13	2.17	0.45
1:A:278:SER:HB3	1:A:307:ALA:HA	1.98	0.44
1:A:339:LEU:HG	1:A:339:LEU:H	1.60	0.44
1:B:10:TYR:O	1:B:11:PRO:C	2.55	0.44
1:B:55:CYS:O	1:B:58:VAL:HG12	2.17	0.44
1:B:352:THR:O	1:B:355:VAL:CG1	2.63	0.44
1:A:310:ASN:HD21	1:A:401:ASN:HA	1.82	0.44
1:C:213:ILE:HG13	1:C:213:ILE:H	1.64	0.44
1:C:325:ILE:HD13	1:C:382:ALA:HB1	1.98	0.44
1:C:364:CYS:O	1:C:365:MET:C	2.56	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:107:PHE:CZ	1:C:237:VAL:HG21	2.53	0.44
1:A:213:ILE:H	1:A:213:ILE:HG13	1.65	0.44
1:B:98:THR:O	1:B:102:ILE:HB	2.18	0.44
1:B:67:VAL:HG11	1:B:187:ILE:HD13	2.00	0.44
1:C:193:ALA:O	1:C:197:ILE:HG13	2.17	0.44
1:C:195:TYR:CE1	1:C:355:VAL:HG22	2.53	0.44
1:C:51:VAL:HG22	1:C:387:LEU:CD2	2.47	0.44
1:C:173:ASN:HB3	1:C:176:VAL:HB	2.00	0.44
1:C:325:ILE:HG21	1:C:367:LEU:HD21	1.99	0.44
1:A:93:SER:OG	1:A:311:MET:HB2	2.18	0.43
1:B:10:TYR:CE2	1:B:14:GLN:HB3	2.48	0.43
1:A:325:ILE:HA	1:A:325:ILE:HD13	1.74	0.43
1:A:15:LYS:NZ	1:A:203:GLN:OE1	2.51	0.43
1:A:241:LEU:HD23	1:A:245:LEU:HD23	2.00	0.43
1:A:303:LEU:HD11	1:A:409:THR:HG21	2.00	0.43
1:B:10:TYR:CD2	1:B:11:PRO:HG2	2.53	0.43
1:C:155:ILE:O	1:C:159:ILE:HD12	2.18	0.43
1:C:205:ALA:N	1:C:206:PRO:HD2	2.33	0.43
1:A:263:LYS:HA	1:A:266:LYS:HD2	2.01	0.43
1:A:248:PHE:HZ	1:A:262:ILE:HG13	1.84	0.43
1:B:63:PHE:O	1:B:67:VAL:HG23	2.18	0.43
1:B:243:ILE:HA	1:B:247:TYR:CD2	2.53	0.43
1:C:250:LEU:HA	1:C:253:ILE:HG22	2.01	0.43
1:B:190:LEU:O	1:B:194:MET:HG2	2.19	0.43
1:C:169:MET:HE2	1:C:169:MET:HB2	1.89	0.43
1:A:74:SER:HB3	1:A:166:THR:HG21	2.01	0.43
1:B:104:ALA:O	1:B:107:PHE:O	2.37	0.43
1:B:322:THR:HG23	1:B:341:ILE:HD11	2.00	0.43
1:C:107:PHE:HB3	1:C:230:LYS:HD3	2.00	0.43
1:C:310:ASN:ND2	1:C:401:ASN:HA	2.33	0.43
1:A:54:LEU:C	1:A:56:MET:N	2.73	0.43
1:A:98:THR:O	1:A:102:ILE:HB	2.19	0.42
1:B:16:ILE:HG21	1:B:391:ALA:HB2	2.01	0.42
1:C:127:ALA:HA	1:C:128:PRO:HD3	1.71	0.42
1:A:55:CYS:O	1:A:58:VAL:HG12	2.18	0.42
1:A:178:LYS:HD3	1:C:185:ASP:OD1	2.19	0.42
1:C:10:TYR:CE2	1:C:14:GLN:CB	3.00	0.42
1:C:130:LEU:HA	1:C:133:ILE:HG22	2.00	0.42
1:A:141:ASN:HA	1:A:142:PRO:HD3	1.84	0.42
1:B:80:ARG:HG3	1:B:81:VAL:H	1.85	0.42
1:B:329:LEU:HD12	1:B:329:LEU:HA	1.88	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:77:ARG:NH1	1:B:170:ASN:OD1	2.53	0.42
1:B:242:GLN:O	1:B:246:VAL:HG23	2.19	0.42
1:B:322:THR:CG2	1:B:341:ILE:HD11	2.49	0.42
1:A:75:PRO:HA	1:A:76:ALA:HA	1.73	0.42
1:A:137:ILE:O	1:A:153:PRO:HA	2.19	0.42
1:C:356:PRO:HG2	1:C:357:GLY:H	1.85	0.42
1:B:29:ILE:HG12	1:B:29:ILE:H	1.70	0.42
1:B:54:LEU:C	1:B:56:MET:H	2.24	0.42
1:B:57:LEU:HB3	1:B:194:MET:HE2	2.02	0.42
1:A:168:LEU:HD11	1:C:193:ALA:HA	2.01	0.42
1:A:181:GLU:O	1:A:185:ASP:HB2	2.20	0.42
1:B:310:ASN:ND2	1:B:401:ASN:OD1	2.53	0.42
1:C:197:ILE:O	1:C:201:VAL:HG23	2.20	0.41
1:C:324:PHE:HD2	1:C:386:ILE:HD11	1.85	0.41
1:A:303:LEU:HD12	1:A:303:LEU:HA	1.82	0.41
1:B:209:VAL:O	1:B:213:ILE:HG13	2.19	0.41
1:C:152:LEU:HD12	1:C:152:LEU:HA	1.85	0.41
1:C:335:VAL:O	1:C:339:LEU:HG	2.20	0.41
1:A:126:GLN:HB2	1:A:127:ALA:HB2	2.01	0.41
1:B:241:LEU:HD23	1:B:245:LEU:HD23	2.01	0.41
1:C:106:LEU:HD22	1:C:106:LEU:HA	1.88	0.41
1:B:35:TYR:HB2	1:B:38:ALA:HB3	2.02	0.41
1:B:292:MET:HE2	1:B:294:ILE:HD11	2.02	0.41
1:C:113:ILE:O	1:C:113:ILE:CG2	2.68	0.41
1:A:236:TYR:O	1:A:240:THR:HG23	2.20	0.41
1:A:259:ILE:H	1:A:259:ILE:HG13	1.75	0.41
1:B:57:LEU:HB3	1:B:194:MET:CE	2.51	0.41
1:A:28:LEU:HD21	1:A:222:VAL:HG13	2.02	0.41
1:A:61:ILE:HG23	1:A:194:MET:HB3	2.03	0.41
1:B:325:ILE:HA	1:B:325:ILE:HD13	1.85	0.41
1:B:337:GLN:H	1:B:337:GLN:HG2	1.54	0.41
1:C:259:ILE:H	1:C:259:ILE:HG13	1.74	0.41
1:A:54:LEU:CD2	1:A:387:LEU:HD11	2.47	0.41
1:A:134:LEU:O	1:A:137:ILE:HG12	2.20	0.41
1:A:205:ALA:O	1:A:209:VAL:HB	2.20	0.41
1:B:103:MET:SD	1:B:237:VAL:HG23	2.60	0.41
1:B:173:ASN:HB3	1:B:176:VAL:HB	2.02	0.41
1:C:61:ILE:HG12	1:C:61:ILE:H	1.78	0.41
1:A:73:ILE:O	1:A:73:ILE:HG22	2.20	0.41
1:A:88:TYR:O	1:A:92:THR:HG23	2.21	0.41
1:A:212:LEU:HD11	1:A:387:LEU:HD23	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:105:ARG:HH22	1:C:335:VAL:N	2.19	0.40
1:C:166:THR:HA	1:C:169:MET:CE	2.51	0.40
1:A:11:PRO:HB2	1:A:14:GLN:HB2	2.03	0.40
1:A:17:LEU:CD2	1:A:392:ILE:HD13	2.51	0.40
1:A:25:ILE:O	1:A:29:ILE:HG12	2.21	0.40
1:A:352:THR:O	1:A:355:VAL:HG11	2.21	0.40
1:C:73:ILE:HD12	1:C:350:ILE:HD12	2.02	0.40
1:C:137:ILE:O	1:C:153:PRO:HA	2.21	0.40
1:B:10:TYR:CG	1:B:11:PRO:CD	2.96	0.40

There are no symmetry-related clashes.

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	412/422 (98%)	369 (90%)	39 (10%)	4 (1%)	15	47
1	B	406/422 (96%)	376 (93%)	25 (6%)	5 (1%)	13	43
1	C	411/422 (97%)	382 (93%)	25 (6%)	4 (1%)	15	47
All	All	1229/1266 (97%)	1127 (92%)	89 (7%)	13 (1%)	14	46

All (13) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	356	PRO
1	C	127	ALA
1	B	255	GLY
1	A	11	PRO
1	B	149	GLY
1	A	255	GLY
1	A	355	VAL
1	A	356	PRO

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Mol	Chain	Res	Type
1	B	355	VAL
1	C	355	VAL
1	C	356	PRO
1	B	11	PRO
1	C	11	PRO

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	322/330 (98%)	266 (83%)	56 (17%)	2	8
1	B	317/330 (96%)	269 (85%)	48 (15%)	3	12
1	C	320/330 (97%)	259 (81%)	61 (19%)	1	6
All	All	959/990 (97%)	794 (83%)	165 (17%)	2	9

All (165) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	GLU
1	A	10	TYR
1	A	13	LEU
1	A	14	GLN
1	A	28	LEU
1	A	41	THR
1	A	45	PRO
1	A	57	LEU
1	A	61	ILE
1	A	65	SER
1	A	77	ARG
1	A	84	LYS
1	A	85	ILE
1	A	90	LEU
1	A	102	ILE
1	A	106	LEU
1	A	107	PHE

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Mol	Chain	Res	Type
1	A	125	HIS
1	A	148	ASN
1	A	150	GLN
1	A	152	LEU
1	A	159	ILE
1	A	174	GLU
1	A	185	ASP
1	A	203	GLN
1	A	209	VAL
1	A	213	ILE
1	A	219	GLU
1	A	232	THR
1	A	239	LEU
1	A	241	LEU
1	A	246	VAL
1	A	259	ILE
1	A	266	LYS
1	A	279	SER
1	A	295	SER
1	A	303	LEU
1	A	305	LEU
1	A	312	ASP
1	A	325	ILE
1	A	329	LEU
1	A	337	GLN
1	A	338	GLN
1	A	339	LEU
1	A	347	LEU
1	A	352	THR
1	A	355	VAL
1	A	366	VAL
1	A	372	LEU
1	A	374	LEU
1	A	394	ASP
1	A	397	ARG
1	A	398	THR
1	A	400	VAL
1	A	411	ILE
1	A	414	LYS
1	B	10	TYR
1	B	13	LEU
1	B	14	GLN

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Mol	Chain	Res	Type
1	B	28	LEU
1	B	29	ILE
1	B	41	THR
1	B	54	LEU
1	B	55	CYS
1	B	57	LEU
1	B	61	ILE
1	B	65	SER
1	B	81	VAL
1	B	90	LEU
1	B	91	LEU
1	B	102	ILE
1	B	107	PHE
1	B	120	GLN
1	B	148	ASN
1	B	150	GLN
1	B	174	GLU
1	B	209	VAL
1	B	219	GLU
1	B	232	THR
1	B	239	LEU
1	B	241	LEU
1	B	245	LEU
1	B	246	VAL
1	B	259	ILE
1	B	266	LYS
1	B	303	LEU
1	B	305	LEU
1	B	312	ASP
1	B	325	ILE
1	B	329	LEU
1	B	333	LEU
1	B	337	GLN
1	B	338	GLN
1	B	339	LEU
1	B	341	ILE
1	B	347	LEU
1	B	352	THR
1	B	374	LEU
1	B	377	PRO
1	B	394	ASP
1	B	397	ARG

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Mol	Chain	Res	Type
1	B	411	ILE
1	B	414	LYS
1	B	416	GLU
1	C	8	ILE
1	C	9	GLU
1	C	10	TYR
1	C	13	LEU
1	C	14	GLN
1	C	22	LEU
1	C	28	LEU
1	C	29	ILE
1	C	33	TYR
1	C	41	THR
1	C	57	LEU
1	C	61	ILE
1	C	65	SER
1	C	84	LYS
1	C	85	ILE
1	C	90	LEU
1	C	91	LEU
1	C	102	ILE
1	C	106	LEU
1	C	107	PHE
1	C	126	GLN
1	C	140	THR
1	C	148	ASN
1	C	150	GLN
1	C	152	LEU
1	C	174	GLU
1	C	181	GLU
1	C	185	ASP
1	C	203	GLN
1	C	209	VAL
1	C	219	GLU
1	C	232	THR
1	C	241	LEU
1	C	246	VAL
1	C	252	LYS
1	C	259	ILE
1	C	266	LYS
1	C	270	LEU
1	C	287	ARG

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Mol	Chain	Res	Type
1	C	295	SER
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	337	GLN
1	C	338	GLN
1	C	347	LEU
1	C	350	ILE
1	C	352	THR
1	C	366	VAL
1	C	372	LEU
1	C	374	LEU
1	C	394	ASP
1	C	397	ARG
1	C	398	THR
1	C	399	MET
1	C	400	VAL
1	C	411	ILE
1	C	414	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	14	GLN
1	A	132	HIS
1	A	310	ASN
1	A	368	HIS
1	B	108	ASN
1	B	132	HIS
1	B	310	ASN
1	B	368	HIS
1	C	14	GLN
1	C	108	ASN
1	C	310	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 3 ligands modelled in this entry, 3 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 ⓘ

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	414/422 (98%)	-0.55	4 (0%)	82	82	65, 105, 140, 182	0
1	B	408/422 (96%)	-0.51	6 (1%)	73	71	63, 101, 147, 196	0
1	C	413/422 (97%)	-0.51	10 (2%)	59	55	64, 111, 154, 196	0
All	All	1235/1266 (97%)	-0.52	20 (1%)	72	69	63, 105, 148, 196	0

All (20) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	112	GLY	3.6
1	C	126	GLN	3.5
1	C	172	GLU	3.3
1	C	266	LYS	3.1
1	C	127	ALA	2.9
1	B	127	ALA	2.7
1	A	167	TYR	2.6
1	C	33	TYR	2.5
1	B	112	GLY	2.5
1	B	33	TYR	2.5
1	C	332	HIS	2.5
1	A	80	ARG	2.4
1	C	32	HIS	2.4
1	C	106	LEU	2.3
1	B	119	GLY	2.3
1	A	123	GLN	2.3
1	B	32	HIS	2.2
1	A	119	GLY	2.2
1	C	76	ALA	2.2
1	B	120	GLN	2.1

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 ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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	HG	A	501	1/1	0.98	0.08	140,140,140,140	1
2	HG	B	501	1/1	0.99	0.04	137,137,137,137	1
2	HG	C	501	1/1	0.99	0.08	128,128,128,128	1

6.5 Other polymers ⓘ

There are no such residues in this entry.