



# Full wwPDB X-ray Structure Validation Report ⓘ

Jun 11, 2024 – 10:49 PM EDT

PDB ID : 1HY1  
Title : CRYSTAL STRUCTURE OF WILD TYPE DUCK DELTA 2 CRYSTALLIN  
(EYE LENS PROTEIN)  
Authors : Sampaleanu, L.M.; Vallee, F.; Slingsby, C.; Howell, P.L.  
Deposited on : 2001-01-17  
Resolution : 2.30 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](mailto: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>.

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

MolProbity : 4.02b-467  
Xtriage (Phenix) : 1.20.1  
EDS : 2.36.2  
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) : 2.36.2

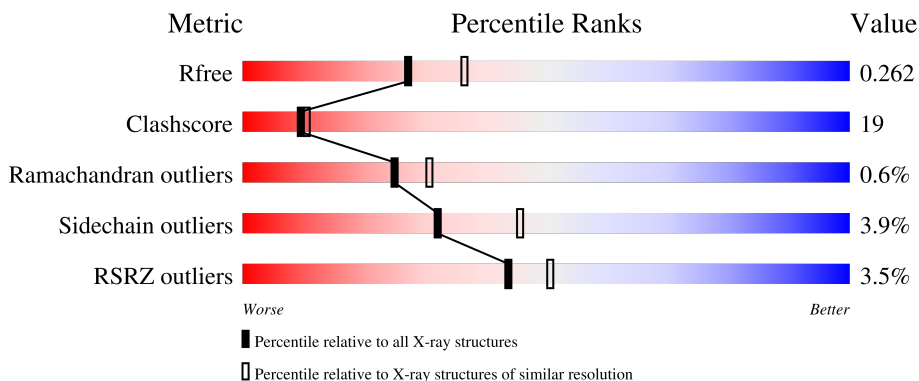
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.30 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	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)
RSRZ outliers	127900	4938 (2.30-2.30)

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  $\geq 3$ , 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	468	 3% (poor fit), 63% (0 outliers), 31% (1 outlier), 2% (2 outliers), 1% (3+ outliers), 0% (not modelled)
1	B	468	 4% (poor fit), 56% (0 outliers), 38% (1 outlier), 1% (2 outliers), 1% (3+ outliers), 0% (not modelled)
1	C	468	 2% (poor fit), 57% (0 outliers), 35% (1 outlier), 2% (2 outliers), 4% (3+ outliers), 0% (not modelled)
1	D	468	 4% (poor fit), 65% (0 outliers), 29% (1 outlier), 1% (2 outliers), 1% (3+ outliers), 0% (not modelled)

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 14603 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 DELTA CRYSTALLIN II.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	448	3484	2207	589	676	12	0	0	0
1	B	448	3481	2205	589	675	12	0	0	0
1	C	449	3490	2210	590	678	12	0	0	0
1	D	449	3493	2212	591	678	12	0	0	0

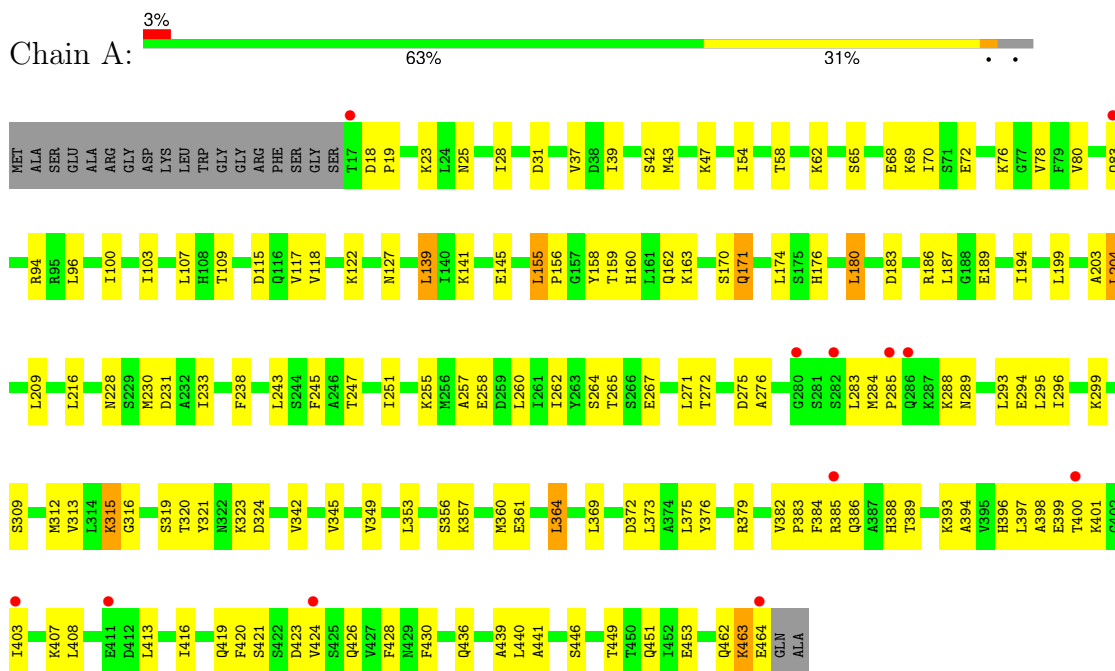
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	196	Total 196	O 196	0	0
2	B	135	Total 135	O 135	0	0
2	C	184	Total 184	O 184	0	0
2	D	140	Total 140	O 140	0	0

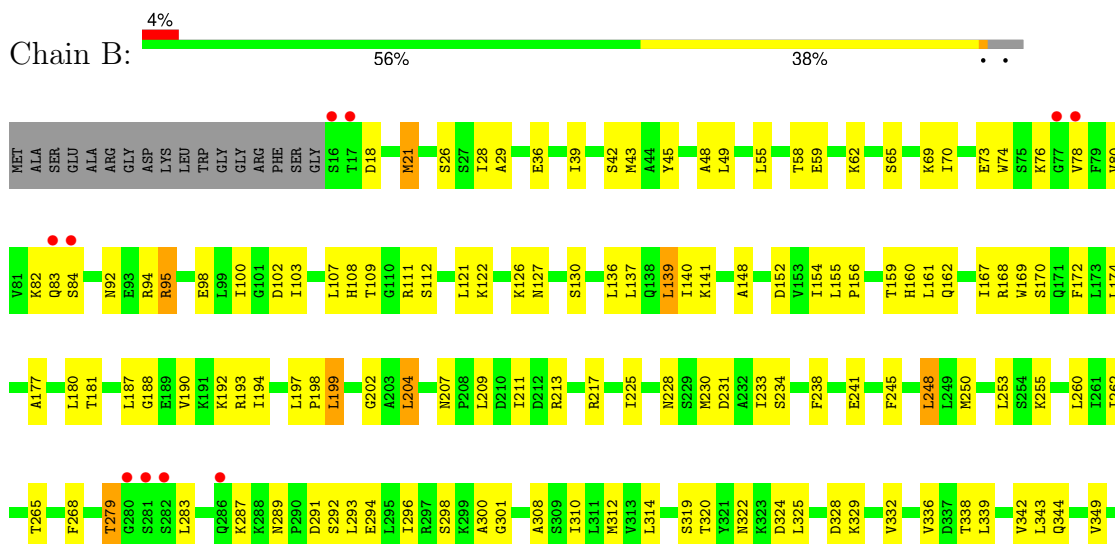
### 3 Residue-property plots i

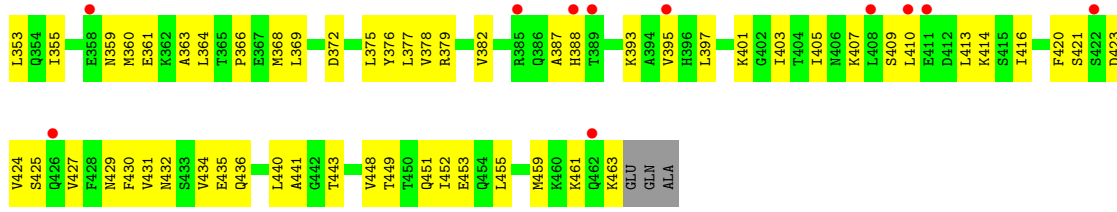
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

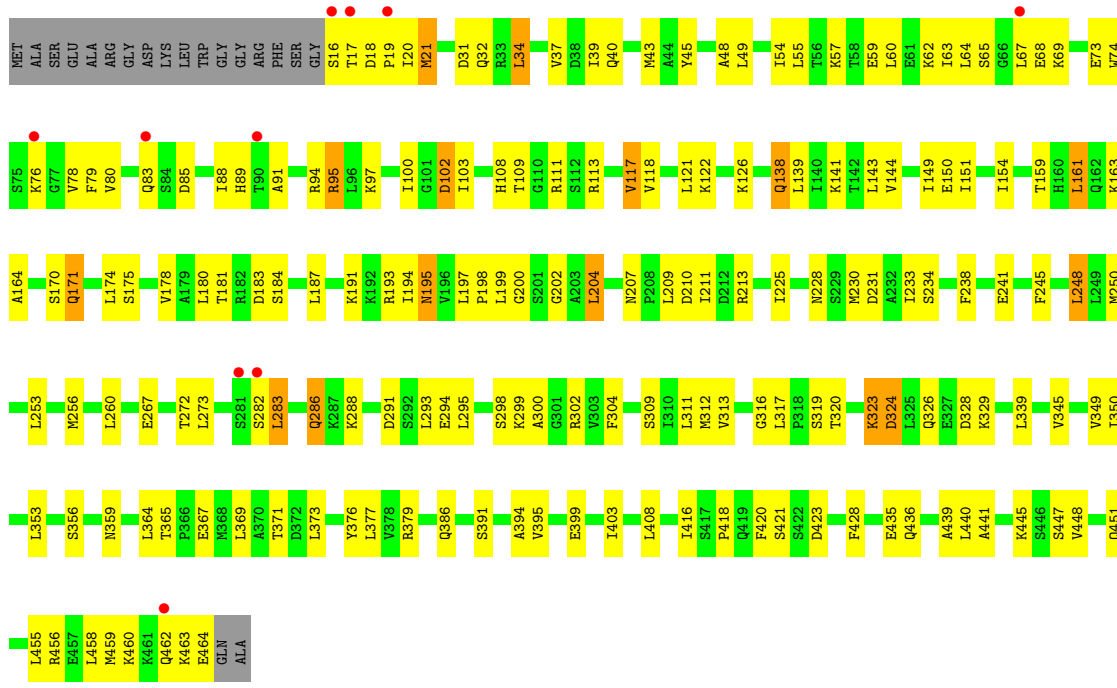


#### • Molecule 1: DELTA CRYSTALLIN II

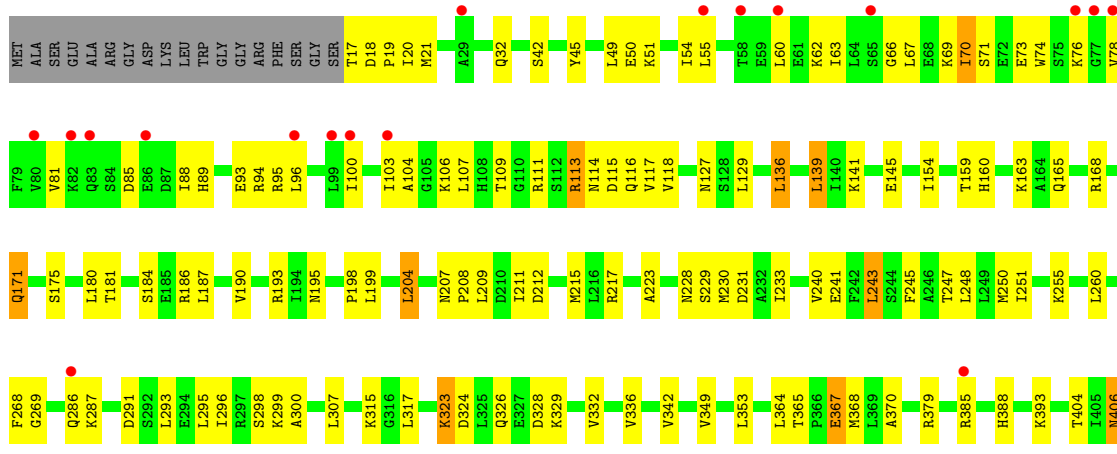




• Molecule 1: DELTA CRYSTALLIN II



• Molecule 1: DELTA CRYSTALLIN II





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	93.48Å 99.05Å 107.18Å 90.00° 102.08° 90.00°	Depositor
Resolution (Å)	20.00 – 2.30 19.99 – 2.30	Depositor EDS
% Data completeness (in resolution range)	86.6 (20.00-2.30) 86.7 (19.99-2.30)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.51 (at 2.30Å)	Xtrriage
Refinement program	CNS 1.0	Depositor
R, $R_{free}$	0.208 , 0.263 0.205 , 0.262	Depositor DCC
$R_{free}$ test set	7436 reflections (10.11%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	24.2	Xtrriage
Anisotropy	0.127	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.32 , 53.3	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	14603	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	33.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.47% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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	0.33	0/3529	0.56	0/4759
1	B	0.33	0/3526	0.54	0/4755
1	C	0.34	0/3535	0.55	0/4767
1	D	0.34	0/3538	0.56	0/4771
All	All	0.33	0/14128	0.55	0/19052

There are no bond length outliers.

There are no bond angle outliers.

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	3484	0	3605	133	0
1	B	3481	0	3604	163	0
1	C	3490	0	3610	172	0
1	D	3493	0	3613	133	0
2	A	196	0	0	11	0
2	B	135	0	0	5	0
2	C	184	0	0	14	0
2	D	140	0	0	11	0
All	All	14603	0	14432	552	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 19.



All (552) 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:127:ASN:HB3	2:A:495:HOH:O	1.61	1.00
1:A:155:LEU:HB3	1:A:360:MET:HG2	1.43	0.98
1:B:379:ARG:HH12	1:B:436:GLN:HE21	1.10	0.95
1:A:398:ALA:HB2	1:A:408:LEU:HD23	1.50	0.94
1:D:49:LEU:HB3	1:D:55:LEU:HD23	1.48	0.93
1:C:171:GLN:HE22	1:C:451:GLN:HE22	1.12	0.92
1:D:406:ASN:H	1:D:406:ASN:HD22	1.17	0.91
1:B:127:ASN:HB2	2:B:518:HOH:O	1.72	0.90
1:C:283:LEU:H	1:C:283:LEU:HD22	1.36	0.90
1:D:379:ARG:HH22	1:D:436:GLN:HE21	0.94	0.88
1:C:202:GLY:O	1:C:233:ILE:HD11	1.74	0.87
1:B:70:ILE:HG12	1:B:95:ARG:HG2	1.57	0.86
1:A:383:PRO:HG2	1:A:386:GLN:HB3	1.57	0.85
1:C:141:LYS:HG2	1:C:459:MET:SD	2.15	0.85
1:C:213:ARG:NE	1:C:225:ILE:HD11	1.93	0.84
1:D:171:GLN:HE21	1:D:171:GLN:HA	1.43	0.83
1:B:429:ASN:ND2	1:B:432:ASN:H	1.77	0.83
1:A:228:ASN:HD22	1:A:231:ASP:H	1.27	0.81
1:D:159:THR:HG22	1:D:160:HIS:CD2	2.14	0.81
1:A:393:LYS:HD2	1:A:416:ILE:HG23	1.62	0.81
1:D:419:GLN:H	1:D:419:GLN:NE2	1.79	0.81
1:A:403:ILE:HB	1:A:407:LYS:HD3	1.63	0.80
1:D:379:ARG:NH2	1:D:436:GLN:HE21	1.78	0.79
1:D:379:ARG:HH22	1:D:436:GLN:NE2	1.76	0.79
1:B:154:ILE:HD12	1:B:167:ILE:O	1.83	0.79
1:C:456:ARG:O	1:C:460:LYS:HD3	1.83	0.78
1:C:371:THR:HB	2:C:500:HOH:O	1.84	0.78
1:B:228:ASN:HD22	1:B:231:ASP:H	1.29	0.77
1:A:115:ASP:HB3	1:A:233:ILE:HD11	1.67	0.77
1:D:113:ARG:HH21	1:D:116:GLN:HE22	1.32	0.77
1:B:207:ASN:ND2	1:B:209:LEU:H	1.83	0.77
1:D:406:ASN:HD22	1:D:406:ASN:N	1.80	0.76
1:C:76:LYS:HE3	1:C:78:VAL:HG11	1.67	0.76
1:A:171:GLN:HA	1:A:171:GLN:HE21	1.51	0.75
1:D:414:LYS:HE3	1:D:420:PHE:O	1.86	0.75
1:B:429:ASN:HD22	1:B:432:ASN:H	1.36	0.74
1:B:109:THR:HG22	1:B:209:LEU:HD11	1.70	0.73
1:D:228:ASN:HD22	1:D:231:ASP:H	1.36	0.73
1:C:250:MET:HE2	1:C:253:LEU:HD12	1.70	0.73
1:B:82:LYS:HD3	1:B:83:GLN:N	2.02	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:399:GLU:HG3	2:C:644:HOH:O	1.87	0.73
1:B:82:LYS:HD3	1:B:84:SER:H	1.53	0.73
1:D:419:GLN:H	1:D:419:GLN:HE21	1.36	0.72
1:A:283:LEU:HD21	1:B:388:HIS:NE2	2.04	0.72
1:D:208:PRO:HG2	1:D:209:LEU:HD22	1.70	0.72
1:A:109:THR:HG22	1:A:209:LEU:HD11	1.71	0.72
1:C:213:ARG:HE	1:C:225:ILE:HD11	1.53	0.72
1:B:375:LEU:O	1:B:378:VAL:HG22	1.89	0.72
1:B:296:ILE:HG12	1:B:342:VAL:HG23	1.71	0.71
1:C:17:THR:HB	1:C:20:ILE:HB	1.71	0.71
1:C:181:THR:HG21	1:C:458:LEU:HD13	1.71	0.71
1:B:292:SER:HB3	1:C:21:MET:HE2	1.72	0.71
1:B:366:PRO:HA	1:B:369:LEU:HD23	1.71	0.70
1:A:376:TYR:CZ	1:A:424:VAL:HG22	2.26	0.70
1:D:171:GLN:HE22	1:D:451:GLN:HE22	1.37	0.70
1:B:393:LYS:HD2	1:B:416:ILE:HG23	1.74	0.70
1:A:464:GLU:HG3	2:A:540:HOH:O	1.89	0.70
1:B:293:LEU:HD21	1:B:349:VAL:HG11	1.72	0.70
1:A:462:GLN:O	1:A:463:LYS:HG3	1.92	0.70
1:B:139:LEU:HD13	1:B:180:LEU:HD13	1.74	0.70
1:A:25:ASN:OD1	1:A:323:LYS:HE2	1.92	0.70
1:D:70:ILE:HD11	1:D:74:TRP:HE1	1.57	0.69
1:D:139:LEU:HD13	1:D:180:LEU:HD13	1.72	0.69
1:C:111:ARG:HG2	1:C:111:ARG:HH21	1.58	0.69
1:C:228:ASN:HD22	1:C:231:ASP:H	1.41	0.69
1:B:376:TYR:CZ	1:B:424:VAL:HG22	2.27	0.69
1:C:379:ARG:HH22	1:C:436:GLN:HE21	1.40	0.69
1:D:32:GLN:HA	1:D:88:ILE:HD13	1.75	0.69
1:B:429:ASN:HD21	1:B:431:VAL:HB	1.57	0.68
1:A:18:ASP:OD1	1:A:19:PRO:HD2	1.93	0.68
1:C:118:VAL:O	1:C:122:LYS:HG3	1.93	0.68
1:D:460:LYS:HE2	1:D:464:GLU:OE1	1.93	0.68
1:A:72:GLU:HB3	1:A:76:LYS:NZ	2.09	0.68
1:C:18:ASP:N	1:C:19:PRO:HD2	2.08	0.68
1:C:283:LEU:HD21	1:D:388:HIS:NE2	2.07	0.68
1:C:309:SER:O	1:C:313:VAL:HG23	1.94	0.68
1:B:177:ALA:O	1:B:181:THR:HG23	1.94	0.68
1:B:279:THR:HB	1:B:291:ASP:OD1	1.93	0.67
1:B:140:ILE:HD13	1:B:181:THR:HG22	1.75	0.67
1:C:64:LEU:O	1:C:68:GLU:HG3	1.95	0.67
1:D:365:THR:HG21	2:D:601:HOH:O	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:171:GLN:HE21	1:C:171:GLN:HA	1.60	0.67
1:A:176:HIS:O	1:A:180:LEU:HD22	1.94	0.67
1:B:338:THR:O	1:B:342:VAL:HG12	1.95	0.67
1:C:109:THR:HG22	1:C:209:LEU:HD11	1.76	0.66
1:D:296:ILE:HG12	1:D:342:VAL:HG13	1.77	0.66
1:D:20:ILE:HD13	2:D:504:HOH:O	1.96	0.66
1:A:408:LEU:HD12	1:A:408:LEU:O	1.94	0.66
1:B:369:LEU:HD21	1:B:430:PHE:HE2	1.61	0.65
1:B:154:ILE:HD13	1:B:434:VAL:HG21	1.78	0.65
1:C:108:HIS:HA	1:C:111:ARG:HH22	1.62	0.65
1:C:143:LEU:HD21	1:C:350:ILE:HD13	1.79	0.65
1:D:76:LYS:O	1:D:76:LYS:HD3	1.97	0.65
1:B:455:LEU:O	1:B:459:MET:HG3	1.97	0.64
1:C:418:PRO:HB2	2:C:573:HOH:O	1.97	0.64
1:B:18:ASP:HB3	1:B:21:MET:HB2	1.79	0.64
1:A:379:ARG:HH22	1:A:436:GLN:HE21	1.45	0.64
1:C:59:GLU:O	1:C:63:ILE:HG12	1.97	0.64
1:D:207:ASN:ND2	1:D:211:ILE:HB	2.13	0.64
1:C:149:ILE:HB	2:C:557:HOH:O	1.97	0.64
1:D:204:LEU:C	1:D:204:LEU:HD23	2.18	0.64
1:C:293:LEU:HD21	1:C:349:VAL:HG11	1.79	0.63
1:B:376:TYR:CE2	1:B:424:VAL:HG22	2.33	0.63
1:B:359:ASN:N	1:B:359:ASN:HD22	1.97	0.62
1:C:126:LYS:NZ	1:C:195:ASN:HD21	1.98	0.62
1:B:225:ILE:CD1	1:D:440:LEU:HD13	2.30	0.62
1:B:159:THR:CG2	1:D:204:LEU:HD12	2.29	0.62
1:C:144:VAL:HG22	1:C:455:LEU:HD23	1.81	0.62
1:D:293:LEU:HD21	1:D:349:VAL:HG11	1.81	0.62
1:C:32:GLN:HA	1:C:88:ILE:HD13	1.82	0.62
1:B:449:THR:O	1:B:453:GLU:HG3	2.00	0.61
1:C:103:ILE:HG13	2:C:634:HOH:O	2.00	0.61
1:C:286:GLN:H	1:C:286:GLN:CD	2.03	0.61
1:D:208:PRO:HG2	1:D:209:LEU:CD2	2.29	0.61
1:C:191:LYS:HE2	2:C:539:HOH:O	1.98	0.61
1:C:250:MET:CE	1:C:253:LEU:HD12	2.31	0.61
1:A:141:LYS:O	1:A:145:GLU:HG3	2.01	0.60
1:C:151:ILE:HD11	1:C:448:VAL:HG23	1.81	0.60
1:D:286:GLN:HE21	1:D:286:GLN:HA	1.67	0.60
1:C:159:THR:HG23	1:C:164:ALA:HB2	1.84	0.60
1:B:395:VAL:HG12	1:B:405:ILE:HG21	1.84	0.60
1:D:96:LEU:O	1:D:100:ILE:HG22	2.01	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:458:LEU:HD12	1:D:461:LYS:HE3	1.83	0.60
1:B:228:ASN:HD21	1:B:230:MET:HB2	1.66	0.60
1:A:171:GLN:HA	1:A:171:GLN:NE2	2.17	0.60
1:C:73:GLU:HA	1:C:78:VAL:CG2	2.30	0.60
1:C:143:LEU:CD2	1:C:350:ILE:HD13	2.32	0.60
1:D:136:LEU:HD13	1:D:184:SER:HB2	1.82	0.59
1:D:393:LYS:HG3	2:D:569:HOH:O	2.02	0.59
1:C:95:ARG:HD3	1:C:95:ARG:O	2.02	0.59
1:C:171:GLN:HE22	1:C:451:GLN:NE2	1.93	0.59
1:C:464:GLU:O	1:C:464:GLU:HG2	2.02	0.59
1:B:339:LEU:HA	1:B:342:VAL:HG12	1.85	0.58
1:C:97:LYS:HD2	1:C:97:LYS:O	2.02	0.58
1:D:406:ASN:H	1:D:406:ASN:ND2	1.94	0.58
1:A:383:PRO:HG2	1:A:386:GLN:CB	2.29	0.58
1:A:440:LEU:O	1:A:441:ALA:HB3	2.02	0.58
1:B:82:LYS:CD	1:B:84:SER:H	2.16	0.58
1:C:117:VAL:HG12	1:C:118:VAL:N	2.19	0.58
1:D:100:ILE:CG2	1:D:104:ALA:HB2	2.33	0.58
1:C:37:VAL:HG22	2:C:468:HOH:O	2.04	0.58
1:D:94:ARG:HH21	1:D:95:ARG:HD3	1.68	0.58
1:B:188:GLY:O	1:B:192:LYS:HG2	2.04	0.58
1:C:283:LEU:H	1:C:283:LEU:CD2	2.15	0.57
1:C:283:LEU:HD22	1:C:283:LEU:N	2.14	0.57
1:A:39:ILE:HD11	1:A:70:ILE:HG22	1.85	0.57
1:C:295:LEU:O	1:C:299:LYS:HG2	2.03	0.57
1:D:419:GLN:NE2	1:D:419:GLN:N	2.51	0.57
1:C:73:GLU:HA	1:C:78:VAL:HG23	1.86	0.57
1:D:323:LYS:HD2	1:D:326:GLN:OE1	2.03	0.57
1:B:74:TRP:HE1	1:B:92:ASN:HD21	1.51	0.57
1:B:197:LEU:HD13	1:B:217:ARG:HA	1.86	0.57
1:A:289:ASN:HD22	1:B:162:GLN:HG3	1.70	0.57
2:A:661:HOH:O	1:C:159:THR:HG22	2.04	0.56
1:B:225:ILE:HD11	1:D:440:LEU:HD13	1.87	0.56
1:B:298:SER:HB3	1:C:324:ASP:HA	1.87	0.56
1:B:440:LEU:O	1:B:441:ALA:HB3	2.05	0.56
1:D:269:GLY:HA2	2:D:516:HOH:O	2.05	0.56
1:A:364:LEU:HB3	1:A:430:PHE:CE2	2.41	0.56
1:B:287:LYS:HE2	2:B:584:HOH:O	2.06	0.56
1:B:159:THR:HG22	1:D:204:LEU:HD12	1.87	0.56
1:A:284:MET:N	1:A:285:PRO:HD3	2.21	0.56
1:C:256:MET:SD	1:C:350:ILE:HD11	2.45	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:260:LEU:HB3	1:B:293:LEU:HD13	1.88	0.56
1:A:373:LEU:HD13	1:A:373:LEU:O	2.06	0.55
1:A:78:VAL:HG22	1:A:78:VAL:O	2.05	0.55
1:B:187:LEU:O	1:B:187:LEU:HD23	2.06	0.55
1:A:357:LYS:O	1:A:361:GLU:HB2	2.06	0.55
1:B:193:ARG:NH2	1:B:241:GLU:OE1	2.39	0.55
1:C:63:ILE:O	1:C:67:LEU:HD23	2.06	0.55
1:D:42:SER:HB3	1:D:107:LEU:HD21	1.89	0.55
1:B:431:VAL:O	1:B:435:GLU:HG2	2.06	0.55
1:C:39:ILE:HG22	1:C:43:MET:HE2	1.88	0.55
1:A:384:PHE:HB2	1:C:109:THR:OG1	2.05	0.55
1:C:204:LEU:C	1:C:204:LEU:HD23	2.27	0.55
1:A:228:ASN:ND2	1:A:231:ASP:H	2.00	0.55
1:B:181:THR:HG21	1:B:455:LEU:CD1	2.36	0.55
1:B:190:VAL:HG22	1:B:241:GLU:HG2	1.89	0.55
1:D:186:ARG:CZ	1:D:248:LEU:HD13	2.36	0.55
1:A:296:ILE:HG12	1:A:342:VAL:HG13	1.87	0.55
1:A:379:ARG:NH2	1:A:436:GLN:HE21	2.05	0.55
1:C:17:THR:HG21	1:C:20:ILE:HD12	1.89	0.55
1:C:445:LYS:O	1:C:448:VAL:HG22	2.06	0.55
1:C:126:LYS:NZ	1:C:195:ASN:ND2	2.55	0.54
1:C:228:ASN:HD21	1:C:230:MET:HB2	1.72	0.54
1:A:283:LEU:HD11	1:B:388:HIS:CD2	2.42	0.54
1:B:369:LEU:HD21	1:B:430:PHE:CE2	2.43	0.54
1:C:282:SER:HB2	1:D:388:HIS:HE1	1.71	0.54
1:A:159:THR:CG2	1:C:204:LEU:HD12	2.37	0.54
1:B:82:LYS:HD3	1:B:84:SER:N	2.19	0.54
1:B:461:LYS:C	1:B:463:LYS:H	2.11	0.54
1:D:70:ILE:HD11	1:D:74:TRP:NE1	2.20	0.54
1:D:18:ASP:OD1	1:D:19:PRO:HD2	2.06	0.54
1:D:100:ILE:HG12	1:D:103:ILE:CG2	2.38	0.54
1:D:181:THR:HG21	1:D:458:LEU:HD23	1.88	0.54
1:A:39:ILE:O	1:A:43:MET:HG3	2.08	0.54
1:B:148:ALA:HB2	1:B:452:ILE:HD13	1.90	0.54
1:C:294:GLU:OE2	1:D:160:HIS:HA	2.08	0.54
1:C:440:LEU:O	1:C:441:ALA:HB3	2.06	0.54
1:B:76:LYS:HB2	1:B:78:VAL:HG23	1.89	0.54
1:D:195:ASN:ND2	1:D:223:ALA:HB2	2.23	0.54
1:D:54:ILE:HD13	1:D:109:THR:HG21	1.90	0.54
1:D:154:ILE:HG22	1:D:364:LEU:HD11	1.90	0.54
1:D:286:GLN:HA	1:D:286:GLN:NE2	2.24	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:187:LEU:C	1:A:187:LEU:HD23	2.29	0.53
1:A:413:LEU:HB3	1:A:420:PHE:CD1	2.43	0.53
1:D:295:LEU:O	1:D:299:LYS:HG2	2.08	0.53
1:A:423:ASP:O	1:A:426:GLN:HG2	2.07	0.53
1:B:94:ARG:O	1:B:98:GLU:HG3	2.09	0.53
1:D:127:ASN:HB2	2:D:595:HOH:O	2.08	0.53
1:D:171:GLN:HA	1:D:171:GLN:NE2	2.19	0.53
1:A:364:LEU:HB3	1:A:430:PHE:CZ	2.44	0.53
1:C:272:THR:CG2	1:C:288:LYS:HD2	2.39	0.53
1:C:88:ILE:HG23	1:C:89:HIS:HD2	1.74	0.53
1:C:63:ILE:HA	1:C:100:ILE:CD1	2.39	0.53
1:D:406:ASN:N	1:D:406:ASN:ND2	2.53	0.53
1:A:160:HIS:HA	1:B:294:GLU:OE1	2.09	0.52
1:A:94:ARG:HG2	1:A:94:ARG:HH11	1.75	0.52
1:B:65:SER:O	1:B:69:LYS:HG3	2.09	0.52
1:B:159:THR:O	1:B:160:HIS:HB2	2.09	0.52
2:C:503:HOH:O	1:D:163:LYS:HE2	2.09	0.52
1:B:49:LEU:HB2	1:B:55:LEU:HD12	1.91	0.52
1:B:324:ASP:HA	1:C:298:SER:HB3	1.91	0.52
1:B:379:ARG:NH1	1:B:436:GLN:HE21	1.93	0.52
1:C:31:ASP:O	1:C:34:LEU:HB2	2.09	0.52
1:D:67:LEU:O	1:D:70:ILE:HG23	2.08	0.52
1:B:429:ASN:HD22	1:B:432:ASN:CG	2.12	0.52
1:D:100:ILE:HG21	1:D:104:ALA:HB2	1.92	0.52
1:B:207:ASN:HD22	1:B:209:LEU:H	1.57	0.52
1:C:108:HIS:HA	1:C:111:ARG:NH2	2.25	0.52
1:B:339:LEU:HA	1:B:342:VAL:CG1	2.40	0.52
1:B:421:SER:O	1:B:424:VAL:HG23	2.10	0.52
1:C:213:ARG:CZ	1:C:225:ILE:HD11	2.40	0.52
1:B:70:ILE:HG12	1:B:95:ARG:CG	2.36	0.52
1:B:429:ASN:HB3	1:B:432:ASN:HD22	1.75	0.52
1:D:70:ILE:HG13	1:D:71:SER:N	2.24	0.52
1:D:115:ASP:HB3	1:D:233:ILE:HD11	1.90	0.52
1:B:154:ILE:HG13	1:B:364:LEU:HD11	1.91	0.52
1:B:440:LEU:HD23	2:D:491:HOH:O	2.10	0.52
1:A:155:LEU:HB2	1:A:156:PRO:CD	2.40	0.51
1:B:169:TRP:O	1:B:172:PHE:HB3	2.10	0.51
1:B:260:LEU:HB3	1:B:293:LEU:CD1	2.40	0.51
1:B:376:TYR:HB2	1:B:427:VAL:HG21	1.91	0.51
1:D:365:THR:HG22	1:D:368:MET:HG3	1.92	0.51
1:A:194:ILE:HG12	1:A:238:PHE:HB2	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:197:LEU:HD11	1:C:199:LEU:HB3	1.92	0.51
1:D:114:ASN:HB3	1:D:233:ILE:HG23	1.91	0.51
1:A:171:GLN:HE21	1:A:171:GLN:CA	2.19	0.51
1:C:100:ILE:HG22	2:C:610:HOH:O	2.09	0.51
1:A:171:GLN:HE22	1:A:451:GLN:HE22	1.57	0.51
1:A:315:LYS:HD2	1:A:316:GLY:N	2.25	0.51
1:D:228:ASN:HD21	1:D:230:MET:HB2	1.76	0.51
1:A:264:SER:HA	1:A:271:LEU:O	2.10	0.51
1:B:359:ASN:N	1:B:359:ASN:ND2	2.58	0.51
1:A:283:LEU:HD22	1:A:283:LEU:N	2.25	0.51
1:C:151:ILE:HD11	1:C:448:VAL:CG2	2.41	0.51
1:D:440:LEU:O	1:D:441:ALA:HB3	2.11	0.51
1:B:39:ILE:O	1:B:43:MET:HG3	2.10	0.51
1:A:398:ALA:HB1	1:A:403:ILE:O	2.11	0.50
1:B:58:THR:O	1:B:62:LYS:HG3	2.11	0.50
1:D:129:LEU:CD1	1:D:187:LEU:HG	2.41	0.50
1:B:248:LEU:HG	1:D:240:VAL:HG11	1.94	0.50
1:C:302:ARG:NH2	2:C:519:HOH:O	2.44	0.50
1:D:450:THR:O	1:D:454:GLN:HG3	2.12	0.50
1:B:434:VAL:HG13	1:B:443:THR:HG23	1.93	0.50
1:B:39:ILE:HD11	1:B:70:ILE:HG22	1.92	0.50
1:B:250:MET:HB3	1:B:300:ALA:HA	1.94	0.50
1:D:76:LYS:HD2	1:D:78:VAL:CG2	2.42	0.50
1:D:204:LEU:HD23	1:D:204:LEU:O	2.11	0.50
1:A:96:LEU:O	1:A:100:ILE:HG12	2.11	0.50
1:C:65:SER:O	1:C:69:LYS:HG3	2.12	0.50
1:D:129:LEU:HD12	1:D:187:LEU:HG	1.93	0.50
1:A:238:PHE:HB3	2:A:494:HOH:O	2.11	0.49
1:B:369:LEU:N	1:B:369:LEU:HD22	2.27	0.49
1:C:18:ASP:O	1:C:21:MET:HB3	2.12	0.49
1:C:213:ARG:HB3	1:C:225:ILE:HD12	1.94	0.49
1:C:85:ASP:OD1	1:C:91:ALA:HA	2.13	0.49
1:C:149:ILE:HG23	1:C:150:GLU:HG3	1.94	0.49
1:B:197:LEU:HD23	1:B:213:ARG:HH21	1.76	0.49
1:A:294:GLU:OE1	1:B:160:HIS:HA	2.12	0.49
1:B:181:THR:HG21	1:B:455:LEU:HD12	1.95	0.49
1:B:204:LEU:HD21	1:D:165:GLN:HG2	1.95	0.49
1:C:18:ASP:N	1:C:19:PRO:CD	2.74	0.49
1:C:151:ILE:HA	1:C:170:SER:OG	2.12	0.49
1:D:69:LYS:O	1:D:73:GLU:HG3	2.13	0.49
1:B:409:SER:O	1:B:413:LEU:HD23	2.11	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:168:ARG:HB3	2:D:474:HOH:O	2.12	0.49
1:C:122:LYS:HE2	1:C:238:PHE:CE2	2.48	0.49
1:D:45:TYR:CE2	1:D:111:ARG:HB2	2.48	0.49
1:D:54:ILE:C	1:D:55:LEU:HD22	2.33	0.49
1:D:106:LYS:HG3	2:D:598:HOH:O	2.12	0.49
1:A:228:ASN:HD21	1:A:230:MET:HB2	1.78	0.49
1:C:345:VAL:O	1:C:349:VAL:HG23	2.13	0.49
1:A:382:VAL:HG21	1:A:419:GLN:HG3	1.95	0.49
1:B:100:ILE:O	1:B:103:ILE:HG22	2.13	0.48
1:A:372:ASP:HA	1:A:375:LEU:HD12	1.94	0.48
1:D:63:ILE:HA	1:D:100:ILE:HD12	1.94	0.48
1:B:353:LEU:C	1:B:353:LEU:HD12	2.33	0.48
1:C:126:LYS:HZ2	1:C:195:ASN:HD21	1.61	0.48
1:D:139:LEU:HD13	1:D:180:LEU:CD1	2.40	0.48
1:A:42:SER:HB3	1:A:107:LEU:HD21	1.95	0.48
1:B:364:LEU:HD23	1:B:368:MET:HE1	1.96	0.48
1:C:45:TYR:CD1	1:C:111:ARG:HD3	2.49	0.48
1:D:51:LYS:HG2	2:D:567:HOH:O	2.13	0.48
1:D:329:LYS:HE3	2:D:509:HOH:O	2.13	0.48
1:D:171:GLN:HE22	1:D:451:GLN:NE2	2.08	0.48
1:A:384:PHE:CE2	1:C:108:HIS:HB2	2.49	0.48
1:C:187:LEU:HB2	1:C:245:PHE:CE1	2.49	0.48
1:C:250:MET:HB3	1:C:300:ALA:HA	1.96	0.48
1:C:180:LEU:O	1:C:183:ASP:HB2	2.14	0.47
1:C:273:LEU:CD1	1:C:349:VAL:HG13	2.44	0.47
1:A:320:THR:OG1	1:A:321:TYR:N	2.47	0.47
1:B:377:LEU:HB3	1:B:382:VAL:HB	1.96	0.47
1:D:243:LEU:HD23	1:D:307:LEU:HA	1.96	0.47
1:A:69:LYS:HE2	2:A:550:HOH:O	2.14	0.47
1:A:262:ILE:O	1:A:265:THR:HG23	2.14	0.47
1:C:456:ARG:HA	1:C:459:MET:CE	2.43	0.47
1:D:421:SER:O	1:D:424:VAL:HG12	2.13	0.47
1:A:72:GLU:HB3	1:A:76:LYS:HZ3	1.77	0.47
1:A:80:VAL:HG13	2:A:484:HOH:O	2.14	0.47
1:A:267:GLU:HG2	1:B:268:PHE:CD1	2.49	0.47
1:B:202:GLY:O	1:B:233:ILE:HD11	2.13	0.47
1:B:451:GLN:O	1:B:455:LEU:HD23	2.13	0.47
1:A:385:ARG:O	1:A:389:THR:HG23	2.13	0.47
1:A:397:LEU:C	1:A:397:LEU:HD23	2.35	0.47
1:C:138:GLN:HG3	2:C:635:HOH:O	2.14	0.47
1:A:267:GLU:HG2	1:B:268:PHE:CG	2.49	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:28:ILE:HG23	1:B:29:ALA:N	2.30	0.47
1:A:43:MET:O	1:A:47:LYS:HG3	2.15	0.47
1:A:388:HIS:CE1	1:B:283:LEU:HD13	2.49	0.47
1:B:42:SER:HB3	1:B:107:LEU:HD21	1.96	0.47
1:B:156:PRO:HG2	1:B:363:ALA:HB1	1.97	0.47
1:C:88:ILE:HG23	1:C:89:HIS:CD2	2.49	0.47
1:D:100:ILE:HG12	1:D:103:ILE:HG23	1.96	0.47
1:B:26:SER:OG	1:B:28:ILE:HG22	2.14	0.47
1:D:247:THR:O	1:D:251:ILE:HG12	2.15	0.47
1:B:429:ASN:ND2	1:B:432:ASN:ND2	2.63	0.47
1:C:83:GLN:O	1:C:83:GLN:HG2	2.15	0.47
1:C:373:LEU:O	1:C:376:TYR:HB3	2.15	0.47
1:B:342:VAL:HG13	1:B:343:LEU:N	2.30	0.47
1:B:423:ASP:C	1:B:425:SER:N	2.68	0.47
1:D:17:THR:HG23	1:D:17:THR:O	2.15	0.47
1:D:404:THR:OG1	1:D:406:ASN:ND2	2.42	0.47
1:A:255:LYS:NZ	1:C:234:SER:OG	2.47	0.46
1:A:324:ASP:HA	1:D:298:SER:HB3	1.97	0.46
1:A:396:HIS:O	1:A:400:THR:HG23	2.14	0.46
1:C:48:ALA:HB1	1:C:211:ILE:HD11	1.97	0.46
1:C:163:LYS:O	1:D:287:LYS:HE2	2.14	0.46
1:C:200:GLY:HA3	1:C:213:ARG:HD3	1.96	0.46
1:B:73:GLU:O	1:B:78:VAL:N	2.47	0.46
1:B:372:ASP:HA	1:B:375:LEU:HD12	1.97	0.46
1:B:429:ASN:HD22	1:B:432:ASN:ND2	2.14	0.46
1:C:194:ILE:HG12	1:C:238:PHE:HB2	1.97	0.46
1:D:54:ILE:HG22	1:D:55:LEU:HD22	1.96	0.46
1:A:54:ILE:HD12	1:A:54:ILE:N	2.30	0.46
1:A:309:SER:O	1:A:313:VAL:HG23	2.15	0.46
1:C:174:LEU:O	1:C:178:VAL:HG23	2.15	0.46
1:A:23:LYS:HD2	1:A:23:LYS:HA	1.72	0.46
1:B:255:LYS:HG3	1:D:317:LEU:O	2.16	0.46
1:D:212:ASP:OD2	1:D:215:MET:HB2	2.15	0.46
1:D:367:GLU:CD	1:D:367:GLU:H	2.19	0.46
1:D:50:GLU:HG3	1:D:60:LEU:HD22	1.97	0.46
1:D:141:LYS:O	1:D:145:GLU:HG2	2.15	0.46
1:C:154:ILE:HG22	1:C:364:LEU:HD11	1.98	0.46
1:A:295:LEU:O	1:A:299:LYS:HG2	2.16	0.46
1:C:403:ILE:HD11	1:C:408:LEU:HD23	1.97	0.46
1:D:20:ILE:HD12	1:D:20:ILE:N	2.30	0.46
1:D:89:HIS:O	1:D:93:GLU:HG3	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:103:ILE:HD13	2:A:488:HOH:O	2.15	0.46
1:A:180:LEU:O	1:A:183:ASP:HB2	2.16	0.46
1:A:449:THR:O	1:A:453:GLU:HG3	2.15	0.46
1:B:83:GLN:HB3	2:B:512:HOH:O	2.15	0.46
1:B:126:LYS:HD3	2:B:523:HOH:O	2.16	0.46
1:A:72:GLU:OE1	1:A:72:GLU:HA	2.16	0.45
1:A:275:ASP:OD1	1:A:288:LYS:NZ	2.49	0.45
1:D:229:SER:O	1:D:233:ILE:HG12	2.15	0.45
1:B:413:LEU:O	1:B:420:PHE:HD2	1.99	0.45
1:B:440:LEU:HD22	1:B:440:LEU:H	1.80	0.45
1:C:328:ASP:OD2	1:C:329:LYS:N	2.48	0.45
1:A:159:THR:HG23	1:C:204:LEU:HD12	1.97	0.45
1:C:111:ARG:HH21	1:C:111:ARG:CG	2.26	0.45
1:C:283:LEU:HB3	1:D:370:ALA:HB3	1.98	0.45
1:A:18:ASP:CG	1:A:19:PRO:HD2	2.36	0.45
1:A:203:ALA:O	1:A:204:LEU:HB3	2.15	0.45
1:B:375:LEU:CD1	1:B:436:GLN:HE22	2.30	0.45
1:A:312:MET:CE	1:B:312:MET:HA	2.46	0.45
1:C:57:LYS:O	1:C:60:LEU:HB3	2.16	0.45
1:C:319:SER:HA	1:C:320:THR:HA	1.79	0.45
1:A:170:SER:O	1:A:174:LEU:HG	2.16	0.45
1:A:446:SER:HB3	2:A:587:HOH:O	2.15	0.45
1:B:375:LEU:HA	1:B:378:VAL:HG22	1.99	0.45
1:D:353:LEU:HD12	1:D:353:LEU:O	2.17	0.45
1:C:62:LYS:HD3	2:C:634:HOH:O	2.17	0.45
1:D:228:ASN:ND2	1:D:231:ASP:H	2.09	0.45
1:A:58:THR:O	1:A:62:LYS:HG2	2.16	0.45
1:B:262:ILE:O	1:B:265:THR:HG23	2.17	0.45
1:D:385:ARG:HG2	1:D:385:ARG:HH11	1.82	0.45
1:D:78:VAL:HG12	1:D:78:VAL:O	2.16	0.45
1:A:379:ARG:HH22	1:A:436:GLN:NE2	2.11	0.45
1:A:401:LYS:NZ	1:A:401:LYS:HB3	2.31	0.45
1:B:204:LEU:HA	1:B:233:ILE:HD12	1.99	0.45
1:B:228:ASN:ND2	1:D:175:SER:HB3	2.32	0.45
1:B:301:GLY:HA2	1:C:312:MET:HG2	1.99	0.45
1:C:102:ASP:HB3	2:C:499:HOH:O	2.16	0.45
1:C:421:SER:HB2	1:C:423:ASP:OD2	2.17	0.45
1:D:81:VAL:HG23	1:D:85:ASP:OD2	2.17	0.45
1:D:217:ARG:HG2	1:D:217:ARG:HH11	1.82	0.45
1:A:228:ASN:HD21	1:C:175:SER:HB3	1.82	0.44
1:A:369:LEU:HD13	1:A:428:PHE:HA	1.98	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:440:LEU:O	1:B:441:ALA:CB	2.65	0.44
1:D:190:VAL:HG22	1:D:241:GLU:HB3	1.98	0.44
1:D:250:MET:HB3	1:D:300:ALA:HA	1.99	0.44
1:C:207:ASN:ND2	1:C:211:ILE:HB	2.32	0.44
1:A:356:SER:O	1:A:360:MET:HB2	2.17	0.44
1:B:194:ILE:HG12	1:B:238:PHE:HB2	1.99	0.44
1:C:184:SER:OG	1:C:462:GLN:CG	2.66	0.44
1:D:66:GLY:O	1:D:69:LYS:N	2.51	0.44
1:A:394:ALA:HA	1:A:416:ILE:CD1	2.48	0.44
1:C:49:LEU:HB3	1:C:55:LEU:HG	1.98	0.44
1:D:67:LEU:HD23	1:D:96:LEU:HD13	1.99	0.44
1:A:189:GLU:OE2	1:C:193:ARG:NH2	2.46	0.44
1:D:421:SER:HB2	1:D:423:ASP:OD1	2.18	0.44
1:B:410:LEU:HD11	1:B:414:LYS:HE2	2.00	0.44
1:C:48:ALA:CB	1:C:211:ILE:HD11	2.48	0.44
1:C:260:LEU:HB2	1:C:293:LEU:HD13	1.99	0.44
1:D:186:ARG:NE	1:D:248:LEU:HD13	2.33	0.44
1:D:193:ARG:NH2	1:D:241:GLU:OE2	2.48	0.44
1:A:187:LEU:HD23	1:A:187:LEU:O	2.17	0.44
1:A:255:LYS:HG3	1:C:317:LEU:O	2.16	0.44
1:B:308:ALA:HB1	1:C:304:PHE:CE2	2.53	0.44
1:C:126:LYS:HZ1	1:C:195:ASN:HD21	1.66	0.44
1:B:152:ASP:HA	1:B:168:ARG:HH21	1.83	0.44
1:B:228:ASN:ND2	1:B:231:ASP:H	2.05	0.44
1:C:126:LYS:HZ2	1:C:195:ASN:ND2	2.13	0.44
1:A:65:SER:O	1:A:69:LYS:HG3	2.17	0.43
1:A:247:THR:O	1:A:251:ILE:HG12	2.17	0.43
1:B:328:ASP:OD1	1:B:329:LYS:N	2.51	0.43
1:C:193:ARG:NH1	1:C:241:GLU:OE2	2.51	0.43
1:A:396:HIS:O	1:A:399:GLU:HB3	2.17	0.43
1:C:213:ARG:CB	1:C:225:ILE:HD12	2.47	0.43
1:C:228:ASN:ND2	1:C:230:MET:H	2.16	0.43
1:C:353:LEU:C	1:C:353:LEU:HD12	2.39	0.43
1:D:62:LYS:HG3	1:D:100:ILE:HG13	1.99	0.43
1:A:72:GLU:HB3	1:A:76:LYS:HZ2	1.81	0.43
1:A:257:ALA:HA	1:A:293:LEU:HD22	2.01	0.43
1:A:283:LEU:HD11	1:B:388:HIS:HD2	1.81	0.43
1:A:357:LYS:H	1:A:357:LYS:HD2	1.84	0.43
1:B:301:GLY:CA	1:C:312:MET:HG2	2.48	0.43
1:C:161:LEU:HD23	1:C:161:LEU:HA	1.90	0.43
1:C:323:LYS:HE3	1:C:326:GLN:NE2	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:315:LYS:HD3	1:D:315:LYS:C	2.39	0.43
1:A:446:SER:O	1:A:449:THR:OG1	2.32	0.43
1:B:45:TYR:CE2	1:B:111:ARG:HB2	2.53	0.43
1:B:377:LEU:HB2	1:B:387:ALA:HB1	2.01	0.43
1:C:447:SER:O	1:C:451:GLN:HG3	2.19	0.43
1:B:361:GLU:HG3	1:B:364:LEU:HD12	2.01	0.43
1:B:429:ASN:HD22	1:B:432:ASN:N	2.11	0.43
1:C:184:SER:OG	1:C:462:GLN:HG2	2.18	0.43
1:C:356:SER:OG	1:C:359:ASN:ND2	2.52	0.43
1:B:204:LEU:HD21	1:D:165:GLN:CG	2.49	0.42
1:C:248:LEU:HD23	1:C:248:LEU:HA	1.84	0.42
1:A:155:LEU:CB	1:A:360:MET:HG2	2.31	0.42
1:A:408:LEU:HD11	1:A:413:LEU:HD21	2.02	0.42
1:A:440:LEU:O	1:A:441:ALA:CB	2.67	0.42
1:B:332:VAL:O	1:B:336:VAL:HG23	2.20	0.42
1:C:17:THR:CG2	1:C:20:ILE:HD12	2.48	0.42
1:C:76:LYS:HE3	1:C:78:VAL:CG1	2.41	0.42
1:C:440:LEU:HD23	2:C:507:HOH:O	2.19	0.42
1:A:162:GLN:HB3	1:B:287:LYS:HD3	2.02	0.42
1:A:276:ALA:HA	1:D:17:THR:N	2.34	0.42
1:C:74:TRP:C	1:C:76:LYS:H	2.22	0.42
1:A:122:LYS:HE2	1:A:238:PHE:CD2	2.54	0.42
1:B:109:THR:HG22	1:B:209:LEU:CD1	2.46	0.42
1:B:322:ASN:H	1:B:325:LEU:HD23	1.85	0.42
1:C:40:GLN:NE2	1:C:43:MET:HE3	2.34	0.42
1:A:28:ILE:HA	1:A:31:ASP:OD2	2.19	0.42
1:A:319:SER:HB3	1:A:320:THR:HG22	2.02	0.42
1:C:207:ASN:HD21	1:C:209:LEU:HB2	1.84	0.42
1:C:369:LEU:HD13	1:C:428:PHE:HA	2.02	0.42
1:A:186:ARG:HH11	1:C:241:GLU:CD	2.22	0.42
1:B:197:LEU:HD23	1:B:213:ARG:NH2	2.35	0.42
1:C:108:HIS:CE1	1:C:113:ARG:HH22	2.38	0.42
1:C:319:SER:HB3	1:C:320:THR:HG22	2.00	0.42
1:A:83:GLN:O	1:A:83:GLN:HG2	2.20	0.42
1:B:122:LYS:HE2	2:B:601:HOH:O	2.19	0.42
1:D:21:MET:CE	1:D:21:MET:HA	2.50	0.42
1:A:117:VAL:HG13	1:A:118:VAL:N	2.35	0.42
1:B:161:LEU:HD12	1:B:161:LEU:HA	1.82	0.42
1:B:423:ASP:C	1:B:425:SER:H	2.23	0.42
1:B:48:ALA:CB	1:B:211:ILE:HD11	2.50	0.42
1:B:397:LEU:HG	1:B:401:LYS:HE2	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:144:VAL:CG2	1:C:455:LEU:HD23	2.47	0.42
1:C:163:LYS:HE2	2:D:551:HOH:O	2.20	0.42
1:C:282:SER:HB2	1:D:388:HIS:CE1	2.52	0.42
1:C:365:THR:HB	1:C:367:GLU:OE1	2.19	0.42
1:C:394:ALA:HA	1:C:416:ILE:CD1	2.50	0.42
1:A:158:TYR:CE2	1:A:163:LYS:HG2	2.55	0.41
1:B:121:LEU:HD12	1:B:121:LEU:HA	1.89	0.41
1:C:143:LEU:HD21	1:C:350:ILE:CD1	2.48	0.41
1:A:43:MET:CE	1:A:68:GLU:HG3	2.50	0.41
1:B:310:ILE:O	1:B:314:LEU:HG	2.21	0.41
1:C:49:LEU:HD12	1:C:49:LEU:HA	1.84	0.41
1:C:377:LEU:HD11	1:C:420:PHE:CZ	2.56	0.41
1:D:115:ASP:HA	1:D:118:VAL:HG22	2.01	0.41
1:A:361:GLU:HG2	2:A:554:HOH:O	2.20	0.41
1:C:391:SER:O	1:C:395:VAL:HG23	2.21	0.41
1:D:328:ASP:OD1	1:D:329:LYS:N	2.53	0.41
1:D:332:VAL:O	1:D:336:VAL:HG23	2.20	0.41
1:A:353:LEU:HD12	1:A:353:LEU:C	2.40	0.41
1:B:355:ILE:HB	1:B:360:MET:HE3	2.02	0.41
1:B:287:LYS:HD2	1:B:287:LYS:C	2.41	0.41
1:B:448:VAL:O	1:B:451:GLN:HB2	2.21	0.41
1:C:79:PHE:CD2	1:C:80:VAL:N	2.88	0.41
1:D:204:LEU:C	1:D:204:LEU:CD2	2.87	0.41
1:A:258:GLU:HG2	1:C:316:GLY:O	2.20	0.41
1:C:49:LEU:HG	1:C:54:ILE:HB	2.03	0.41
1:C:94:ARG:HG2	1:C:94:ARG:HH11	1.85	0.41
1:B:80:VAL:O	1:B:80:VAL:HG13	2.21	0.41
1:B:170:SER:O	1:B:174:LEU:HG	2.21	0.41
1:B:279:THR:HG22	1:B:289:ASN:HB2	2.02	0.41
1:C:16:SER:C	1:C:17:THR:HG23	2.41	0.41
1:C:435:GLU:OE2	1:C:435:GLU:HA	2.20	0.41
1:D:248:LEU:O	1:D:248:LEU:HD23	2.21	0.41
1:B:199:LEU:HD23	1:B:199:LEU:HA	1.91	0.41
1:C:31:ASP:OD1	1:C:88:ILE:HB	2.21	0.41
1:D:209:LEU:HD22	1:D:209:LEU:N	2.36	0.41
1:A:171:GLN:HE22	1:A:451:GLN:NE2	2.19	0.40
1:A:345:VAL:O	1:A:349:VAL:HG23	2.21	0.40
1:B:141:LYS:HE3	1:B:141:LYS:HB2	1.85	0.40
1:B:217:ARG:HG2	1:B:217:ARG:HH11	1.86	0.40
1:C:267:GLU:HG2	1:D:268:PHE:CG	2.56	0.40
1:C:459:MET:O	1:C:463:LYS:HB2	2.21	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:93:GLU:O	1:D:96:LEU:N	2.46	0.40
1:A:315:LYS:HE2	1:B:312:MET:O	2.21	0.40
1:A:439:ALA:HB2	1:C:210:ASP:HA	2.02	0.40
1:B:234:SER:OG	1:D:255:LYS:NZ	2.54	0.40
1:A:139:LEU:O	1:A:139:LEU:HD23	2.21	0.40
1:A:272:THR:HA	2:A:568:HOH:O	2.20	0.40
1:A:421:SER:O	1:A:424:VAL:HG23	2.21	0.40
1:B:429:ASN:ND2	1:B:432:ASN:N	2.57	0.40
1:D:113:ARG:HH21	1:D:116:GLN:NE2	2.10	0.40
1:B:59:GLU:HG2	1:B:103:ILE:HD11	2.02	0.40
1:B:344:GLN:HB3	1:C:17:THR:HG21	2.03	0.40
1:C:272:THR:HG23	1:C:288:LYS:HD2	2.03	0.40
1:C:323:LYS:HE3	1:C:326:GLN:HE22	1.86	0.40
1:A:37:VAL:HG13	2:A:476:HOH:O	2.21	0.40
1:A:159:THR:O	1:A:160:HIS:HB2	2.21	0.40
1:A:464:GLU:HG3	1:A:464:GLU:O	2.20	0.40
1:B:319:SER:HA	1:B:320:THR:HA	1.92	0.40
1:B:403:ILE:HD12	1:B:407:LYS:HB2	2.03	0.40
1:C:111:ARG:NH2	1:C:111:ARG:CG	2.83	0.40
1:C:439:ALA:O	1:C:440:LEU:C	2.60	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	446/468 (95%)	416 (93%)	28 (6%)	2 (0%)	34 42
1	B	446/468 (95%)	426 (96%)	17 (4%)	3 (1%)	22 26
1	C	447/468 (96%)	424 (95%)	20 (4%)	3 (1%)	22 26
1	D	447/468 (96%)	426 (95%)	19 (4%)	2 (0%)	34 42
All	All	1786/1872 (95%)	1692 (95%)	84 (5%)	10 (1%)	25 31

All (10) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	204	LEU
1	B	204	LEU
1	C	204	LEU
1	D	204	LEU
1	B	102	ASP
1	D	198	PRO
1	A	463	LYS
1	B	198	PRO
1	C	117	VAL
1	C	198	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	392/405 (97%)	381 (97%)	11 (3%)	43 60
1	B	392/405 (97%)	377 (96%)	15 (4%)	33 47
1	C	393/405 (97%)	374 (95%)	19 (5%)	25 36
1	D	393/405 (97%)	376 (96%)	17 (4%)	29 40
All	All	1570/1620 (97%)	1508 (96%)	62 (4%)	32 46

All (62) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	139	LEU
1	A	155	LEU
1	A	171	GLN
1	A	180	LEU
1	A	199	LEU
1	A	216	LEU
1	A	243	LEU
1	A	245	PHE
1	A	260	LEU
1	A	315	LYS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	364	LEU
1	B	21	MET
1	B	36	GLU
1	B	95	ARG
1	B	108	HIS
1	B	112	SER
1	B	130	SER
1	B	136	LEU
1	B	137	LEU
1	B	139	LEU
1	B	155	LEU
1	B	199	LEU
1	B	245	PHE
1	B	248	LEU
1	B	253	LEU
1	B	279	THR
1	C	21	MET
1	C	34	LEU
1	C	95	ARG
1	C	102	ASP
1	C	121	LEU
1	C	138	GLN
1	C	139	LEU
1	C	161	LEU
1	C	171	GLN
1	C	195	ASN
1	C	248	LEU
1	C	283	LEU
1	C	286	GLN
1	C	291	ASP
1	C	311	LEU
1	C	323	LYS
1	C	324	ASP
1	C	339	LEU
1	C	386	GLN
1	D	70	ILE
1	D	113	ARG
1	D	117	VAL
1	D	136	LEU
1	D	139	LEU
1	D	171	GLN
1	D	199	LEU

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Mol	Chain	Res	Type
1	D	243	LEU
1	D	245	PHE
1	D	260	LEU
1	D	291	ASP
1	D	323	LYS
1	D	324	ASP
1	D	367	GLU
1	D	406	ASN
1	D	419	GLN
1	D	455	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (55) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	32	GLN
1	A	114	ASN
1	A	135	HIS
1	A	162	GLN
1	A	171	GLN
1	A	228	ASN
1	A	289	ASN
1	A	326	GLN
1	A	344	GLN
1	A	419	GLN
1	A	436	GLN
1	B	92	ASN
1	B	108	HIS
1	B	114	ASN
1	B	116	GLN
1	B	162	GLN
1	B	165	GLN
1	B	207	ASN
1	B	228	ASN
1	B	326	GLN
1	B	354	GLN
1	B	359	ASN
1	B	429	ASN
1	B	432	ASN
1	B	436	GLN
1	B	454	GLN
1	C	25	ASN
1	C	40	GLN

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Mol	Chain	Res	Type
1	C	83	GLN
1	C	89	HIS
1	C	108	HIS
1	C	116	GLN
1	C	171	GLN
1	C	195	ASN
1	C	207	ASN
1	C	228	ASN
1	C	286	GLN
1	C	326	GLN
1	C	359	ASN
1	C	386	GLN
1	C	436	GLN
1	D	25	ASN
1	D	116	GLN
1	D	127	ASN
1	D	171	GLN
1	D	207	ASN
1	D	228	ASN
1	D	286	GLN
1	D	386	GLN
1	D	406	ASN
1	D	419	GLN
1	D	426	GLN
1	D	432	ASN
1	D	436	GLN
1	D	462	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, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	448/468 (95%)	-0.09	12 (2%) 54 62	11, 28, 62, 76	0
1	B	448/468 (95%)	0.13	21 (4%) 31 38	13, 34, 61, 73	0
1	C	449/468 (95%)	-0.05	10 (2%) 62 69	10, 27, 65, 85	0
1	D	449/468 (95%)	0.01	19 (4%) 36 43	10, 28, 63, 80	0
All	All	1794/1872 (95%)	-0.00	62 (3%) 44 51	10, 29, 63, 85	0

All (62) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	16	SER	5.6
1	D	78	VAL	5.6
1	B	16	SER	5.2
1	C	67	LEU	3.9
1	C	83	GLN	3.8
1	C	462	GLN	3.8
1	B	280	GLY	3.7
1	B	281	SER	3.6
1	D	76	LYS	3.4
1	B	282	SER	3.2
1	B	286	GLN	3.2
1	B	410	LEU	3.1
1	B	83	GLN	3.1
1	D	96	LEU	3.1
1	D	465	GLN	3.1
1	D	385	ARG	2.9
1	C	17	THR	2.8
1	C	281	SER	2.8
1	B	395	VAL	2.8
1	B	78	VAL	2.8
1	A	400	THR	2.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	A	83	GLN	2.8
1	C	282	SER	2.8
1	D	82	LYS	2.7
1	D	100	ILE	2.7
1	A	286	GLN	2.6
1	D	58	THR	2.6
1	B	385	ARG	2.6
1	A	464	GLU	2.6
1	B	388	HIS	2.6
1	A	385	ARG	2.6
1	D	60	LEU	2.6
1	B	422	SER	2.5
1	D	99	LEU	2.5
1	A	285	PRO	2.5
1	D	29	ALA	2.4
1	B	408	LEU	2.4
1	D	83	GLN	2.4
1	B	462	GLN	2.4
1	A	17	THR	2.4
1	A	403	ILE	2.4
1	D	103	ILE	2.3
1	A	424	VAL	2.2
1	A	282	SER	2.2
1	A	411	GLU	2.2
1	B	84	SER	2.2
1	D	77	GLY	2.2
1	B	358	GLU	2.1
1	A	280	GLY	2.1
1	C	76	LYS	2.1
1	B	389	THR	2.1
1	D	80	VAL	2.1
1	C	19	PRO	2.1
1	D	65	SER	2.1
1	D	86	GLU	2.1
1	B	17	THR	2.0
1	B	77	GLY	2.0
1	D	55	LEU	2.0
1	D	286	GLN	2.0
1	B	411	GLU	2.0
1	B	426	GLN	2.0
1	C	90	THR	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.