Full wwPDB X-ray Structure Validation Report (i)

Oct 21, 2024 – 03:37 PM EDT

PDB ID	:	2R7D
Title	:	Crystal structure of ribonuclease II family protein from Deinococcus radiodurans, triclinic crystal form. NorthEast Structural Genomics target DrR63
Authors	:	Seetharaman, J.; Neely, H.; Forouhar, F.; Wang, D.; Fang, Y.; Cunningham, K.; Ma, L.-C.; Xia, R.; Liu, J.; Baran, M.C.; Acton, T.B.; Rost, B.; Montelione, G.T.; Hunt, J.F.; Tong, L.; Northeast Structural Genomics Consortium (NESG)
Deposited on	:	2007-09-07
Resolution	:	1.80 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 (i) symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

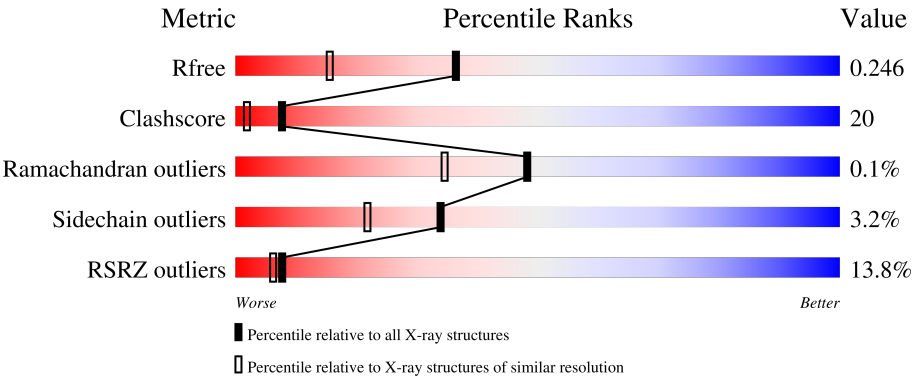
MolProbity	:	4.02b-467
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	1.20.1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 1.80 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}	164625	7108 (1.80-1.80)
Clashscore	180529	8162 (1.80-1.80)
Ramachandran outliers	177936	8077 (1.80-1.80)
Sidechain outliers	177891	8076 (1.80-1.80)
RSRZ outliers	164620	7108 (1.80-1.80)

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 <=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	469	5% 71% 26%
1	B	469	22% 64% 32%
1	C	469	13% 70% 26%

Validation Pipeline (wwPDB-VP) : 2.39

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 11897 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 Ribonuclease II family protein.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	461	Total	C	N	O	S	Se	0	0	0
			3562	2228	652	671	2	9			
1	B	459	Total	C	N	O	S	Se	0	0	0
			3545	2217	650	667	2	9			
1	C	459	Total	C	N	O	S	Se	0	0	0
			3545	2217	650	667	2	9			

There are 24 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	462	LEU	-	expression tag	UNP Q9RYD0
A	463	GLU	-	expression tag	UNP Q9RYD0
A	464	HIS	-	expression tag	UNP Q9RYD0
A	465	HIS	-	expression tag	UNP Q9RYD0
A	466	HIS	-	expression tag	UNP Q9RYD0
A	467	HIS	-	expression tag	UNP Q9RYD0
A	468	HIS	-	expression tag	UNP Q9RYD0
A	469	HIS	-	expression tag	UNP Q9RYD0
B	462	LEU	-	expression tag	UNP Q9RYD0
B	463	GLU	-	expression tag	UNP Q9RYD0
B	464	HIS	-	expression tag	UNP Q9RYD0
B	465	HIS	-	expression tag	UNP Q9RYD0
B	466	HIS	-	expression tag	UNP Q9RYD0
B	467	HIS	-	expression tag	UNP Q9RYD0
B	468	HIS	-	expression tag	UNP Q9RYD0
B	469	HIS	-	expression tag	UNP Q9RYD0
C	462	LEU	-	expression tag	UNP Q9RYD0
C	463	GLU	-	expression tag	UNP Q9RYD0
C	464	HIS	-	expression tag	UNP Q9RYD0
C	465	HIS	-	expression tag	UNP Q9RYD0
C	466	HIS	-	expression tag	UNP Q9RYD0
C	467	HIS	-	expression tag	UNP Q9RYD0
C	468	HIS	-	expression tag	UNP Q9RYD0

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Chain	Residue	Modelled	Actual	Comment	Reference
C	469	HIS	-	expression tag	UNP Q9RYD0

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 3 is water.

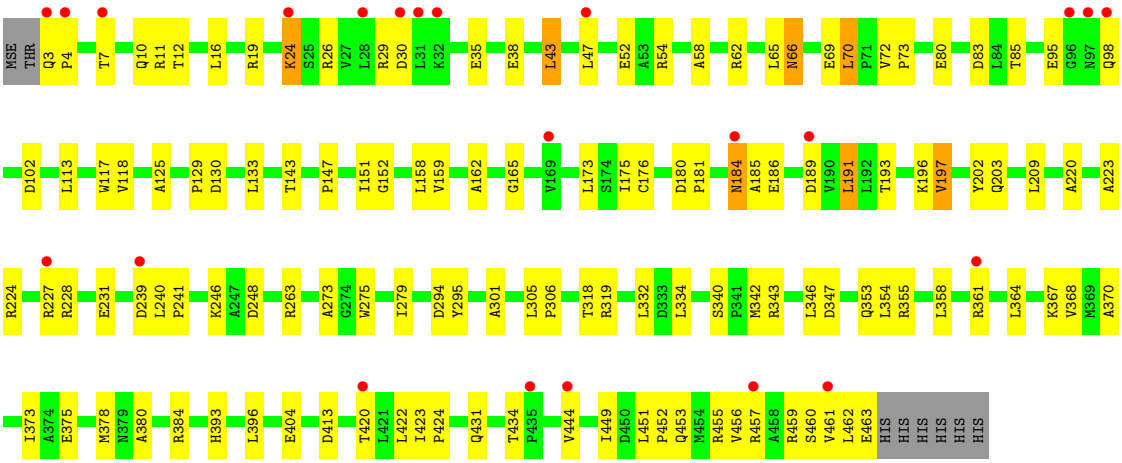
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	536	Total O 536 536	0	0
3	B	303	Total O 303 303	0	0
3	C	403	Total O 403 403	0	0

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.

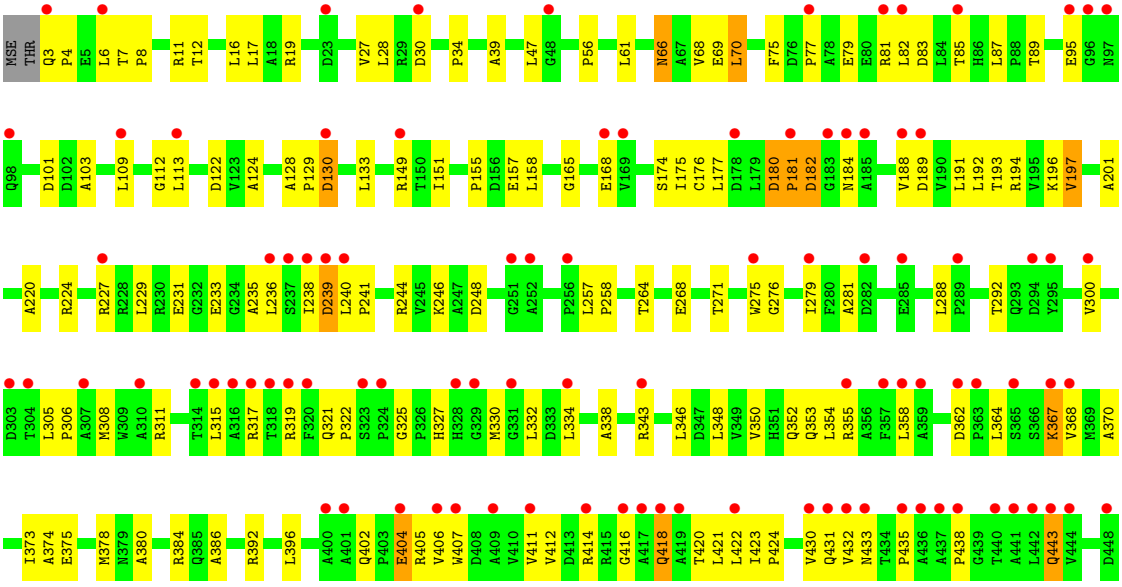
• Molecule 1: Ribonuclease II family protein

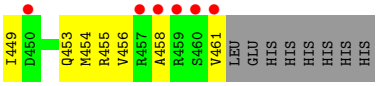
Chain A:



• Molecule 1: Ribonuclease II family protein

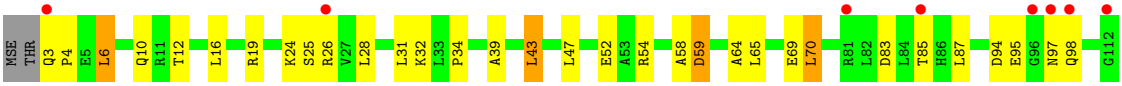
Chain B:

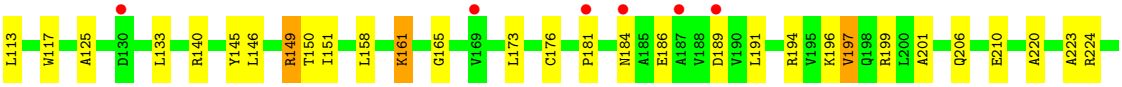


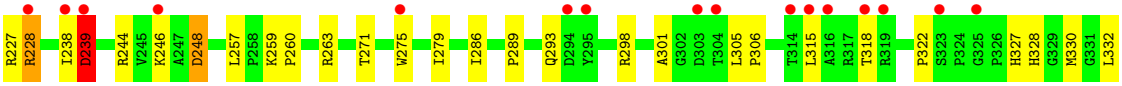


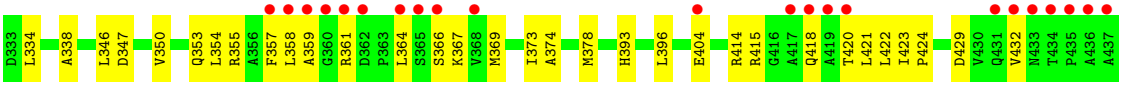
• Molecule 1: Ribonuclease II family protein

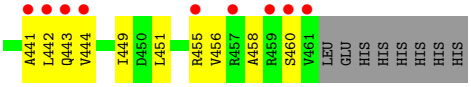
Chain C:











4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α, β, γ	65.76Å 92.20Å 92.34Å 60.08° 89.57° 71.11°	Depositor
Resolution (Å)	36.68 – 1.80 36.68 – 1.80	Depositor EDS
% Data completeness (in resolution range)	80.7 (36.68-1.80) 91.9 (36.68-1.80)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	0.04	Depositor
$< I/\sigma(I) >$ [1]	1.74 (at 1.81Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.221 , 0.243 0.227 , 0.246	Depositor DCC
R_{free} test set	2691 reflections (1.80%)	wwPDB-VP
Wilson B-factor (Å^2)	23.4	Xtriage
Anisotropy	0.161	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 48.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.014 for h,h-k,-l 0.016 for -h,-k+l,l 0.008 for -h,-h+k-l,-l	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	11897	wwPDB-VP
Average B, all atoms (Å^2)	33.0	wwPDB-VP

Xtriage'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.*

[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: MG

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	0/3624	0.62	3/4927 (0.1%)
1	B	0.27	0/3607	0.58	6/4904 (0.1%)
1	C	0.30	0/3607	0.59	2/4904 (0.0%)
All	All	0.30	0/10838	0.60	11/14735 (0.1%)

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	239	ASP	CB-CG-OD2	5.27	123.04	118.30
1	B	130	ASP	CB-CG-OD2	5.27	123.04	118.30
1	B	180	ASP	CB-CG-OD2	5.27	123.04	118.30
1	B	362	ASP	CB-CG-OD2	5.25	123.02	118.30
1	B	182	ASP	CB-CG-OD2	5.24	123.01	118.30
1	C	239	ASP	CB-CG-OD2	5.23	123.01	118.30
1	C	248	ASP	CB-CG-OD2	5.23	123.01	118.30
1	B	239	ASP	CB-CG-OD2	5.22	123.00	118.30
1	A	248	ASP	CB-CG-OD2	5.21	122.99	118.30
1	B	248	ASP	CB-CG-OD2	5.21	122.99	118.30
1	A	173	LEU	N-CA-C	-5.05	97.35	111.00

There are no chirality outliers.

There are no planarity outliers.

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	3562	0	3564	134	0
1	B	3545	0	3547	159	0
1	C	3545	0	3547	127	0
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
3	A	536	0	0	34	0
3	B	303	0	0	24	0
3	C	403	0	0	26	0
All	All	11897	0	10658	420	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 20.

All (420) 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:C:328:HIS:HB3	3:C:3394:HOH:O	1.60	1.01
1:B:180:ASP:HB2	1:B:181:PRO:HD2	1.41	0.98
1:A:353:GLN:HE22	1:A:364:LEU:H	1.00	0.96
1:B:239:ASP:O	1:B:308:MSE:SE	2.39	0.91
1:A:375:GLU:HA	1:A:378:MSE:HE2	1.53	0.90
1:A:463:GLU:HG2	3:A:1122:HOH:O	1.70	0.90
1:B:321:GLN:HA	3:B:2261:HOH:O	1.72	0.89
1:A:83:ASP:OD2	1:A:85:THR:HG22	1.73	0.89
1:C:52:GLU:HG2	1:C:451:LEU:HD12	1.56	0.88
1:A:370:ALA:HA	3:A:1315:HOH:O	1.74	0.88
1:A:370:ALA:HB3	3:A:1531:HOH:O	1.76	0.85
1:A:26:ARG:HH11	1:A:29:ARG:HH11	1.24	0.85
1:A:176:CYS:SG	1:A:189:ASP:HB2	2.16	0.85
1:C:12:THR:O	1:C:16:LEU:HD23	1.77	0.82
1:B:375:GLU:HA	1:B:378:MSE:HE3	1.61	0.82
1:C:83:ASP:OD2	1:C:85:THR:HG22	1.80	0.82
1:B:124:ALA:HB3	1:B:355:ARG:HD3	1.61	0.81
1:A:159:VAL:HA	1:A:342:MSE:HE1	1.61	0.81
1:C:176:CYS:SG	1:C:189:ASP:HB2	2.22	0.79
1:B:69:GLU:C	1:B:70:LEU:HD12	2.04	0.78
1:A:380:ALA:HB1	1:A:384:ARG:HH12	1.47	0.78
1:B:373:ILE:HB	3:B:2244:HOH:O	1.84	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:414:ARG:HB3	1:C:414:ARG:NH1	1.99	0.77
1:B:238:ILE:HG21	1:B:315:LEU:HD11	1.66	0.77
1:B:133:LEU:HD12	1:B:133:LEU:H	1.49	0.76
1:A:380:ALA:HB1	1:A:384:ARG:NH1	2.01	0.76
1:B:353:GLN:HE22	1:B:364:LEU:H	1.31	0.76
1:A:420:THR:HG22	1:A:431:GLN:OE1	1.85	0.76
1:A:162:ALA:HB3	1:A:342:MSE:HE3	1.68	0.76
1:C:279:ILE:HD13	1:C:334:LEU:HD11	1.66	0.76
1:B:70:LEU:CD1	1:B:70:LEU:N	2.50	0.75
1:B:418:GLN:HA	1:B:433:ASN:HA	1.68	0.75
1:B:12:THR:O	1:B:16:LEU:HD23	1.87	0.75
1:A:373:ILE:HB	3:A:1315:HOH:O	1.85	0.75
1:A:367:LYS:HA	3:A:1531:HOH:O	1.85	0.74
1:B:370:ALA:HA	3:B:2244:HOH:O	1.87	0.74
1:A:196:LYS:HG3	1:A:196:LYS:O	1.86	0.74
1:C:414:ARG:HB3	1:C:414:ARG:HH11	1.51	0.74
1:C:196:LYS:HE2	3:C:3032:HOH:O	1.87	0.73
1:C:125:ALA:HB2	1:C:355:ARG:HH12	1.53	0.72
1:C:228:ARG:NH1	1:C:228:ARG:HB2	2.04	0.72
1:C:354:LEU:O	1:C:358:LEU:HD23	1.89	0.72
1:B:176:CYS:SG	1:B:189:ASP:HB2	2.29	0.72
1:A:159:VAL:HA	1:A:342:MSE:CE	2.19	0.72
1:C:196:LYS:O	1:C:196:LYS:HG3	1.89	0.71
1:C:133:LEU:H	1:C:133:LEU:HD12	1.54	0.71
1:A:24:LYS:HB2	1:A:24:LYS:NZ	2.06	0.70
1:B:70:LEU:HD12	1:B:70:LEU:N	2.07	0.70
1:A:118:VAL:CG1	1:A:175:ILE:HB	2.21	0.69
1:A:162:ALA:HB3	1:A:342:MSE:CE	2.22	0.69
1:C:353:GLN:HE22	1:C:364:LEU:H	1.41	0.69
1:C:443:GLN:HE21	1:C:443:GLN:HA	1.58	0.69
1:B:220:ALA:O	1:B:224:ARG:HG3	1.94	0.68
1:A:12:THR:O	1:A:16:LEU:HD23	1.94	0.67
1:A:223:ALA:HB1	1:A:227:ARG:HH12	1.60	0.67
1:B:455:ARG:HD2	3:B:2253:HOH:O	1.95	0.67
1:C:69:GLU:C	1:C:70:LEU:HD12	2.15	0.67
1:A:26:ARG:HH11	1:A:29:ARG:NH1	1.94	0.66
1:B:129:PRO:HG2	3:B:2119:HOH:O	1.96	0.66
1:C:70:LEU:CD1	1:C:70:LEU:N	2.59	0.66
1:B:414:ARG:NH2	1:B:435:PRO:HA	2.11	0.66
1:A:184:ASN:HD22	1:A:185:ALA:N	1.93	0.65
1:B:305:LEU:HB2	1:B:306:PRO:HD3	1.78	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:449:ILE:HG13	1:A:456:VAL:HG12	1.77	0.65
1:B:404:GLU:H	1:B:404:GLU:CD	2.00	0.65
1:A:24:LYS:HD3	3:A:1151:HOH:O	1.96	0.65
1:A:203:GLN:HG3	3:A:1466:HOH:O	1.96	0.65
1:C:369:MSE:O	1:C:373:ILE:HD13	1.96	0.65
1:B:95:GLU:HG2	1:B:201:ALA:HB1	1.78	0.65
1:B:165:GLY:HA2	1:B:197:VAL:HG13	1.79	0.65
1:A:364:LEU:HB3	1:A:368:VAL:CG2	2.26	0.65
1:B:244:ARG:HH21	1:B:246:LYS:HZ3	1.44	0.65
1:B:133:LEU:HD12	1:B:133:LEU:N	2.11	0.64
1:A:125:ALA:HB2	1:A:355:ARG:HH12	1.61	0.64
1:A:66:ASN:HD22	1:A:66:ASN:H	1.44	0.64
1:A:353:GLN:HE22	1:A:364:LEU:N	1.83	0.64
1:B:227:ARG:HH22	1:B:268:GLU:HB2	1.63	0.64
1:A:457:ARG:HG3	3:A:1445:HOH:O	1.98	0.64
1:B:364:LEU:HB3	1:B:368:VAL:CG2	2.28	0.64
1:B:124:ALA:CB	1:B:355:ARG:HD3	2.28	0.64
1:B:191:LEU:HD23	1:B:191:LEU:N	2.13	0.63
1:C:322:PRO:HD3	3:C:3163:HOH:O	1.96	0.63
1:C:444:VAL:HG11	1:C:458:ALA:HB1	1.81	0.63
1:C:441:ALA:C	1:C:442:LEU:HD12	2.18	0.63
1:C:449:ILE:HG13	1:C:456:VAL:HG12	1.79	0.63
1:A:180:ASP:OD2	1:A:184:ASN:HB3	1.97	0.63
1:B:240:LEU:HB3	1:B:241:PRO:HD2	1.80	0.62
1:A:69:GLU:C	1:A:70:LEU:HD12	2.19	0.62
1:A:165:GLY:HA2	1:A:197:VAL:HG13	1.82	0.62
1:C:133:LEU:HD12	1:C:133:LEU:N	2.15	0.62
1:A:364:LEU:HB3	1:A:368:VAL:HG21	1.82	0.61
1:A:129:PRO:HG3	3:A:1342:HOH:O	2.01	0.61
1:A:11:ARG:NH2	3:A:1408:HOH:O	2.33	0.61
1:B:129:PRO:O	1:B:130:ASP:HB3	2.01	0.61
1:B:364:LEU:HB3	1:B:368:VAL:HG21	1.81	0.61
1:C:87:LEU:HB3	3:C:3349:HOH:O	1.99	0.61
1:B:30:ASP:HB2	3:B:2088:HOH:O	2.00	0.61
1:B:66:ASN:H	1:B:66:ASN:HD22	1.47	0.61
1:B:85:THR:O	1:B:196:LYS:HE3	2.01	0.61
1:B:422:LEU:O	1:B:424:PRO:HD3	2.01	0.61
1:A:118:VAL:HG11	1:A:273:ALA:CB	2.30	0.61
1:B:4:PRO:HG2	1:B:47:LEU:HD21	1.83	0.61
1:A:54:ARG:HG2	3:A:1341:HOH:O	2.01	0.60
1:B:244:ARG:HH21	1:B:246:LYS:NZ	1.97	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:301:ALA:HB1	3:C:3350:HOH:O	2.01	0.60
1:B:375:GLU:HA	1:B:378:MSE:CE	2.30	0.60
1:A:26:ARG:NH1	1:A:29:ARG:HH11	1.95	0.60
1:B:430:VAL:HG21	1:B:458:ALA:HB2	1.84	0.60
1:C:3:GLN:HB2	1:C:4:PRO:HD3	1.84	0.60
1:B:151:ILE:HD12	1:B:151:ILE:N	2.17	0.59
1:A:305:LEU:HB2	1:A:306:PRO:HD3	1.84	0.59
1:B:227:ARG:NH1	3:B:2072:HOH:O	2.36	0.59
1:A:102:ASP:HB2	3:A:1211:HOH:O	2.02	0.59
1:C:396:LEU:HD22	1:C:456:VAL:CG1	2.33	0.59
1:A:118:VAL:HG11	1:A:273:ALA:HB2	1.85	0.58
1:A:396:LEU:HD22	1:A:456:VAL:CG1	2.33	0.58
1:B:330:MSE:HB3	1:B:332:LEU:HD23	1.83	0.58
1:C:369:MSE:HG3	3:C:3163:HOH:O	2.02	0.58
1:B:319:ARG:HB3	1:B:319:ARG:NH1	2.18	0.58
1:A:318:THR:HG23	3:A:1087:HOH:O	2.02	0.58
1:C:220:ALA:O	1:C:224:ARG:HG3	2.03	0.58
1:B:354:LEU:O	1:B:358:LEU:HD13	2.03	0.58
1:A:24:LYS:HB2	1:A:24:LYS:HZ2	1.68	0.57
1:A:354:LEU:O	1:A:358:LEU:HD13	2.03	0.57
1:B:8:PRO:HG2	3:B:2047:HOH:O	2.04	0.57
1:B:227:ARG:NH2	1:B:264:THR:HG22	2.18	0.57
1:A:420:THR:HG23	3:A:1182:HOH:O	2.02	0.57
1:B:449:ILE:HG13	1:B:456:VAL:HG12	1.84	0.57
1:B:418:GLN:HG3	1:B:431:GLN:HG3	1.87	0.57
1:B:380:ALA:HB1	1:B:384:ARG:NH1	2.19	0.57
1:A:165:GLY:CA	1:A:197:VAL:HG13	2.35	0.57
1:A:319:ARG:HD2	3:A:1232:HOH:O	2.04	0.57
1:A:453:GLN:HB2	1:A:455:ARG:HH11	1.70	0.57
1:C:24:LYS:HD2	3:C:3329:HOH:O	2.04	0.57
1:A:184:ASN:HD22	1:A:185:ALA:H	1.52	0.56
1:B:180:ASP:HB2	1:B:181:PRO:CD	2.27	0.56
1:A:30:ASP:HB2	3:A:1154:HOH:O	2.05	0.56
1:B:227:ARG:O	1:B:231:GLU:HG3	2.05	0.56
1:A:361:ARG:HD3	3:A:1424:HOH:O	2.05	0.56
1:B:402:GLN:OE1	1:B:405:ARG:HD2	2.05	0.56
1:C:244:ARG:HG3	1:C:257:LEU:HD21	1.86	0.56
1:C:26:ARG:HG2	1:C:26:ARG:HH11	1.71	0.56
1:C:443:GLN:HA	1:C:443:GLN:NE2	2.21	0.56
1:A:375:GLU:HA	1:A:378:MSE:CE	2.29	0.56
1:C:396:LEU:HD22	1:C:456:VAL:HG13	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:66:ASN:H	1:A:66:ASN:ND2	2.04	0.56
1:A:463:GLU:HB2	3:A:1184:HOH:O	2.05	0.56
1:A:70:LEU:CD1	1:A:70:LEU:N	2.68	0.56
1:C:275:TRP:O	1:C:279:ILE:HG12	2.06	0.56
1:A:24:LYS:HG2	1:A:35:GLU:OE1	2.07	0.55
1:B:374:ALA:O	1:B:378:MSE:HG3	2.06	0.55
1:A:196:LYS:HE2	3:A:1007:HOH:O	2.06	0.55
1:A:444:VAL:HG23	1:A:459:ARG:O	2.06	0.55
1:C:98:GLN:HA	1:C:199:ARG:HH22	1.71	0.55
1:B:373:ILE:HD12	3:B:2261:HOH:O	2.07	0.55
1:C:54:ARG:HD2	3:C:3145:HOH:O	2.06	0.55
1:A:43:LEU:HD22	1:A:47:LEU:HG	1.89	0.55
1:A:227:ARG:O	1:A:231:GLU:HG3	2.07	0.55
1:B:16:LEU:HD22	1:B:19:ARG:HH21	1.69	0.55
1:C:3:GLN:HB2	1:C:4:PRO:CD	2.35	0.55
1:B:34:PRO:HG2	1:B:39:ALA:HB2	1.88	0.55
1:B:227:ARG:NH1	1:B:268:GLU:OE1	2.40	0.55
1:C:52:GLU:HG2	1:C:451:LEU:CD1	2.35	0.55
1:B:317:ARG:HG2	1:B:317:ARG:HH11	1.71	0.55
1:C:353:GLN:NE2	1:C:364:LEU:HD23	2.21	0.55
1:A:413:ASP:HB3	1:A:420:THR:OG1	2.06	0.55
1:C:70:LEU:HD12	1:C:70:LEU:N	2.22	0.55
1:A:275:TRP:O	1:A:279:ILE:HG12	2.06	0.55
1:C:444:VAL:CG1	1:C:458:ALA:HB1	2.37	0.55
1:B:338:ALA:HB2	1:B:350:VAL:HG11	1.88	0.54
1:C:165:GLY:HA2	1:C:197:VAL:HG13	1.89	0.54
1:C:59:ASP:OD1	1:C:65:LEU:HD11	2.06	0.54
1:A:3:GLN:N	1:A:4:PRO:HD2	2.23	0.54
1:A:340:SER:HB3	1:A:343:ARG:HG2	1.90	0.54
1:B:348:LEU:O	1:B:352:GLN:HG3	2.07	0.54
1:B:432:VAL:HG22	1:B:458:ALA:HB3	1.90	0.54
1:C:228:ARG:HB2	1:C:228:ARG:HH11	1.71	0.54
1:B:11:ARG:NH2	3:B:2226:HOH:O	2.40	0.54
1:B:279:ILE:HD13	1:B:334:LEU:HD11	1.89	0.54
1:B:7:THR:HB	1:B:8:PRO:HD2	1.89	0.54
1:C:327:HIS:CE1	1:C:330:MSE:HG3	2.44	0.53
1:A:19:ARG:NH2	1:A:54:ARG:HH22	2.06	0.53
1:B:449:ILE:HD12	1:B:449:ILE:N	2.23	0.53
1:C:420:THR:HB	3:C:3247:HOH:O	2.09	0.53
1:A:118:VAL:HG13	1:A:118:VAL:O	2.08	0.53
1:C:191:LEU:N	1:C:191:LEU:HD23	2.22	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:165:GLY:CA	1:B:197:VAL:HG13	2.39	0.53
1:B:174:SER:C	1:B:175:ILE:HD12	2.29	0.53
1:A:69:GLU:O	1:A:70:LEU:HD12	2.09	0.53
1:B:396:LEU:HD22	1:B:456:VAL:CG1	2.39	0.53
1:C:69:GLU:O	1:C:70:LEU:HD12	2.09	0.53
1:A:346:LEU:HB2	3:A:1356:HOH:O	2.09	0.52
1:C:364:LEU:H	1:C:364:LEU:HD22	1.74	0.52
1:A:158:LEU:HD23	1:A:342:MSE:CE	2.38	0.52
1:A:396:LEU:HD22	1:A:456:VAL:HG11	1.91	0.52
1:B:227:ARG:NH1	3:B:2138:HOH:O	2.42	0.52
1:B:334:LEU:HD23	1:B:334:LEU:N	2.25	0.52
1:C:133:LEU:H	1:C:133:LEU:CD1	2.20	0.52
1:C:449:ILE:HG13	1:C:456:VAL:CG1	2.39	0.52
1:C:184:ASN:ND2	3:C:3378:HOH:O	2.40	0.52
1:B:418:GLN:HE21	1:B:418:GLN:N	2.07	0.52
1:B:180:ASP:C	1:B:182:ASP:H	2.12	0.52
1:B:180:ASP:OD2	1:B:184:ASN:HB2	2.08	0.52
1:A:453:GLN:HG3	1:A:455:ARG:NH1	2.25	0.51
1:A:118:VAL:HG13	1:A:175:ILE:HB	1.93	0.51
1:A:151:ILE:N	1:A:151:ILE:HD12	2.25	0.51
1:C:95:GLU:HG3	3:C:3025:HOH:O	2.09	0.51
1:C:140:ARG:NH1	3:C:3325:HOH:O	2.43	0.51
1:A:361:ARG:HG3	1:A:361:ARG:HH11	1.76	0.51
1:B:300:VAL:HG23	1:B:311:ARG:HE	1.76	0.51
1:B:85:THR:C	3:B:2300:HOH:O	2.48	0.51
1:B:133:LEU:H	1:B:133:LEU:CD1	2.18	0.51
1:C:194:ARG:HG3	1:C:194:ARG:HH11	1.76	0.51
1:B:89:THR:HG22	1:B:103:ALA:HB1	1.93	0.51
1:B:453:GLN:NE2	3:B:2263:HOH:O	2.43	0.51
1:B:406:VAL:HG12	1:B:443:GLN:HG3	1.93	0.50
1:B:180:ASP:OD1	1:B:182:ASP:HB2	2.11	0.50
1:B:327:HIS:CE1	1:B:330:MSE:HG3	2.46	0.50
1:C:338:ALA:HB2	1:C:350:VAL:HG11	1.92	0.50
1:C:133:LEU:HD11	3:C:3119:HOH:O	2.11	0.50
1:A:117:TRP:HZ3	1:A:191:LEU:HD11	1.77	0.50
1:A:147:PRO:O	1:A:246:LYS:HD3	2.10	0.50
1:A:355:ARG:NH2	3:A:1020:HOH:O	2.45	0.50
1:B:129:PRO:O	1:B:130:ASP:CB	2.59	0.50
1:B:149:ARG:HD2	1:B:151:ILE:HD11	1.94	0.50
1:B:95:GLU:HG3	3:B:2101:HOH:O	2.12	0.50
1:B:405:ARG:HD3	1:B:407:TRP:CZ2	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:3:GLN:N	1:B:4:PRO:HD2	2.27	0.50
1:B:412:VAL:HG22	1:B:420:THR:O	2.12	0.50
1:A:52:GLU:O	1:A:393:HIS:HE1	1.95	0.50
1:A:191:LEU:HD13	1:A:193:THR:CG2	2.42	0.50
1:B:392:ARG:NH1	1:B:454:MSE:HB3	2.27	0.50
1:C:85:THR:O	1:C:196:LYS:HD2	2.11	0.50
1:A:449:ILE:HG13	1:A:456:VAL:CG1	2.42	0.49
1:C:145:TYR:HE1	3:C:3360:HOH:O	1.95	0.49
1:B:109:LEU:HB2	1:B:113:LEU:HB3	1.94	0.49
1:C:238:ILE:HD13	1:C:315:LEU:HD11	1.94	0.49
1:A:133:LEU:HD13	3:A:1019:HOH:O	2.12	0.49
1:A:158:LEU:HD23	1:A:342:MSE:HE2	1.94	0.49
1:C:85:THR:O	1:C:196:LYS:CD	2.61	0.49
1:A:460:SER:HB3	3:A:1184:HOH:O	2.12	0.49
1:B:82:LEU:HB2	3:B:2063:HOH:O	2.11	0.49
1:C:113:LEU:HD11	1:C:186:GLU:OE1	2.13	0.49
1:C:364:LEU:HD22	1:C:364:LEU:N	2.28	0.49
1:A:453:GLN:HG3	1:A:455:ARG:HH12	1.78	0.48
1:B:8:PRO:HD3	3:B:2226:HOH:O	2.12	0.48
1:B:69:GLU:O	1:B:70:LEU:HD12	2.12	0.48
1:C:359:ALA:HB3	1:C:361:ARG:HG3	1.95	0.48
1:A:191:LEU:HD13	1:A:193:THR:HG23	1.95	0.48
1:A:240:LEU:HB3	1:A:241:PRO:HD2	1.96	0.48
1:B:229:LEU:O	1:B:233:GLU:HG2	2.14	0.48
1:B:124:ALA:HB3	1:B:355:ARG:CD	2.38	0.48
1:B:311:ARG:O	1:B:315:LEU:HG	2.12	0.48
1:B:414:ARG:HG2	1:B:416:GLY:H	1.77	0.48
1:C:364:LEU:H	1:C:364:LEU:CD2	2.26	0.48
1:C:165:GLY:CA	1:C:197:VAL:HG13	2.43	0.48
1:C:361:ARG:HH11	1:C:361:ARG:HG2	1.78	0.48
1:A:26:ARG:NH1	3:A:1382:HOH:O	2.43	0.48
1:A:58:ALA:CB	1:A:65:LEU:HD21	2.43	0.48
1:A:393:HIS:HD2	3:A:1061:HOH:O	1.97	0.48
1:B:175:ILE:HD12	1:B:175:ILE:N	2.29	0.48
1:B:180:ASP:O	1:B:182:ASP:N	2.46	0.48
1:C:151:ILE:N	1:C:151:ILE:HD12	2.28	0.48
1:B:317:ARG:HG2	1:B:317:ARG:NH1	2.28	0.48
1:B:418:GLN:HB3	1:B:433:ASN:CG	2.33	0.48
1:A:355:ARG:CZ	3:A:1020:HOH:O	2.60	0.48
1:B:112:GLY:O	1:B:181:PRO:HD3	2.13	0.48
1:B:194:ARG:HG3	1:B:194:ARG:HH11	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:330:MSE:O	1:C:332:LEU:HD13	2.14	0.47
1:C:374:ALA:O	1:C:378:MSE:HG2	2.15	0.47
1:A:364:LEU:HB3	1:A:368:VAL:HG23	1.96	0.47
1:C:414:ARG:HH11	1:C:414:ARG:CB	2.25	0.47
1:B:396:LEU:HD22	1:B:456:VAL:HG11	1.96	0.47
1:B:75:PHE:O	1:B:77:PRO:HD3	2.14	0.47
1:B:367:LYS:C	1:B:367:LYS:HD2	2.34	0.47
1:C:422:LEU:O	1:C:424:PRO:HD3	2.15	0.47
1:A:7:THR:O	1:A:11:ARG:HG3	2.14	0.47
1:A:70:LEU:HD12	1:A:70:LEU:N	2.28	0.47
1:A:461:VAL:HG22	1:A:462:LEU:HG	1.97	0.47
1:B:418:GLN:N	1:B:418:GLN:NE2	2.63	0.47
1:C:125:ALA:CB	1:C:355:ARG:HH12	2.24	0.47
1:C:421:LEU:HD13	1:C:432:VAL:HB	1.97	0.47
1:A:158:LEU:HD23	1:A:158:LEU:C	2.34	0.47
1:C:58:ALA:CB	1:C:65:LEU:HD21	2.45	0.47
1:C:94:ASP:OD2	1:C:263:ARG:NH2	2.46	0.47
1:C:305:LEU:N	1:C:306:PRO:HD2	2.30	0.47
1:B:227:ARG:HG3	1:B:227:ARG:HH11	1.80	0.47
1:B:83:ASP:OD2	1:B:85:THR:HG22	2.15	0.47
1:B:240:LEU:HB3	1:B:241:PRO:CD	2.45	0.47
1:C:415:ARG:O	1:C:418:GLN:HB2	2.15	0.47
1:A:158:LEU:CD2	1:A:342:MSE:HE2	2.45	0.46
1:C:43:LEU:HD22	1:C:47:LEU:HG	1.97	0.46
1:C:271:THR:HG23	1:C:330:MSE:HE2	1.97	0.46
1:B:66:ASN:H	1:B:66:ASN:ND2	2.11	0.46
1:B:411:VAL:CG1	1:B:438:PRO:HA	2.46	0.46
1:C:181:PRO:HD2	3:C:3339:HOH:O	2.14	0.46
1:C:423:ILE:HD12	1:C:423:ILE:N	2.30	0.46
1:A:38:GLU:HG2	3:A:1332:HOH:O	2.14	0.46
1:B:373:ILE:CD1	3:B:2261:HOH:O	2.63	0.46
1:C:318:THR:HG23	3:C:3115:HOH:O	2.14	0.46
1:C:393:HIS:HD2	3:C:3125:HOH:O	1.97	0.46
1:B:17:LEU:HD23	1:B:28:LEU:HD12	1.97	0.46
1:B:292:THR:HG22	1:B:325:GLY:O	2.16	0.46
1:C:34:PRO:HG2	1:C:39:ALA:HB2	1.97	0.46
1:B:271:THR:HG23	1:B:330:MSE:HE2	1.97	0.46
1:B:380:ALA:HB1	1:B:384:ARG:HH12	1.80	0.46
1:C:228:ARG:HH11	1:C:228:ARG:CB	2.29	0.46
1:B:87:LEU:HB3	3:B:2303:HOH:O	2.14	0.46
1:B:275:TRP:O	1:B:279:ILE:HG12	2.15	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:98:GLN:HG2	1:A:98:GLN:O	2.16	0.45
1:C:25:SER:OG	1:C:28:LEU:HD13	2.15	0.45
1:C:196:LYS:HE3	3:C:3327:HOH:O	2.15	0.45
1:B:70:LEU:N	1:B:70:LEU:HD13	2.32	0.45
1:B:418:GLN:CA	1:B:433:ASN:HA	2.43	0.45
1:C:248:ASP:OD1	1:C:248:ASP:C	2.55	0.45
1:B:192:LEU:HD22	1:B:355:ARG:NH1	2.31	0.45
1:B:61:LEU:HD12	1:B:386:ALA:HB2	1.98	0.45
1:C:449:ILE:HA	1:C:456:VAL:HG12	1.98	0.45
1:B:158:LEU:C	1:B:158:LEU:HD23	2.36	0.45
1:B:343:ARG:NH2	3:B:2287:HOH:O	2.49	0.45
1:A:165:GLY:N	1:A:197:VAL:HG13	2.32	0.45
1:B:238:ILE:HD13	1:B:315:LEU:CD1	2.47	0.45
1:B:330:MSE:O	1:B:332:LEU:HD22	2.16	0.45
1:B:281:ALA:HB2	1:B:288:LEU:HD11	1.99	0.45
1:B:423:ILE:HD12	1:B:423:ILE:N	2.32	0.45
1:A:113:LEU:HD11	1:A:186:GLU:OE2	2.17	0.45
1:A:279:ILE:CD1	1:A:334:LEU:HD21	2.47	0.45
1:B:443:GLN:HB3	1:B:461:VAL:HG12	1.98	0.45
1:A:52:GLU:HG3	3:A:1200:HOH:O	2.17	0.44
1:B:406:VAL:CG1	1:B:443:GLN:HG3	2.46	0.44
1:C:353:GLN:NE2	1:C:353:GLN:HA	2.32	0.44
1:B:128:ALA:HB1	1:B:129:PRO:HD2	1.99	0.44
1:C:455:ARG:NE	3:C:3317:HOH:O	2.50	0.44
1:B:188:VAL:HG11	1:B:276:GLY:CA	2.48	0.44
1:C:346:LEU:HB2	3:C:3101:HOH:O	2.16	0.44
1:B:353:GLN:NE2	1:B:364:LEU:H	2.06	0.44
1:A:7:THR:OG1	1:A:10:GLN:HG3	2.18	0.44
1:A:62:ARG:HG3	1:A:62:ARG:HH11	1.82	0.44
1:A:95:GLU:HG3	3:A:1105:HOH:O	2.17	0.44
1:B:180:ASP:CB	1:B:181:PRO:HD2	2.25	0.44
1:C:165:GLY:N	1:C:197:VAL:HG13	2.33	0.44
1:A:228:ARG:HD3	3:A:1421:HOH:O	2.17	0.44
1:B:180:ASP:C	1:B:182:ASP:N	2.70	0.44
1:C:150:THR:HG21	3:C:3360:HOH:O	2.18	0.44
1:A:453:GLN:HB2	1:A:455:ARG:NH1	2.33	0.43
1:C:64:ALA:HB3	3:C:3325:HOH:O	2.18	0.43
1:B:157:GLU:HG3	3:B:2202:HOH:O	2.18	0.43
1:B:418:GLN:NE2	1:B:418:GLN:H	2.15	0.43
1:C:367:LYS:HD2	1:C:367:LYS:O	2.18	0.43
1:B:300:VAL:CG2	1:B:311:ARG:HE	2.31	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:298:ARG:HH11	1:C:298:ARG:HG3	1.83	0.43
1:A:72:VAL:HA	1:A:73:PRO:HD3	1.86	0.43
1:C:322:PRO:HB2	1:C:366:SER:HB2	2.00	0.43
1:B:430:VAL:HG21	1:B:458:ALA:CB	2.49	0.43
1:B:87:LEU:N	3:B:2300:HOH:O	2.52	0.43
1:B:421:LEU:HD12	1:B:421:LEU:N	2.34	0.43
1:C:223:ALA:HB1	1:C:227:ARG:HH12	1.84	0.43
1:C:334:LEU:N	1:C:334:LEU:HD23	2.34	0.43
1:B:81:ARG:HD3	1:B:193:THR:O	2.19	0.43
1:B:177:LEU:N	1:B:177:LEU:HD12	2.34	0.43
1:C:26:ARG:HG2	1:C:26:ARG:NH1	2.32	0.43
1:C:173:LEU:C	1:C:173:LEU:HD23	2.39	0.43
1:C:429:ASP:HB2	3:C:3247:HOH:O	2.19	0.43
1:A:455:ARG:HH11	1:A:455:ARG:HG2	1.83	0.42
1:C:52:GLU:O	1:C:393:HIS:HE1	2.02	0.42
1:C:69:GLU:C	1:C:70:LEU:CD1	2.85	0.42
1:B:79:GLU:OE2	1:B:192:LEU:HD13	2.19	0.42
1:A:118:VAL:HG23	3:A:1211:HOH:O	2.17	0.42
1:A:373:ILE:HD12	3:A:1315:HOH:O	2.18	0.42
1:C:146:LEU:HD12	1:C:149:ARG:NH1	2.35	0.42
1:A:294:ASP:CG	1:A:295:TYR:H	2.23	0.42
1:A:451:LEU:HB2	1:A:452:PRO:HD3	2.01	0.42
1:A:165:GLY:N	1:A:197:VAL:CG1	2.83	0.42
1:B:231:GLU:HA	1:B:235:ALA:HB3	2.01	0.42
1:B:346:LEU:HD13	3:B:2010:HOH:O	2.18	0.42
1:C:94:ASP:O	1:C:97:ASN:OD1	2.37	0.42
1:A:180:ASP:HB2	1:A:181:PRO:CD	2.49	0.42
1:C:293:GLN:CG	3:C:3394:HOH:O	2.67	0.42
1:C:443:GLN:O	1:C:460:SER:HA	2.19	0.42
1:A:422:LEU:O	1:A:424:PRO:HD3	2.20	0.42
1:C:286:ILE:HD11	1:C:357:PHE:CG	2.55	0.42
1:B:319:ARG:CB	1:B:319:ARG:HH11	2.32	0.42
1:C:31:LEU:O	1:C:32:LYS:HB2	2.19	0.42
1:B:322:PRO:HD3	3:B:2261:HOH:O	2.20	0.41
1:B:68:VAL:HG12	1:B:155:PRO:HG3	2.01	0.41
1:B:81:ARG:NH2	1:B:122:ASP:OD2	2.53	0.41
1:C:161:LYS:CB	1:C:161:LYS:NZ	2.82	0.41
1:A:423:ILE:N	1:A:423:ILE:HD12	2.35	0.41
1:B:414:ARG:NH1	1:B:414:ARG:HG3	2.34	0.41
1:C:19:ARG:NH1	3:C:3030:HOH:O	2.52	0.41
1:A:396:LEU:HD22	1:A:456:VAL:HG13	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:236:LEU:HD12	3:B:2234:HOH:O	2.20	0.41
1:B:330:MSE:CB	1:B:332:LEU:HD23	2.47	0.41
1:C:259:LYS:N	1:C:260:PRO:CD	2.83	0.41
1:A:294:ASP:CG	1:A:295:TYR:N	2.74	0.41
1:C:289:PRO:HB3	1:C:373:ILE:HD11	2.03	0.41
1:A:184:ASN:ND2	1:A:185:ALA:N	2.65	0.41
1:B:257:LEU:HA	1:B:258:PRO:HD3	1.95	0.41
1:C:158:LEU:C	1:C:158:LEU:HD23	2.41	0.41
1:A:202:TYR:CD1	1:A:263:ARG:HA	2.56	0.41
1:B:6:LEU:HD21	1:B:27:VAL:HG11	2.03	0.41
1:C:449:ILE:N	1:C:449:ILE:HD12	2.35	0.41
1:A:117:TRP:CZ3	1:A:191:LEU:HD11	2.56	0.41
1:A:343:ARG:NH1	3:A:1284:HOH:O	2.54	0.41
1:C:161:LYS:NZ	3:C:3399:HOH:O	2.47	0.41
1:C:206:GLN:O	1:C:210:GLU:HG3	2.21	0.41
1:A:24:LYS:HB2	1:A:24:LYS:HZ3	1.83	0.41
1:A:220:ALA:O	1:A:224:ARG:HG3	2.20	0.41
1:A:449:ILE:HD12	1:A:449:ILE:N	2.36	0.41
1:A:449:ILE:HA	1:A:456:VAL:HG12	2.03	0.41
1:B:191:LEU:N	1:B:191:LEU:CD2	2.81	0.40
1:C:355:ARG:HH11	1:C:355:ARG:HG3	1.87	0.40
1:A:143:THR:HG23	1:A:152:GLY:HA2	2.03	0.40
1:A:301:ALA:HB1	3:A:1411:HOH:O	2.19	0.40
1:C:6:LEU:HG	1:C:10:GLN:HB3	2.03	0.40
1:C:95:GLU:HG2	1:C:201:ALA:HB1	2.02	0.40
1:A:279:ILE:HD13	1:A:334:LEU:HD21	2.03	0.40
1:C:194:ARG:HG3	1:C:194:ARG:NH1	2.36	0.40
1:B:411:VAL:HG12	1:B:438:PRO:HA	2.03	0.40
1:C:117:TRP:CE3	1:C:176:CYS:HB3	2.57	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	459/469 (98%)	450 (98%)	9 (2%)	0	100	100
1	B	457/469 (97%)	441 (96%)	15 (3%)	1 (0%)	44	31
1	C	457/469 (97%)	450 (98%)	6 (1%)	1 (0%)	44	31
All	All	1373/1407 (98%)	1341 (98%)	30 (2%)	2 (0%)	48	34

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	239	ASP
1	B	181	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	371/369 (100%)	357 (96%)	14 (4%)	28	16
1	B	369/369 (100%)	359 (97%)	10 (3%)	40	28
1	C	369/369 (100%)	357 (97%)	12 (3%)	33	21
All	All	1109/1107 (100%)	1073 (97%)	36 (3%)	34	22

All (36) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	24	LYS
1	A	43	LEU
1	A	66	ASN
1	A	70	LEU
1	A	80	GLU
1	A	130	ASP
1	A	184	ASN
1	A	191	LEU
1	A	197	VAL
1	A	209	LEU
1	A	332	LEU

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Mol	Chain	Res	Type
1	A	347	ASP
1	A	404	GLU
1	A	434	THR
1	B	56	PRO
1	B	66	ASN
1	B	70	LEU
1	B	101	ASP
1	B	168	GLU
1	B	197	VAL
1	B	367	LYS
1	B	404	GLU
1	B	418	GLN
1	B	443	GLN
1	C	6	LEU
1	C	43	LEU
1	C	59	ASP
1	C	70	LEU
1	C	149	ARG
1	C	161	LYS
1	C	197	VAL
1	C	228	ARG
1	C	239	ASP
1	C	246	LYS
1	C	347	ASP
1	C	404	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	66	ASN
1	A	97	ASN
1	A	184	ASN
1	A	321	GLN
1	A	353	GLN
1	A	393	HIS
1	A	433	ASN
1	B	66	ASN
1	B	97	ASN
1	B	184	ASN
1	B	353	GLN
1	B	393	HIS
1	B	418	GLN

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Mol	Chain	Res	Type
1	B	431	GLN
1	C	66	ASN
1	C	97	ASN
1	C	98	GLN
1	C	184	ASN
1	C	353	GLN
1	C	393	HIS
1	C	443	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 oligosaccharides 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, 95^{th} 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	452/469 (96%)	0.25	23 (5%) 34 31	10, 24, 41, 58	0
1	B	450/469 (95%)	1.20	103 (22%) 2 2	15, 37, 59, 66	0
1	C	450/469 (95%)	0.70	61 (13%) 8 6	15, 30, 50, 59	0
All	All	1352/1407 (96%)	0.71	187 (13%) 8 6	10, 30, 53, 66	0

All (187) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	189	ASP	6.2
1	C	97	ASN	5.7
1	A	97	ASN	5.3
1	B	97	ASN	5.1
1	A	189	ASP	5.0
1	B	461	VAL	4.8
1	B	189	ASP	4.6
1	A	98	GLN	4.4
1	C	435	PRO	4.4
1	B	417	ALA	4.2
1	B	435	PRO	4.2
1	B	436	ALA	4.2
1	C	436	ALA	4.1
1	B	315	LEU	4.1
1	B	96	GLY	4.1
1	B	98	GLN	4.0
1	C	432	VAL	4.0
1	C	461	VAL	4.0
1	C	303	ASP	4.0
1	B	295	TYR	3.8
1	B	319	ARG	3.7
1	B	459	ARG	3.7
1	B	3	GLN	3.7

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Mol	Chain	Res	Type	RSRZ
1	B	169	VAL	3.7
1	A	4	PRO	3.6
1	B	437	ALA	3.5
1	B	458	ALA	3.5
1	C	96	GLY	3.5
1	A	184	ASN	3.5
1	B	307	ALA	3.5
1	C	98	GLN	3.5
1	C	441	ALA	3.3
1	B	418	GLN	3.3
1	C	359	ALA	3.3
1	C	368	VAL	3.3
1	C	358	LEU	3.3
1	C	325	GLY	3.3
1	B	416	GLY	3.2
1	B	357	PHE	3.2
1	B	240	LEU	3.2
1	A	30	ASP	3.2
1	B	300	VAL	3.2
1	B	368	VAL	3.2
1	B	432	VAL	3.2
1	B	303	ASP	3.2
1	C	437	ALA	3.2
1	B	442	LEU	3.1
1	A	7	THR	3.1
1	B	85	THR	3.1
1	C	85	THR	3.1
1	B	185	ALA	3.1
1	B	457	ARG	3.0
1	C	419	ALA	3.0
1	B	460	SER	3.0
1	B	236	LEU	3.0
1	B	239	ASP	3.0
1	B	450	ASP	3.0
1	C	360	GLY	3.0
1	B	181	PRO	2.9
1	A	28	LEU	2.9
1	B	294	ASP	2.9
1	B	440	THR	2.9
1	B	251	GLY	2.9
1	B	237	SER	2.9
1	B	441	ALA	2.9

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Mol	Chain	Res	Type	RSRZ
1	B	304	THR	2.9
1	B	95	GLU	2.9
1	C	366	SER	2.8
1	C	318	THR	2.8
1	C	314	THR	2.8
1	B	328	HIS	2.8
1	A	24	LYS	2.8
1	C	169	VAL	2.8
1	A	457	ARG	2.8
1	B	359	ALA	2.8
1	B	404	GLU	2.8
1	C	228	ARG	2.7
1	B	406	VAL	2.7
1	B	316	ALA	2.7
1	A	239	ASP	2.7
1	B	188	VAL	2.7
1	C	316	ALA	2.7
1	C	420	THR	2.7
1	C	455	ARG	2.7
1	B	275	TRP	2.7
1	B	400	ALA	2.7
1	B	433	ASN	2.7
1	C	443	GLN	2.7
1	C	460	SER	2.6
1	A	96	GLY	2.6
1	B	130	ASP	2.6
1	B	362	ASP	2.6
1	C	239	ASP	2.6
1	C	275	TRP	2.6
1	A	444	VAL	2.6
1	B	443	GLN	2.6
1	A	169	VAL	2.6
1	C	295	TYR	2.6
1	B	109	LEU	2.6
1	A	420	THR	2.6
1	B	430	VAL	2.5
1	B	438	PRO	2.5
1	C	364	LEU	2.5
1	B	419	ALA	2.5
1	B	323	SER	2.5
1	B	431	GLN	2.5
1	C	431	GLN	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	256	PRO	2.5
1	B	149	ARG	2.5
1	B	282	ASP	2.5
1	B	358	LEU	2.5
1	B	318	THR	2.5
1	B	329	GLY	2.4
1	A	31	LEU	2.4
1	B	422	LEU	2.4
1	C	434	THR	2.4
1	C	442	LEU	2.4
1	B	367	LYS	2.4
1	B	82	LEU	2.4
1	B	238	ILE	2.4
1	B	343	ARG	2.4
1	C	187	ALA	2.4
1	B	365	SER	2.4
1	C	365	SER	2.4
1	B	30	ASP	2.4
1	A	461	VAL	2.4
1	C	112	GLY	2.4
1	C	184	ASN	2.3
1	B	285	GLU	2.3
1	C	404	GLU	2.3
1	B	444	VAL	2.3
1	C	130	ASP	2.3
1	B	48	GLY	2.3
1	B	310	ALA	2.2
1	C	26	ARG	2.2
1	C	361	ARG	2.2
1	B	77	PRO	2.2
1	C	433	ASN	2.2
1	C	246	LYS	2.2
1	B	168	GLU	2.2
1	B	407	TRP	2.2
1	B	23	ASP	2.2
1	B	178	ASP	2.2
1	B	448	ASP	2.2
1	C	294	ASP	2.2
1	B	355	ARG	2.2
1	C	319	ARG	2.2
1	B	334	LEU	2.2
1	C	315	LEU	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	417	ALA	2.2
1	C	181	PRO	2.2
1	A	3	GLN	2.2
1	A	227	ARG	2.2
1	C	323	SER	2.2
1	B	113	LEU	2.2
1	B	279	ILE	2.2
1	A	361	ARG	2.2
1	C	81	ARG	2.2
1	C	459	ARG	2.2
1	C	444	VAL	2.2
1	A	32	LYS	2.2
1	B	331	GLY	2.2
1	A	47	LEU	2.2
1	B	6	LEU	2.2
1	B	409	ALA	2.2
1	C	3	GLN	2.2
1	B	289	PRO	2.2
1	C	457	ARG	2.2
1	C	304	THR	2.1
1	B	183	GLY	2.1
1	B	401	ALA	2.1
1	B	324	PRO	2.1
1	B	363	PRO	2.1
1	C	238	ILE	2.1
1	B	81	ARG	2.1
1	B	320	PHE	2.1
1	B	314	THR	2.1
1	A	435	PRO	2.1
1	B	227	ARG	2.1
1	B	317	ARG	2.1
1	C	362	ASP	2.0
1	B	411	VAL	2.0
1	C	357	PHE	2.0
1	C	418	GLN	2.0
1	B	184	ASN	2.0
1	B	414	ARG	2.0
1	B	252	ALA	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} 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	MG	B	2000	1/1	0.96	0.07	19,19,19,19	0
2	MG	C	3000	1/1	0.96	0.05	20,20,20,20	0
2	MG	A	1000	1/1	0.97	0.05	20,20,20,20	0

6.5 Other polymers (i)

There are no such residues in this entry.