



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 17, 2021 – 07:45 AM EDT

PDB ID : 1KY9
Title : Crystal Structure of DegP (HtrA)
Authors : Krojer, T.; Garrido-Franco, M.; Huber, R.; Ehrmann, M.; Clausen, T.
Deposited on : 2002-02-04
Resolution : 2.80 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 : 2.23.2
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.23.2

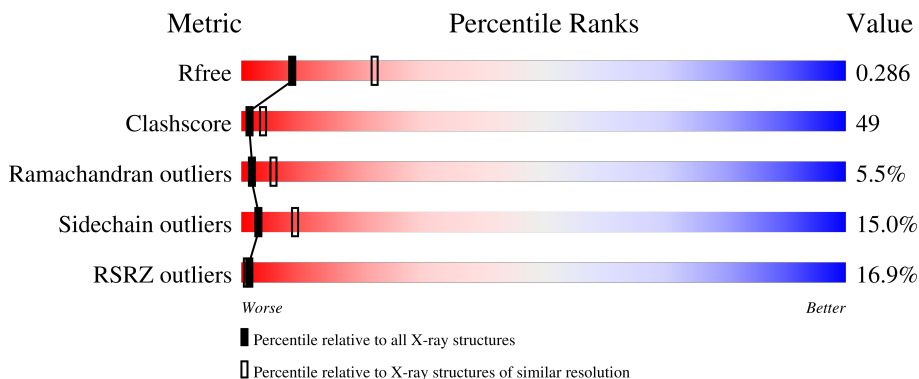
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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	448	
1	B	448	

2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 5366 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 PROTEASE DO.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	Se			
1	A	311	2282	1426	403	441	12	0	0	0
1	B	396	2918	1818	519	568	13	0	0	0

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	12	MSE	MET	modified residue	UNP P0C0V0
A	18	MSE	MET	modified residue	UNP P0C0V0
A	23	MSE	MET	modified residue	UNP P0C0V0
A	42	MSE	MET	modified residue	UNP P0C0V0
A	85	MSE	MET	modified residue	UNP P0C0V0
A	127	MSE	MET	modified residue	UNP P0C0V0
A	152	MSE	MET	modified residue	UNP P0C0V0
A	210	ALA	SER	engineered mutation	UNP P0C0V0
A	246	MSE	MET	modified residue	UNP P0C0V0
A	254	MSE	MET	modified residue	UNP P0C0V0
A	268	MSE	MET	modified residue	UNP P0C0V0
A	280	MSE	MET	modified residue	UNP P0C0V0
A	331	MSE	MET	modified residue	UNP P0C0V0
A	376	MSE	MET	modified residue	UNP P0C0V0
A	447	MSE	MET	modified residue	UNP P0C0V0
B	12	MSE	MET	modified residue	UNP P0C0V0
B	18	MSE	MET	modified residue	UNP P0C0V0
B	23	MSE	MET	modified residue	UNP P0C0V0
B	42	MSE	MET	modified residue	UNP P0C0V0
B	85	MSE	MET	modified residue	UNP P0C0V0
B	127	MSE	MET	modified residue	UNP P0C0V0
B	152	MSE	MET	modified residue	UNP P0C0V0
B	210	ALA	SER	engineered mutation	UNP P0C0V0
B	246	MSE	MET	modified residue	UNP P0C0V0
B	254	MSE	MET	modified residue	UNP P0C0V0

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Chain	Residue	Modelled	Actual	Comment	Reference
B	268	MSE	MET	modified residue	UNP P0C0V0
B	280	MSE	MET	modified residue	UNP P0C0V0
B	331	MSE	MET	modified residue	UNP P0C0V0
B	376	MSE	MET	modified residue	UNP P0C0V0
B	447	MSE	MET	modified residue	UNP P0C0V0

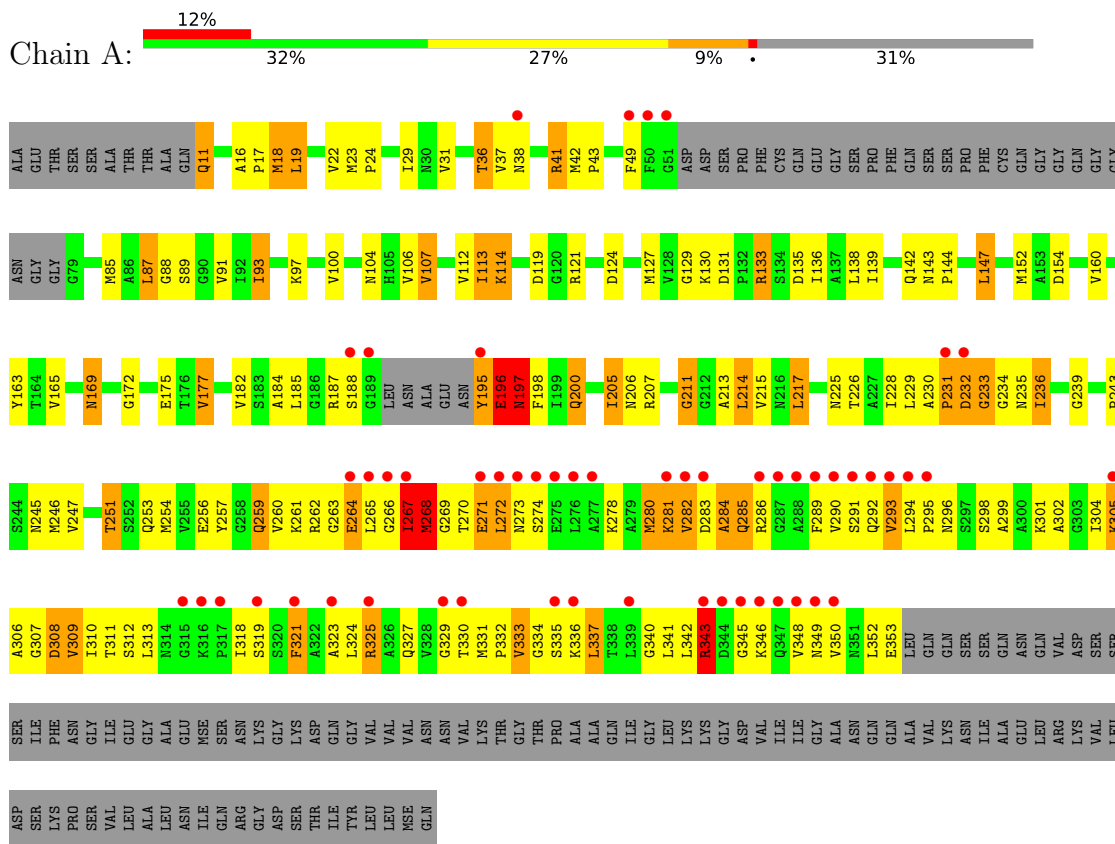
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	77	Total O 77 77	0	0
2	B	89	Total O 89 89	0	0

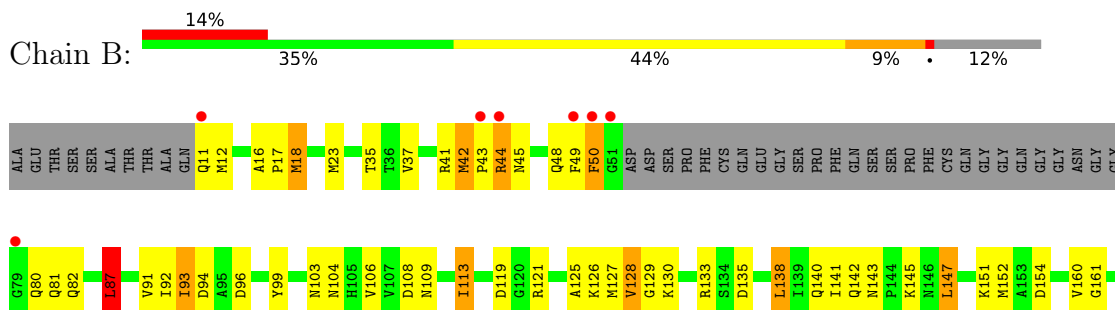
3 Residue-property plots i

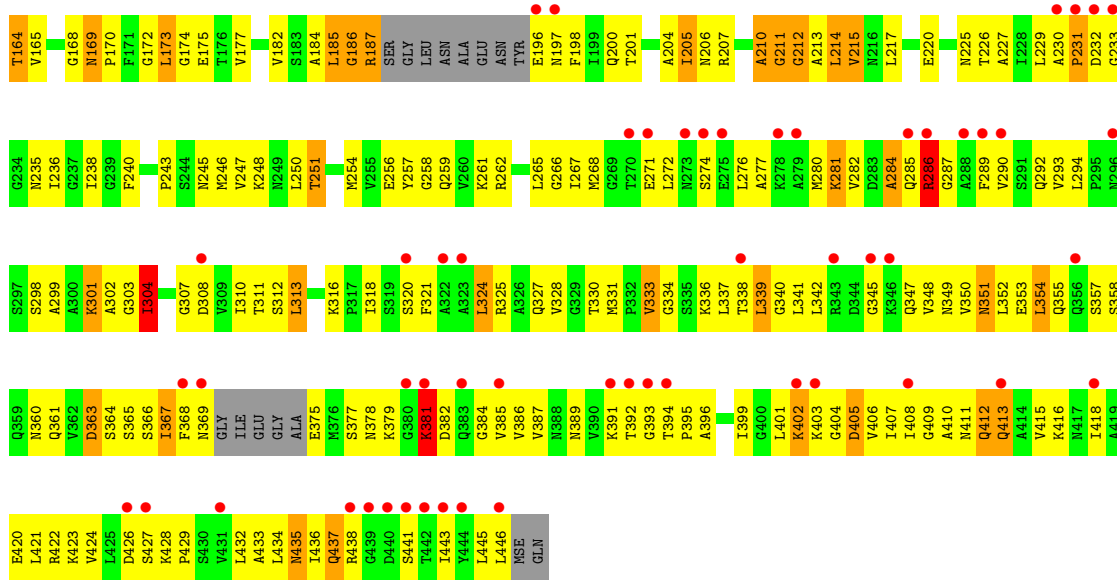
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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: PROTEASE DO



• Molecule 1: PROTEASE DO





4 Data and refinement statistics

Property	Value	Source
Space group	P 63 2 2	Depositor
Cell constants a, b, c, α , β , γ	121.37Å 121.37Å 233.67Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 2.80 19.93 – 2.80	Depositor EDS
% Data completeness (in resolution range)	(Not available) (20.00-2.80) 99.6 (19.93-2.80)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.48 (at 2.79Å)	Xtrriage
Refinement program	CNS	Depositor
R, R_{free}	0.218 , 0.275 0.228 , 0.286	Depositor DCC
R_{free} test set	2338 reflections (4.96%)	wwPDB-VP
Wilson B-factor (Å ²)	69.7	Xtrriage
Anisotropy	0.398	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 83.2	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	5366	wwPDB-VP
Average B, all atoms (Å ²)	94.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.40% 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](#)

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	0.61	0/2295	0.88	7/3078 (0.2%)
1	B	0.56	0/2932	0.90	4/3934 (0.1%)
All	All	0.58	0/5227	0.89	11/7012 (0.2%)

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	230	ALA	C-N-CD	-20.86	74.72	120.60
1	B	230	ALA	C-N-CA	13.68	179.44	122.00
1	A	230	ALA	C-N-CD	-9.74	99.18	120.60
1	A	230	ALA	C-N-CA	7.04	151.57	122.00
1	B	87	LEU	CA-CB-CG	6.67	130.65	115.30
1	A	231	PRO	N-CA-C	5.86	127.33	112.10
1	A	268	MSE	N-CA-C	-5.39	96.44	111.00
1	A	233	GLY	N-CA-C	-5.30	99.86	113.10
1	B	250	LEU	CA-CB-CG	5.27	127.42	115.30
1	A	268	MSE	N-CA-CB	5.21	119.97	110.60
1	A	196	GLU	N-CA-C	-5.12	97.17	111.00

There are no chirality outliers.

There are no planarity outliers.

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	2282	0	2340	225	0
1	B	2918	0	3008	290	0
2	A	77	0	0	18	0
2	B	89	0	0	15	0
All	All	5366	0	5348	515	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 49.

All (515) 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:A:266:GLY:O	1:A:267:ILE:HG13	1.38	1.21
1:B:267:ILE:HD11	1:B:321:PHE:HE1	1.15	1.08
1:A:309:VAL:HG23	1:A:342:LEU:HB3	1.33	1.06
1:B:246:MSE:HG2	2:B:476:HOH:O	1.56	1.05
1:A:265:LEU:HG	1:A:265:LEU:O	1.28	1.04
1:A:246:MSE:HG2	2:A:471:HOH:O	1.54	1.04
1:A:262:ARG:HH12	1:A:332:PRO:HG3	1.23	1.02
1:A:293:VAL:HG23	1:A:299:ALA:HB1	1.41	1.01
1:B:42:MSE:HE2	1:B:44:ARG:HD3	1.44	1.00
1:A:298:SER:HA	1:A:301:LYS:HB3	1.43	0.99
1:A:265:LEU:O	1:A:265:LEU:CG	2.10	0.98
1:A:195:TYR:HB3	1:A:336:LYS:O	1.62	0.97
1:B:367:ILE:HG23	1:B:368:PHE:H	1.26	0.97
1:B:42:MSE:HE2	1:B:44:ARG:CD	1.94	0.97
1:A:273:ASN:HA	1:A:278:LYS:HG2	1.43	0.97
1:B:93:ILE:HG13	1:B:152:MSE:HE2	1.46	0.97
1:B:18:MSE:HE1	1:B:165:VAL:HG11	1.47	0.95
1:B:409:GLY:HA3	1:B:435:ASN:HB2	1.46	0.95
1:A:187:ARG:HG3	1:A:195:TYR:HA	1.47	0.94
1:A:127:MSE:CG	2:A:490:HOH:O	2.14	0.94
1:A:261:LYS:O	1:A:333:VAL:HG23	1.68	0.94
1:A:343:ARG:HH11	1:A:346:LYS:HD2	1.31	0.93
1:B:382:ASP:HB3	1:B:416:LYS:HB2	1.51	0.92
1:A:313:LEU:HD11	1:A:337:LEU:HD12	1.50	0.91
1:B:302:ALA:CB	1:B:350:VAL:HG11	2.01	0.91
1:A:197:ASN:HD22	1:A:197:ASN:H	1.16	0.90
1:B:121:ARG:NH2	1:B:145:LYS:O	2.03	0.90
1:B:267:ILE:HD11	1:B:321:PHE:CE1	2.05	0.90
1:A:318:ILE:HG21	1:A:324:LEU:HG	1.54	0.89
1:A:337:LEU:HD21	1:A:352:LEU:HD11	1.54	0.89

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:197:ASN:HD22	1:A:197:ASN:N	1.63	0.89
1:B:268:MSE:HE2	1:B:294:LEU:HD11	1.54	0.88
1:B:302:ALA:HB1	1:B:350:VAL:HG11	1.55	0.88
1:B:396:ALA:O	1:B:399:ILE:HG22	1.73	0.87
1:B:443:ILE:HD12	1:B:445:LEU:HD21	1.58	0.86
1:A:293:VAL:HG21	1:A:304:ILE:O	1.75	0.86
1:A:290:VAL:HG21	1:A:310:ILE:HD13	1.58	0.85
1:A:304:ILE:HA	1:A:346:LYS:HZ3	1.42	0.83
1:A:197:ASN:H	1:A:197:ASN:ND2	1.78	0.82
1:B:367:ILE:HG23	1:B:368:PHE:N	1.95	0.81
1:B:266:GLY:O	1:B:294:LEU:HB2	1.79	0.81
1:B:276:LEU:HB3	1:B:280:MSE:HE2	1.63	0.81
1:B:304:ILE:HG12	1:B:341:LEU:HD11	1.61	0.81
1:B:399:ILE:HG23	1:B:401:LEU:HD13	1.63	0.80
1:B:42:MSE:CE	1:B:44:ARG:HD3	2.11	0.80
1:B:302:ALA:HB1	1:B:350:VAL:CG1	2.11	0.79
1:A:298:SER:O	1:A:302:ALA:HB2	1.81	0.79
1:A:341:LEU:HD22	1:A:346:LYS:HD3	1.65	0.79
1:B:402:LYS:HG2	1:B:403:LYS:H	1.48	0.78
1:A:321:PHE:HD2	1:A:321:PHE:H	1.31	0.78
1:B:268:MSE:CE	1:B:294:LEU:HD21	2.13	0.77
1:B:267:ILE:HD12	1:B:268:MSE:N	1.99	0.77
1:A:127:MSE:HG2	2:A:490:HOH:O	1.81	0.77
1:A:352:LEU:O	1:A:353:GLU:HB2	1.83	0.77
1:B:227:ALA:HA	2:B:507:HOH:O	1.85	0.76
1:B:236:ILE:HG22	2:B:457:HOH:O	1.84	0.76
1:A:311:THR:HA	1:A:318:ILE:HB	1.66	0.76
1:A:127:MSE:HG3	2:A:490:HOH:O	1.83	0.75
1:B:247:VAL:O	1:B:251:THR:HB	1.86	0.75
1:A:313:LEU:HD23	1:A:327:GLN:HE21	1.52	0.75
1:A:271:GLU:HG2	1:A:272:LEU:N	2.00	0.75
1:B:339:LEU:HD12	1:B:339:LEU:H	1.51	0.75
1:A:205:ILE:HD12	1:A:205:ILE:H	1.50	0.74
1:B:229:LEU:O	1:B:232:ASP:HB3	1.87	0.74
1:A:29:ILE:HG23	1:A:113:ILE:HD13	1.69	0.74
1:A:107:VAL:HG13	1:A:127:MSE:HE1	1.70	0.74
1:B:41:ARG:O	1:B:42:MSE:HE3	1.88	0.73
1:A:29:ILE:HG23	1:A:113:ILE:CD1	2.19	0.73
1:A:246:MSE:HA	1:A:246:MSE:HE2	1.69	0.73
1:B:268:MSE:HE3	1:B:294:LEU:HD21	1.71	0.73
1:A:318:ILE:CG2	1:A:324:LEU:HG	2.18	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:42:MSE:HB3	1:A:43:PRO:HA	1.71	0.72
1:A:343:ARG:HH12	1:A:346:LYS:HZ2	1.37	0.72
1:B:348:VAL:HG12	1:B:349:ASN:H	1.54	0.72
1:B:226:THR:HG22	1:B:240:PHE:O	1.89	0.72
1:A:163:TYR:HB2	1:A:217:LEU:CD2	2.19	0.72
1:A:262:ARG:HH12	1:A:332:PRO:CG	1.99	0.72
1:A:312:SER:HB2	1:A:340:GLY:H	1.53	0.72
1:A:247:VAL:O	1:A:251:THR:HB	1.90	0.71
1:A:235:ASN:HB2	2:A:473:HOH:O	1.91	0.71
1:A:266:GLY:C	1:A:267:ILE:HG13	2.11	0.71
1:B:349:ASN:O	1:B:350:VAL:HG13	1.91	0.71
1:B:169:ASN:C	1:B:169:ASN:HD22	1.94	0.71
1:B:286:ARG:HD2	1:B:286:ARG:O	1.90	0.71
1:B:387:VAL:HG12	1:B:405:ASP:O	1.91	0.70
1:B:113:ILE:HG13	1:B:125:ALA:HB3	1.72	0.70
1:B:41:ARG:C	1:B:42:MSE:HE3	2.13	0.70
1:A:262:ARG:NH1	1:A:332:PRO:HG3	2.03	0.69
1:A:87:LEU:HD23	1:A:88:GLY:N	2.07	0.69
1:A:293:VAL:HG11	1:A:305:LYS:HA	1.73	0.69
1:B:206:ASN:OD1	1:B:207:ARG:HG3	1.92	0.69
1:B:93:ILE:HG13	1:B:152:MSE:CE	2.20	0.69
1:B:355:GLN:HG2	1:B:357:SER:H	1.57	0.69
1:A:104:ASN:HD22	1:A:130:LYS:HB2	1.57	0.69
1:B:410:ALA:HB2	1:B:415:VAL:HG23	1.73	0.69
1:B:384:GLY:HA3	1:B:408:ILE:HD13	1.73	0.69
1:B:169:ASN:HD21	1:B:172:GLY:CA	2.05	0.69
1:A:341:LEU:HD23	1:A:342:LEU:N	2.08	0.68
1:B:361:GLN:HG3	1:B:375:GLU:HG2	1.74	0.68
1:B:381:LYS:HD3	1:B:381:LYS:H	1.57	0.68
1:B:276:LEU:HB3	1:B:280:MSE:CE	2.22	0.68
1:A:343:ARG:HH11	1:A:346:LYS:CD	2.04	0.68
1:A:343:ARG:NH1	1:A:346:LYS:HD2	2.08	0.68
1:A:293:VAL:HG23	1:A:299:ALA:CB	2.20	0.68
1:B:302:ALA:CB	1:B:350:VAL:CG1	2.70	0.68
1:B:410:ALA:N	1:B:413:GLN:O	2.21	0.68
1:A:160:VAL:O	1:A:182:VAL:O	2.12	0.68
1:B:405:ASP:HA	1:B:438:ARG:HB3	1.75	0.68
1:B:415:VAL:HG12	1:B:415:VAL:O	1.94	0.67
1:A:87:LEU:HD23	1:A:87:LEU:C	2.15	0.67
1:B:324:LEU:O	1:B:328:VAL:HG22	1.94	0.67
1:A:264:GLU:HA	1:A:329:GLY:HA2	1.78	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:18:MSE:CE	1:B:165:VAL:HG11	2.24	0.67
1:B:415:VAL:HG13	1:B:421:LEU:HB2	1.77	0.67
1:B:184:ALA:HB3	1:B:200:GLN:HB2	1.77	0.66
1:B:360:ASN:ND2	1:B:418:ILE:HD13	2.11	0.66
1:B:169:ASN:ND2	1:B:172:GLY:H	1.93	0.66
1:A:342:LEU:HD23	1:A:343:ARG:N	2.09	0.66
1:A:269:GLY:HA2	1:A:291:SER:OG	1.95	0.66
1:A:343:ARG:NH1	1:A:346:LYS:HZ2	1.93	0.65
1:A:93:ILE:HG13	1:A:152:MSE:HE2	1.77	0.65
1:A:19:LEU:HD21	1:A:177:VAL:HG21	1.77	0.65
1:A:304:ILE:HA	1:A:346:LYS:NZ	2.10	0.65
1:B:304:ILE:CG1	1:B:341:LEU:HD11	2.27	0.65
1:B:304:ILE:HG12	1:B:341:LEU:CD1	2.27	0.65
1:A:289:PHE:HA	1:A:309:VAL:HG12	1.79	0.64
1:A:163:TYR:HB2	1:A:217:LEU:HD21	1.80	0.64
1:B:243:PRO:O	1:B:247:VAL:HG23	1.98	0.64
1:B:379:LYS:HB2	1:B:386:VAL:HB	1.80	0.64
1:A:187:ARG:CG	1:A:195:TYR:HA	2.24	0.63
1:A:266:GLY:O	1:A:267:ILE:CG1	2.32	0.63
1:B:232:ASP:OD1	1:B:233:GLY:O	2.16	0.63
1:B:284:ALA:HB1	1:B:286:ARG:NH2	2.14	0.63
1:B:411:ASN:HA	1:B:433:ALA:O	1.98	0.63
1:A:133:ARG:NH1	1:A:330:THR:HG23	2.12	0.63
1:A:305:LYS:HB2	1:A:305:LYS:NZ	2.14	0.63
1:A:85:MSE:HE2	2:A:479:HOH:O	1.99	0.62
1:B:363:ASP:OD1	1:B:422:ARG:NH1	2.26	0.62
1:B:330:THR:HG22	1:B:330:THR:O	1.99	0.62
1:B:386:VAL:HG22	1:B:406:VAL:HG22	1.82	0.62
1:A:268:MSE:O	1:A:292:GLN:HB2	2.00	0.62
1:B:165:VAL:CG1	1:B:215:VAL:HG12	2.30	0.62
1:B:303:GLY:O	1:B:304:ILE:HG13	2.00	0.61
1:B:420:GLU:O	1:B:423:LYS:HB3	2.00	0.61
1:A:337:LEU:HD21	1:A:352:LEU:CD1	2.28	0.61
1:B:94:ASP:HB3	1:B:99:TYR:HB2	1.82	0.61
1:A:235:ASN:N	2:A:473:HOH:O	2.31	0.61
1:B:267:ILE:HD12	1:B:268:MSE:CA	2.31	0.61
1:B:354:LEU:HD13	1:B:355:GLN:N	2.16	0.61
1:A:343:ARG:HH12	1:A:346:LYS:NZ	1.99	0.60
1:A:282:VAL:HG12	1:A:282:VAL:O	2.01	0.60
1:B:384:GLY:HA2	1:B:415:VAL:O	2.01	0.60
1:A:312:SER:HB2	1:A:340:GLY:N	2.16	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:335:SER:HB2	1:A:352:LEU:HD13	1.82	0.60
1:B:313:LEU:HD21	1:B:337:LEU:HD12	1.84	0.60
1:B:393:GLY:C	1:B:395:PRO:HD3	2.22	0.60
1:A:133:ARG:NH1	1:A:331:MSE:HA	2.17	0.59
1:B:334:GLY:HA2	1:B:351:ASN:HD21	1.66	0.59
1:A:175:GLU:OE2	1:A:175:GLU:HA	2.02	0.59
1:B:41:ARG:HG3	1:B:41:ARG:HH11	1.65	0.59
1:B:409:GLY:HA3	1:B:435:ASN:CB	2.27	0.59
1:B:411:ASN:OD1	1:B:433:ALA:N	2.25	0.59
1:A:135:ASP:HB3	1:A:226:THR:OG1	2.02	0.59
1:B:113:ILE:CG1	1:B:125:ALA:HB3	2.32	0.59
1:A:318:ILE:HG21	1:A:324:LEU:CG	2.29	0.59
1:B:348:VAL:HG12	1:B:349:ASN:N	2.18	0.59
1:A:169:ASN:C	1:A:169:ASN:HD22	2.04	0.59
1:B:226:THR:OG1	1:B:227:ALA:N	2.36	0.59
1:A:133:ARG:HH11	1:A:330:THR:HG23	1.68	0.58
1:B:340:GLY:HA2	1:B:347:GLN:HG3	1.83	0.58
1:B:339:LEU:HD12	1:B:339:LEU:N	2.18	0.58
1:B:438:ARG:HG3	1:B:438:ARG:HH11	1.68	0.58
1:A:311:THR:CA	1:A:318:ILE:HB	2.34	0.58
1:A:321:PHE:CD2	1:A:321:PHE:N	2.63	0.58
1:B:265:LEU:HD21	1:B:339:LEU:HD21	1.85	0.58
1:B:349:ASN:O	1:B:350:VAL:CG1	2.51	0.58
1:B:407:ILE:HG12	1:B:436:ILE:HG22	1.85	0.58
1:A:335:SER:HB2	1:A:352:LEU:HD22	1.85	0.58
1:A:169:ASN:ND2	1:A:172:GLY:H	2.01	0.58
1:B:169:ASN:HD21	1:B:172:GLY:N	2.02	0.58
1:B:311:THR:HB	2:B:484:HOH:O	2.03	0.57
1:A:293:VAL:HG11	1:A:305:LYS:HD3	1.86	0.57
1:B:360:ASN:O	1:B:375:GLU:HA	2.04	0.57
1:B:405:ASP:OD2	1:B:438:ARG:HD3	2.04	0.57
1:B:161:GLY:N	2:B:533:HOH:O	2.20	0.57
1:B:405:ASP:HA	1:B:438:ARG:CB	2.35	0.57
1:A:267:ILE:HG22	1:A:295:PRO:HD2	1.86	0.57
1:A:272:LEU:HG	1:A:289:PHE:HB2	1.86	0.57
1:B:119:ASP:OD2	1:B:121:ARG:HD3	2.04	0.57
1:B:113:ILE:HG13	1:B:113:ILE:O	2.04	0.57
1:B:185:LEU:O	1:B:187:ARG:N	2.38	0.57
1:B:381:LYS:HD3	1:B:381:LYS:N	2.20	0.56
1:A:133:ARG:HD3	1:A:330:THR:O	2.05	0.56
1:A:154:ASP:HA	1:A:245:ASN:HD21	1.69	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:133:ARG:HG3	1:B:262:ARG:HH11	1.70	0.56
1:A:91:VAL:HG21	1:A:213:ALA:HB2	1.87	0.56
1:B:394:THR:N	1:B:395:PRO:HD3	2.20	0.56
1:A:271:GLU:HB2	1:A:321:PHE:CE1	2.41	0.56
1:B:337:LEU:HD23	1:B:337:LEU:H	1.70	0.56
1:A:91:VAL:CG2	1:A:213:ALA:HB2	2.35	0.56
1:A:298:SER:HA	1:A:301:LYS:CB	2.28	0.56
1:A:272:LEU:O	1:A:273:ASN:HB2	2.05	0.56
1:A:206:ASN:OD1	1:A:207:ARG:HG3	2.06	0.55
1:A:334:GLY:N	1:A:352:LEU:HB2	2.21	0.55
1:B:415:VAL:CG1	1:B:421:LEU:HB2	2.36	0.55
1:A:114:LYS:HE2	1:A:124:ASP:OD1	2.07	0.55
1:A:337:LEU:HD23	1:A:337:LEU:H	1.72	0.55
1:B:127:MSE:HE1	1:B:129:GLY:O	2.07	0.55
1:A:234:GLY:HA3	2:A:462:HOH:O	2.06	0.55
1:A:283:ASP:O	1:A:284:ALA:HB3	2.06	0.55
1:B:81:GLN:O	1:B:82:GLN:OE1	2.24	0.55
1:B:365:SER:O	1:B:367:ILE:N	2.40	0.55
1:B:286:ARG:HG2	1:B:286:ARG:HH11	1.72	0.55
1:B:330:THR:O	1:B:331:MSE:HG3	2.07	0.54
1:B:412:GLN:HG2	1:B:413:GLN:N	2.21	0.54
1:B:185:LEU:O	1:B:186:GLY:C	2.46	0.54
1:A:136:ILE:O	1:A:254:MSE:HE1	2.08	0.54
1:B:336:LYS:HG2	1:B:351:ASN:HB2	1.90	0.54
1:A:283:ASP:O	1:A:284:ALA:CB	2.55	0.54
1:B:164:THR:HG21	1:B:201:THR:OG1	2.08	0.54
1:B:438:ARG:HG3	1:B:438:ARG:NH1	2.23	0.54
1:A:343:ARG:NH1	1:A:346:LYS:NZ	2.54	0.54
1:B:355:GLN:OE1	1:B:357:SER:HB2	2.08	0.54
1:B:184:ALA:HB3	1:B:200:GLN:CB	2.39	0.53
1:B:301:LYS:HD3	1:B:301:LYS:C	2.29	0.53
1:A:281:LYS:H	1:A:281:LYS:HD2	1.73	0.53
1:A:267:ILE:HG21	1:A:299:ALA:CB	2.37	0.53
1:B:262:ARG:HG3	1:B:355:GLN:NE2	2.24	0.53
1:B:310:ILE:HD12	1:B:310:ILE:N	2.23	0.53
1:B:259:GLN:HG2	1:B:378:ASN:HD22	1.74	0.52
1:A:305:LYS:HG3	1:A:306:ALA:H	1.73	0.52
1:B:82:GLN:OE1	1:B:82:GLN:HA	2.09	0.52
1:B:410:ALA:CB	1:B:415:VAL:HG23	2.37	0.52
1:A:264:GLU:HG3	2:A:521:HOH:O	2.08	0.52
1:A:337:LEU:HD23	1:A:337:LEU:N	2.25	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:169:ASN:ND2	1:B:172:GLY:N	2.58	0.52
1:B:212:GLY:O	1:B:225:ASN:N	2.35	0.52
1:B:437:GLN:HA	1:B:441:SER:O	2.10	0.52
1:B:37:VAL:HG11	1:B:82:GLN:HE21	1.75	0.52
1:B:268:MSE:HE2	1:B:294:LEU:CD1	2.33	0.52
1:B:349:ASN:C	1:B:350:VAL:HG13	2.30	0.52
1:A:185:LEU:HD13	1:A:188:SER:HB2	1.90	0.52
1:A:337:LEU:HG	1:A:350:VAL:HG22	1.90	0.52
1:B:204:ALA:O	1:B:205:ILE:HG13	2.09	0.52
1:B:272:LEU:HD13	1:B:285:GLN:CA	2.40	0.52
1:B:282:VAL:HG23	1:B:285:GLN:CD	2.30	0.52
1:B:386:VAL:CG2	1:B:406:VAL:HG22	2.40	0.52
1:A:334:GLY:H	1:A:352:LEU:HB2	1.75	0.51
1:B:259:GLN:OE1	1:B:354:LEU:HG	2.10	0.51
1:B:445:LEU:N	1:B:445:LEU:HD22	2.25	0.51
1:A:107:VAL:HG13	1:A:127:MSE:CE	2.39	0.51
1:A:42:MSE:HB3	1:A:43:PRO:CA	2.40	0.51
1:B:44:ARG:HA	1:B:44:ARG:NE	2.24	0.51
1:B:160:VAL:O	1:B:182:VAL:O	2.26	0.51
1:B:310:ILE:HD12	1:B:310:ILE:H	1.76	0.51
1:B:204:ALA:C	1:B:205:ILE:HG13	2.31	0.51
1:B:411:ASN:HD21	1:B:428:LYS:NZ	2.08	0.51
1:B:11:GLN:CD	1:B:11:GLN:N	2.64	0.51
1:B:236:ILE:HG12	1:B:236:ILE:O	2.11	0.51
1:B:410:ALA:HB1	1:B:424:VAL:HG21	1.93	0.51
1:A:271:GLU:HG3	1:A:321:PHE:CE2	2.46	0.51
1:B:23:MSE:HE2	2:B:473:HOH:O	2.10	0.51
1:B:104:ASN:O	1:B:108:ASP:HB2	2.11	0.51
1:A:335:SER:CB	1:A:352:LEU:HD22	2.41	0.50
1:A:348:VAL:HG12	1:A:349:ASN:N	2.26	0.50
1:B:169:ASN:C	1:B:169:ASN:ND2	2.64	0.50
1:B:151:LYS:HD3	1:B:220:GLU:OE2	2.12	0.50
1:A:281:LYS:H	1:A:281:LYS:CD	2.25	0.50
1:B:127:MSE:HE1	1:B:129:GLY:C	2.31	0.50
1:A:308:ASP:OD1	1:A:343:ARG:NH1	2.44	0.50
1:A:16:ALA:HB3	1:A:17:PRO:HD3	1.93	0.50
1:B:427:SER:C	1:B:429:PRO:HD3	2.31	0.50
1:A:271:GLU:HB2	1:A:321:PHE:CD1	2.46	0.50
1:B:313:LEU:HD13	1:B:327:GLN:HE21	1.76	0.50
1:A:23:MSE:N	1:A:24:PRO:CD	2.74	0.50
1:A:42:MSE:HE1	2:A:505:HOH:O	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:318:ILE:HG13	1:A:324:LEU:HD21	1.94	0.49
1:B:405:ASP:CA	1:B:438:ARG:HB3	2.41	0.49
1:A:335:SER:HB2	1:A:352:LEU:CD1	2.43	0.49
1:B:333:VAL:HG12	1:B:334:GLY:N	2.27	0.49
1:B:41:ARG:HH11	1:B:41:ARG:CG	2.25	0.49
1:B:126:LYS:NZ	2:B:518:HOH:O	2.45	0.49
1:B:416:LYS:HD3	1:B:420:GLU:OE1	2.12	0.49
1:B:330:THR:C	1:B:331:MSE:HG3	2.32	0.49
1:B:410:ALA:CA	1:B:415:VAL:HG23	2.42	0.49
1:A:290:VAL:CG2	1:A:310:ILE:HD13	2.38	0.49
1:B:267:ILE:HD12	1:B:267:ILE:C	2.33	0.49
1:B:268:MSE:HE2	1:B:294:LEU:HD21	1.90	0.49
1:A:278:LYS:HD3	1:A:282:VAL:HG21	1.94	0.49
1:B:142:GLN:HG3	2:B:486:HOH:O	2.11	0.49
1:B:416:LYS:HG2	1:B:420:GLU:OE2	2.12	0.49
1:A:323:ALA:O	1:A:327:GLN:HG3	2.13	0.49
1:B:381:LYS:H	1:B:381:LYS:CD	2.19	0.49
1:B:411:ASN:ND2	1:B:412:GLN:OE1	2.45	0.49
1:A:89:SER:HB2	2:A:502:HOH:O	2.13	0.49
1:B:160:VAL:HB	2:B:533:HOH:O	2.11	0.48
1:A:243:PRO:O	1:A:247:VAL:HG23	2.13	0.48
1:B:410:ALA:C	1:B:412:GLN:H	2.16	0.48
1:B:411:ASN:O	1:B:412:GLN:HB3	2.13	0.48
1:A:133:ARG:HH11	1:A:330:THR:C	2.16	0.48
1:A:187:ARG:HH12	1:A:336:LYS:NZ	2.11	0.48
1:A:311:THR:HG23	1:A:318:ILE:O	2.13	0.48
1:B:82:GLN:HG2	2:B:472:HOH:O	2.13	0.48
1:B:432:LEU:O	1:B:446:LEU:HA	2.13	0.48
1:A:85:MSE:HB3	2:A:479:HOH:O	2.14	0.48
1:A:184:ALA:HB3	1:A:200:GLN:HB2	1.96	0.48
1:A:187:ARG:NH1	1:A:336:LYS:HD2	2.29	0.48
1:A:310:ILE:N	1:A:310:ILE:HD12	2.29	0.48
1:A:304:ILE:HG23	1:A:308:ASP:OD2	2.13	0.48
1:A:308:ASP:OD1	1:A:341:LEU:HD21	2.13	0.48
1:B:290:VAL:HG23	1:B:308:ASP:O	2.14	0.48
1:B:354:LEU:HD13	1:B:355:GLN:H	1.77	0.48
1:B:334:GLY:HA2	1:B:351:ASN:ND2	2.28	0.48
1:A:207:ARG:CG	1:A:207:ARG:HH11	2.27	0.48
1:A:266:GLY:C	1:A:267:ILE:CG1	2.78	0.47
1:B:360:ASN:ND2	1:B:418:ILE:CD1	2.77	0.47
1:A:133:ARG:HH12	1:A:331:MSE:HG2	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:278:LYS:NZ	1:A:282:VAL:HG11	2.28	0.47
1:B:42:MSE:HG3	1:B:43:PRO:HA	1.96	0.47
1:B:265:LEU:O	1:B:299:ALA:HB2	2.14	0.47
1:B:320:SER:O	1:B:321:PHE:C	2.52	0.47
1:B:382:ASP:OD2	1:B:416:LYS:HE2	2.14	0.47
1:A:200:GLN:HA	1:A:239:GLY:O	2.14	0.47
1:B:41:ARG:O	1:B:44:ARG:NH1	2.47	0.47
1:A:232:ASP:O	1:A:233:GLY:C	2.53	0.47
1:A:293:VAL:HG22	1:A:293:VAL:O	2.14	0.47
1:B:272:LEU:HD13	1:B:285:GLN:HA	1.96	0.47
1:A:335:SER:HB2	1:A:352:LEU:CD2	2.44	0.47
1:B:424:VAL:C	1:B:426:ASP:H	2.18	0.47
1:A:205:ILE:O	1:A:235:ASN:ND2	2.48	0.47
1:A:298:SER:CA	1:A:301:LYS:HB3	2.30	0.47
1:A:325:ARG:HG2	1:A:325:ARG:HH11	1.78	0.47
1:B:399:ILE:O	1:B:445:LEU:HG	2.15	0.47
1:A:290:VAL:HG21	1:A:310:ILE:CD1	2.36	0.47
1:B:42:MSE:HE2	1:B:44:ARG:CG	2.43	0.47
1:B:248:LYS:O	1:B:251:THR:HG22	2.15	0.47
1:B:412:GLN:HG2	1:B:413:GLN:H	1.80	0.46
1:A:259:GLN:HG3	2:A:495:HOH:O	2.15	0.46
1:B:45:ASN:HB3	1:B:48:GLN:HB3	1.96	0.46
1:B:267:ILE:HD12	1:B:268:MSE:C	2.34	0.46
1:A:205:ILE:HD11	2:A:451:HOH:O	2.15	0.46
1:A:294:LEU:O	1:A:296:ASN:ND2	2.48	0.46
1:B:87:LEU:C	1:B:87:LEU:HD23	2.35	0.46
1:B:409:GLY:HA2	1:B:413:GLN:O	2.15	0.46
1:A:214:LEU:HG	1:A:225:ASN:HD21	1.80	0.46
1:A:272:LEU:O	1:A:273:ASN:CB	2.63	0.46
1:B:37:VAL:HG11	1:B:82:GLN:NE2	2.31	0.46
1:B:312:SER:HA	1:B:318:ILE:HG12	1.97	0.46
1:A:36:THR:O	1:A:36:THR:HG22	2.15	0.46
1:A:129:GLY:HA3	1:A:254:MSE:HB3	1.98	0.46
1:A:160:VAL:N	2:A:511:HOH:O	2.48	0.46
1:A:305:LYS:HB2	1:A:305:LYS:HZ3	1.79	0.46
1:B:385:VAL:HG11	1:B:418:ILE:HG12	1.97	0.46
1:A:37:VAL:HG22	1:A:38:ASN:N	2.30	0.46
1:A:207:ARG:HG3	1:A:207:ARG:HH11	1.79	0.46
1:A:263:GLY:O	1:A:265:LEU:HD22	2.15	0.46
1:B:367:ILE:CG2	1:B:368:PHE:H	2.05	0.46
1:B:410:ALA:C	1:B:412:GLN:N	2.67	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:282:VAL:HG23	1:B:285:GLN:HG2	1.98	0.46
1:A:318:ILE:O	1:A:318:ILE:HG22	2.16	0.46
1:B:108:ASP:O	1:B:109:ASN:HB2	2.14	0.46
1:A:205:ILE:HD12	1:A:205:ILE:N	2.25	0.45
1:B:99:TYR:CD2	1:B:140:GLN:HG3	2.51	0.45
1:B:133:ARG:NE	1:B:325:ARG:NH1	2.65	0.45
1:B:271:GLU:OE2	1:B:321:PHE:N	2.46	0.45
1:B:272:LEU:CD1	1:B:286:ARG:N	2.79	0.45
1:B:333:VAL:HG21	1:B:354:LEU:HD23	1.98	0.45
1:B:337:LEU:HD23	1:B:337:LEU:N	2.30	0.45
1:A:298:SER:O	1:A:302:ALA:CB	2.58	0.45
1:A:313:LEU:HD11	1:A:337:LEU:CD1	2.35	0.45
1:B:42:MSE:HE2	1:B:44:ARG:HD2	1.93	0.45
1:B:282:VAL:HG23	1:B:285:GLN:CG	2.47	0.45
1:B:402:LYS:CG	1:B:403:LYS:H	2.20	0.45
1:B:141:ILE:HD12	1:B:147:LEU:HD21	1.97	0.45
1:B:308:ASP:HA	1:B:342:LEU:O	2.15	0.45
1:B:16:ALA:HB3	1:B:17:PRO:HD3	1.99	0.45
1:B:408:ILE:H	1:B:437:GLN:NE2	2.15	0.45
1:B:411:ASN:ND2	1:B:428:LYS:NZ	2.65	0.45
1:B:433:ALA:HA	1:B:445:LEU:O	2.17	0.45
1:A:232:ASP:O	1:A:234:GLY:N	2.49	0.45
1:B:128:VAL:HG13	1:B:138:LEU:HB3	1.98	0.45
1:B:133:ARG:HG3	1:B:262:ARG:NH1	2.29	0.45
1:B:365:SER:C	1:B:367:ILE:N	2.70	0.45
1:A:169:ASN:C	1:A:169:ASN:ND2	2.69	0.45
1:A:262:ARG:HH11	1:A:331:MSE:C	2.20	0.45
1:A:112:VAL:HG13	2:A:487:HOH:O	2.17	0.45
1:A:267:ILE:O	1:A:295:PRO:HG2	2.17	0.45
1:B:108:ASP:OD1	1:B:130:LYS:NZ	2.50	0.45
1:B:135:ASP:CG	1:B:135:ASP:O	2.54	0.45
1:B:259:GLN:HE22	1:B:377:SER:HB2	1.82	0.45
1:B:365:SER:CB	1:B:367:ILE:HG22	2.47	0.45
1:A:113:ILE:HD12	1:A:114:LYS:N	2.31	0.44
1:A:308:ASP:HB3	1:A:341:LEU:HD21	1.99	0.44
1:A:187:ARG:HD2	1:A:195:TYR:CD2	2.52	0.44
1:A:262:ARG:HA	1:A:262:ARG:HD3	1.72	0.44
1:B:338:THR:HA	1:B:349:ASN:HA	1.99	0.44
1:B:92:ILE:HD13	1:B:147:LEU:HG	2.00	0.44
1:A:196:GLU:OE1	1:A:331:MSE:HE2	2.17	0.44
1:A:341:LEU:HD13	1:A:346:LYS:HD3	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:152:MSE:HE2	2:B:519:HOH:O	2.17	0.44
1:B:259:GLN:HG2	1:B:378:ASN:ND2	2.32	0.44
1:A:100:VAL:HB	1:A:139:ILE:HG13	1.98	0.44
1:A:142:GLN:O	1:A:143:ASN:HB2	2.18	0.44
1:A:187:ARG:HH11	1:A:336:LYS:HD2	1.82	0.44
1:B:201:THR:O	1:B:238:ILE:HG12	2.16	0.44
1:B:405:ASP:HA	1:B:438:ARG:HA	1.99	0.44
1:A:331:MSE:HA	1:A:332:PRO:HD3	1.79	0.44
1:B:333:VAL:HG13	1:B:353:GLU:HA	2.00	0.44
1:B:365:SER:C	1:B:367:ILE:H	2.21	0.44
1:B:410:ALA:HB3	1:B:413:GLN:CB	2.48	0.44
1:A:312:SER:HB2	1:A:340:GLY:CA	2.48	0.44
1:B:168:GLY:C	1:B:170:PRO:HD3	2.39	0.44
1:B:286:ARG:HH11	1:B:286:ARG:CG	2.30	0.44
1:B:289:PHE:HE2	1:B:307:GLY:HA2	1.82	0.44
1:B:391:LYS:HB3	1:B:392:THR:H	1.68	0.44
1:A:41:ARG:HD3	1:A:41:ARG:C	2.38	0.43
1:A:133:ARG:NH1	1:A:330:THR:O	2.51	0.43
1:A:281:LYS:O	1:A:282:VAL:HB	2.17	0.43
1:A:11:GLN:HB2	2:A:512:HOH:O	2.18	0.43
1:B:405:ASP:CG	1:B:438:ARG:HB3	2.39	0.43
1:A:264:GLU:CA	1:A:329:GLY:HA2	2.47	0.43
1:B:404:GLY:O	1:B:438:ARG:HB2	2.17	0.43
1:B:172:GLY:O	1:B:174:GLY:N	2.52	0.43
1:B:313:LEU:HD21	1:B:337:LEU:HB2	2.00	0.43
1:A:257:TYR:C	1:A:259:GLN:H	2.22	0.43
1:A:307:GLY:O	1:A:308:ASP:O	2.35	0.43
1:B:256:GLU:O	1:B:257:TYR:CD2	2.71	0.43
1:B:277:ALA:O	1:B:282:VAL:HG22	2.18	0.43
1:A:253:GLN:OE1	1:A:260:VAL:HG23	2.19	0.43
1:B:258:GLY:HA3	1:B:418:ILE:HB	2.01	0.43
1:B:293:VAL:HG13	1:B:293:VAL:O	2.19	0.43
1:B:399:ILE:HG23	1:B:399:ILE:O	2.19	0.43
1:B:406:VAL:HG11	1:B:408:ILE:HD11	1.99	0.43
1:B:210:ALA:O	1:B:211:GLY:O	2.36	0.43
1:B:334:GLY:O	1:B:351:ASN:ND2	2.48	0.43
1:B:405:ASP:N	1:B:405:ASP:OD1	2.52	0.43
1:B:402:LYS:HG2	1:B:403:LYS:N	2.25	0.43
1:B:406:VAL:HG12	1:B:407:ILE:N	2.34	0.43
1:B:434:LEU:O	1:B:436:ILE:HG23	2.20	0.42
1:B:435:ASN:OD1	1:B:435:ASN:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:207:ARG:CG	1:A:207:ARG:NH1	2.81	0.42
1:A:228:ILE:HD11	1:A:236:ILE:HG21	2.00	0.42
1:A:163:TYR:HB2	1:A:217:LEU:HD22	2.01	0.42
1:A:345:GLY:O	1:A:346:LYS:HB2	2.19	0.42
1:A:256:GLU:O	1:A:256:GLU:HG3	2.19	0.42
1:A:343:ARG:HH11	1:A:343:ARG:HG2	1.84	0.42
1:B:42:MSE:HA	1:B:43:PRO:O	2.18	0.42
1:B:384:GLY:HA3	1:B:408:ILE:CD1	2.45	0.42
1:B:410:ALA:HB3	1:B:413:GLN:HB2	2.02	0.42
1:A:11:GLN:NE2	1:A:11:GLN:N	2.68	0.42
1:A:270:THR:O	1:A:271:GLU:O	2.38	0.42
1:A:278:LYS:HZ2	1:A:282:VAL:HG11	1.85	0.42
1:B:142:GLN:O	1:B:143:ASN:HB2	2.20	0.42
1:B:165:VAL:HG12	1:B:215:VAL:O	2.20	0.42
1:B:298:SER:HB2	1:B:353:GLU:OE1	2.20	0.42
1:A:348:VAL:HG12	1:A:349:ASN:H	1.84	0.42
1:B:169:ASN:HB2	1:B:175:GLU:OE1	2.20	0.42
1:B:405:ASP:HA	1:B:438:ARG:CA	2.50	0.42
1:A:41:ARG:HD3	1:A:41:ARG:O	2.19	0.42
1:B:294:LEU:HD23	1:B:294:LEU:HA	1.85	0.42
1:B:35:THR:O	1:B:81:GLN:HA	2.20	0.42
1:A:228:ILE:HD11	1:A:236:ILE:CG2	2.50	0.41
1:A:246:MSE:HA	1:A:246:MSE:CE	2.45	0.41
1:B:340:GLY:HA2	1:B:347:GLN:CG	2.50	0.41
1:B:175:GLU:HG3	2:B:464:HOH:O	2.20	0.41
1:B:432:LEU:HD11	1:B:434:LEU:HD11	2.02	0.41
1:A:144:PRO:HB2	1:A:147:LEU:HD22	2.01	0.41
1:A:274:SER:O	1:A:278:LYS:HB2	2.20	0.41
1:B:138:LEU:HA	1:B:138:LEU:HD23	1.78	0.41
1:B:196:GLU:O	1:B:198:PHE:N	2.49	0.41
1:B:262:ARG:HG3	1:B:355:GLN:HE21	1.84	0.41
1:B:302:ALA:HB1	1:B:350:VAL:HG12	1.96	0.41
1:A:211:GLY:HA2	2:A:502:HOH:O	2.20	0.41
1:B:41:ARG:CG	1:B:41:ARG:NH1	2.84	0.41
1:B:103:ASN:HB2	1:B:106:VAL:HG23	2.03	0.41
1:B:302:ALA:HB3	1:B:350:VAL:HG11	1.93	0.41
1:A:185:LEU:CD1	1:A:188:SER:HB2	2.50	0.41
1:A:19:LEU:HD12	1:A:19:LEU:HA	1.96	0.41
1:A:29:ILE:CG2	1:A:113:ILE:HD13	2.47	0.41
1:A:280:MSE:HB3	1:A:281:LYS:H	1.60	0.41
1:B:169:ASN:ND2	1:B:169:ASN:O	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:198:PHE:HE2	1:B:226:THR:HG21	1.85	0.41
1:B:410:ALA:HA	1:B:415:VAL:CG2	2.51	0.41
1:B:411:ASN:OD1	1:B:432:LEU:HA	2.21	0.41
1:B:229:LEU:HD23	1:B:229:LEU:HA	1.80	0.41
1:B:365:SER:HB3	1:B:367:ILE:HG22	2.03	0.41
1:A:11:GLN:N	1:A:11:GLN:CD	2.73	0.41
1:A:154:ASP:C	1:A:154:ASP:OD2	2.57	0.41
1:A:187:ARG:HB2	1:A:197:ASN:HB3	2.02	0.41
1:A:228:ILE:HG13	1:A:229:LEU:HD23	2.03	0.41
1:A:228:ILE:HG13	1:A:229:LEU:CD2	2.51	0.41
1:B:185:LEU:HD12	1:B:185:LEU:HA	1.81	0.41
1:B:187:ARG:NH1	2:B:521:HOH:O	2.54	0.41
1:B:364:SER:HA	1:B:422:ARG:HD3	2.03	0.41
1:B:368:PHE:O	1:B:369:ASN:OD1	2.39	0.41
1:A:18:MSE:O	1:A:22:VAL:HG23	2.21	0.41
1:B:154:ASP:HA	1:B:245:ASN:HD21	1.85	0.41
1:B:379:LYS:HB2	1:B:386:VAL:CB	2.50	0.41
1:B:91:VAL:CG2	1:B:213:ALA:HB2	2.51	0.40
1:B:129:GLY:HA3	1:B:254:MSE:HB3	2.03	0.40
1:B:164:THR:HG23	1:B:214:LEU:HD21	2.01	0.40
1:B:368:PHE:CD1	1:B:369:ASN:N	2.90	0.40
1:A:262:ARG:NH1	1:A:332:PRO:N	2.69	0.40
1:B:175:GLU:HB2	2:B:473:HOH:O	2.20	0.40
1:B:205:ILE:N	1:B:205:ILE:HD12	2.36	0.40
1:A:31:VAL:HG21	1:A:106:VAL:O	2.21	0.40
1:B:152:MSE:CE	2:B:519:HOH:O	2.69	0.40
1:B:240:PHE:CD1	1:B:240:PHE:N	2.89	0.40
1:B:259:GLN:NE2	1:B:358:SER:O	2.54	0.40
1:B:272:LEU:CD1	1:B:287:GLY:H	2.34	0.40
1:A:97:LYS:HD3	1:A:97:LYS:HA	1.77	0.40
1:A:119:ASP:OD1	1:A:121:ARG:HG3	2.21	0.40
1:A:131:ASP:OD1	1:A:262:ARG:NH2	2.54	0.40
1:A:285:GLN:O	1:A:286:ARG:HB3	2.21	0.40
1:B:108:ASP:CG	1:B:130:LYS:NZ	2.75	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	305/448 (68%)	259 (85%)	29 (10%)	17 (6%)	2	5
1	B	388/448 (87%)	318 (82%)	49 (13%)	21 (5%)	2	5
All	All	693/896 (77%)	577 (83%)	78 (11%)	38 (6%)	2	5

All (38) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	197	ASN
1	A	267	ILE
1	A	268	MSE
1	A	271	GLU
1	A	281	LYS
1	A	284	ALA
1	A	285	GLN
1	A	308	ASP
1	A	343	ARG
1	B	231	PRO
1	B	281	LYS
1	B	304	ILE
1	B	333	VAL
1	B	367	ILE
1	B	412	GLN
1	A	264	GLU
1	A	293	VAL
1	A	319	SER
1	B	50	PHE
1	B	173	LEU
1	B	186	GLY
1	B	197	ASN
1	B	211	GLY
1	B	345	GLY
1	B	366	SER

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Mol	Chain	Res	Type
1	B	381	LYS
1	A	211	GLY
1	B	210	ALA
1	B	284	ALA
1	B	286	ARG
1	A	282	VAL
1	B	274	SER
1	B	389	ASN
1	B	402	LYS
1	A	333	VAL
1	B	212	GLY
1	A	309	VAL
1	A	231	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	246/342 (72%)	207 (84%)	39 (16%)	2 7
1	B	319/342 (93%)	273 (86%)	46 (14%)	3 10
All	All	565/684 (83%)	480 (85%)	85 (15%)	3 9

All (85) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	11	GLN
1	A	18	MSE
1	A	19	LEU
1	A	36	THR
1	A	41	ARG
1	A	49	PHE
1	A	87	LEU
1	A	93	ILE
1	A	107	VAL
1	A	113	ILE

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Mol	Chain	Res	Type
1	A	114	LYS
1	A	133	ARG
1	A	138	LEU
1	A	147	LEU
1	A	165	VAL
1	A	169	ASN
1	A	177	VAL
1	A	195	TYR
1	A	196	GLU
1	A	197	ASN
1	A	198	PHE
1	A	200	GLN
1	A	205	ILE
1	A	214	LEU
1	A	215	VAL
1	A	217	LEU
1	A	232	ASP
1	A	236	ILE
1	A	251	THR
1	A	259	GLN
1	A	267	ILE
1	A	268	MSE
1	A	272	LEU
1	A	280	MSE
1	A	305	LYS
1	A	321	PHE
1	A	325	ARG
1	A	337	LEU
1	A	343	ARG
1	B	12	MSE
1	B	18	MSE
1	B	42	MSE
1	B	44	ARG
1	B	49	PHE
1	B	50	PHE
1	B	80	GLN
1	B	87	LEU
1	B	93	ILE
1	B	96	ASP
1	B	113	ILE
1	B	128	VAL
1	B	138	LEU

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Mol	Chain	Res	Type
1	B	147	LEU
1	B	164	THR
1	B	169	ASN
1	B	173	LEU
1	B	177	VAL
1	B	185	LEU
1	B	187	ARG
1	B	205	ILE
1	B	214	LEU
1	B	215	VAL
1	B	217	LEU
1	B	231	PRO
1	B	235	ASN
1	B	251	THR
1	B	261	LYS
1	B	281	LYS
1	B	286	ARG
1	B	292	GLN
1	B	301	LYS
1	B	304	ILE
1	B	313	LEU
1	B	316	LYS
1	B	324	LEU
1	B	339	LEU
1	B	351	ASN
1	B	352	LEU
1	B	354	LEU
1	B	363	ASP
1	B	381	LYS
1	B	405	ASP
1	B	413	GLN
1	B	435	ASN
1	B	437	GLN

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (32) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	11	GLN
1	A	80	GLN
1	A	104	ASN
1	A	140	GLN
1	A	142	GLN

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Mol	Chain	Res	Type
1	A	169	ASN
1	A	197	ASN
1	A	225	ASN
1	A	235	ASN
1	A	245	ASN
1	A	327	GLN
1	A	347	GLN
1	B	48	GLN
1	B	80	GLN
1	B	104	ASN
1	B	116	GLN
1	B	140	GLN
1	B	146	ASN
1	B	169	ASN
1	B	245	ASN
1	B	292	GLN
1	B	296	ASN
1	B	327	GLN
1	B	347	GLN
1	B	351	ASN
1	B	355	GLN
1	B	360	ASN
1	B	378	ASN
1	B	383	GLN
1	B	388	ASN
1	B	411	ASN
1	B	413	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](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	299/448 (66%)	0.74	54 (18%) 1 1	35, 68, 175, 186	0
1	B	383/448 (85%)	0.64	61 (15%) 1 1	37, 102, 163, 169	0
All	All	682/896 (76%)	0.69	115 (16%) 1 1	35, 83, 167, 186	0

All (115) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	439	GLY	10.9
1	A	345	GLY	8.3
1	A	274	SER	8.2
1	A	271	GLU	8.1
1	A	276	LEU	7.8
1	B	232	ASP	7.4
1	B	392	THR	7.3
1	A	266	GLY	7.1
1	A	277	ALA	6.8
1	A	348	VAL	6.7
1	B	273	ASN	6.6
1	A	287	GLY	6.6
1	B	403	LYS	6.4
1	A	292	GLN	6.3
1	A	267	ILE	6.2
1	A	349	ASN	6.1
1	B	323	ALA	5.9
1	B	393	GLY	5.9
1	B	438	ARG	5.7
1	A	281	LYS	5.6
1	A	50	PHE	5.6
1	B	443	ILE	5.6
1	A	275	GLU	5.6
1	A	195	TYR	5.5

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Mol	Chain	Res	Type	RSRZ
1	A	272	LEU	5.4
1	A	344	ASP	5.3
1	B	296	ASN	5.0
1	B	431	VAL	5.0
1	A	286	ARG	4.9
1	B	285	GLN	4.9
1	B	427	SER	4.9
1	A	273	ASN	4.9
1	A	188	SER	4.8
1	A	189	GLY	4.7
1	B	233	GLY	4.7
1	A	288	ALA	4.6
1	B	391	LYS	4.6
1	B	446	LEU	4.6
1	A	282	VAL	4.4
1	A	330	THR	4.4
1	B	394	THR	4.3
1	A	347	GLN	4.1
1	A	293	VAL	4.1
1	A	323	ALA	4.1
1	B	231	PRO	4.0
1	B	230	ALA	4.0
1	B	288	ALA	4.0
1	B	51	GLY	3.9
1	B	286	ARG	3.9
1	B	11	GLN	3.9
1	A	291	SER	3.8
1	A	283	ASP	3.8
1	B	444	TYR	3.8
1	A	315	GLY	3.7
1	B	408	ILE	3.6
1	A	336	LYS	3.4
1	B	44	ARG	3.4
1	B	402	LYS	3.3
1	B	275	GLU	3.3
1	B	322	ALA	3.3
1	B	338	THR	3.3
1	B	383	GLN	3.3
1	B	271	GLU	3.2
1	B	345	GLY	3.2
1	B	290	VAL	3.2
1	A	265	LEU	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	350	VAL	3.1
1	A	317	PRO	3.1
1	A	231	PRO	3.0
1	A	290	VAL	3.0
1	B	196	GLU	3.0
1	B	440	ASP	3.0
1	B	274	SER	3.0
1	B	426	ASP	3.0
1	A	294	LEU	3.0
1	B	320	SER	2.9
1	B	343	ARG	2.9
1	A	329	GLY	2.8
1	A	321	PHE	2.8
1	A	335	SER	2.8
1	B	279	ALA	2.8
1	B	278	LYS	2.7
1	A	51	GLY	2.7
1	B	356	GLN	2.7
1	B	442	THR	2.7
1	B	413	GLN	2.7
1	B	289	PHE	2.7
1	A	289	PHE	2.7
1	A	339	LEU	2.7
1	A	319	SER	2.6
1	A	343	ARG	2.5
1	A	316	LYS	2.4
1	B	346	LYS	2.4
1	B	43	PRO	2.4
1	A	305	LYS	2.4
1	A	38	ASN	2.4
1	B	380	GLY	2.3
1	B	50	PHE	2.3
1	A	264	GLU	2.3
1	A	49	PHE	2.2
1	B	381	LYS	2.2
1	A	232	ASP	2.2
1	B	49	PHE	2.2
1	B	385	VAL	2.2
1	B	79	GLY	2.2
1	A	295	PRO	2.2
1	B	308	ASP	2.1
1	B	369	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	346	LYS	2.1
1	B	418	ILE	2.1
1	B	441	SER	2.0
1	B	197	ASN	2.0
1	B	368	PHE	2.0
1	B	270	THR	2.0
1	A	325	ARG	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](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.