Full wwPDB X-ray Structure Validation Report (i)

Feb 5, 2024 – 08:41 PM EST

PDB ID	:	1YIA
Title	:	Crystal structure of tryptophanyl tRNA synthetase II from Deinococcus radiodurans in complex with 5-Hydroxy tryptophan.
Authors	:	Buddha, M.R.; Crane, B.R.
Deposited on	:	2005-01-11
Resolution	:	3.70 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:

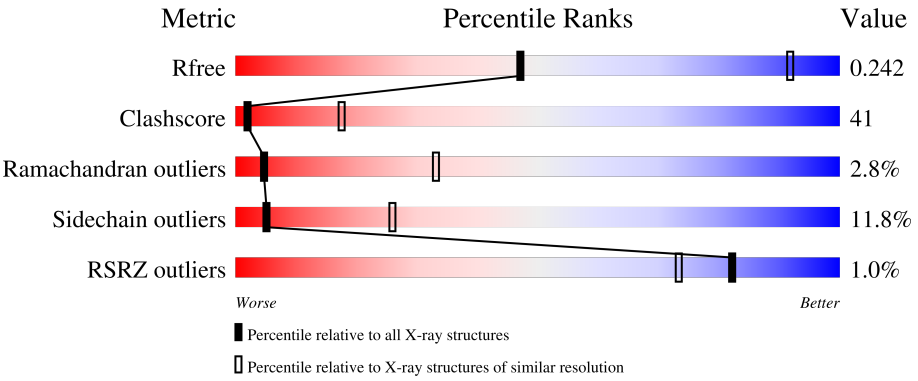
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 3.70 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	1049 (3.88-3.52)
Clashscore	141614	1027 (3.86-3.54)
Ramachandran outliers	138981	1069 (3.88-3.52)
Sidechain outliers	138945	1065 (3.88-3.52)
RSRZ outliers	127900	1578 (3.90-3.50)

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	351	2% 32% 52% 10% 6%
1	B	351	% 47% 41% 6% 6%
1	C	351	53% 35% 6% • 6%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	HRP	B	1154	-	-	X	-

2 Entry composition

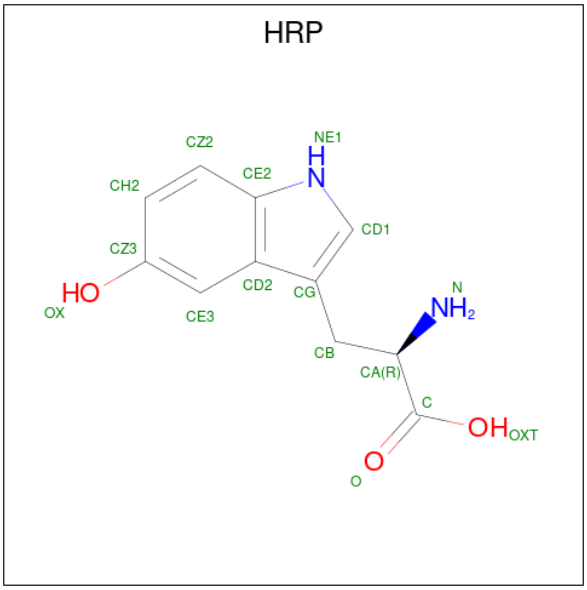
There are 2 unique types of molecules in this entry. The entry contains 7603 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 tryptophanyl-tRNA synthetase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	331	Total	C	N	O	S	2	0	0
			2544	1599	468	471	6			
1	A	331	Total	C	N	O	S	0	0	0
			2511	1581	457	467	6			
1	C	331	Total	C	N	O	S	0	0	0
			2532	1593	462	471	6			

- Molecule 2 is 5-HYDROXY-L-TRYPTOPHAN (three-letter code: HRP) (formula: $C_{11}H_{12}N_2O_3$).



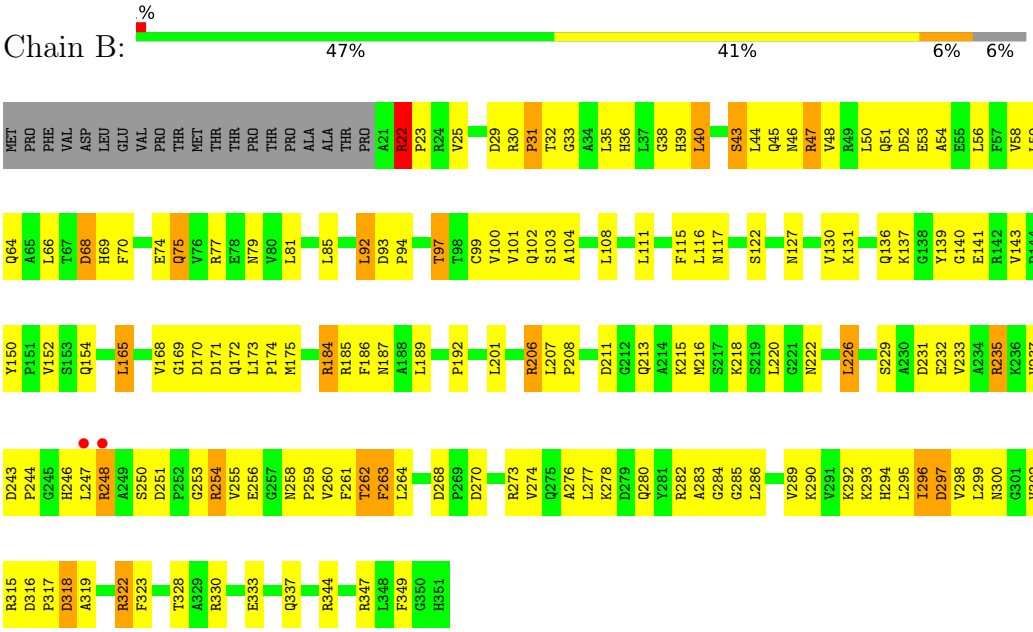
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total	C	N	O	0	0
			16	11	2	3		

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.

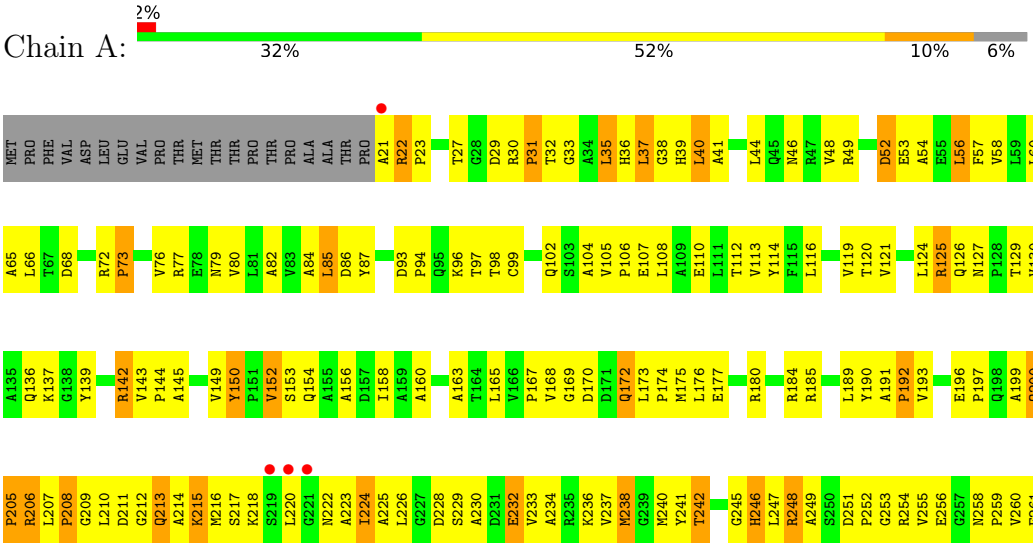
• Molecule 1: tryptophanyl-tRNA synthetase

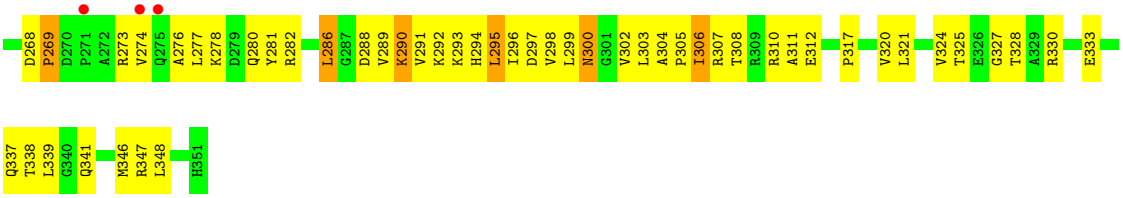
Chain B:



• Molecule 1: tryptophanyl-tRNA synthetase

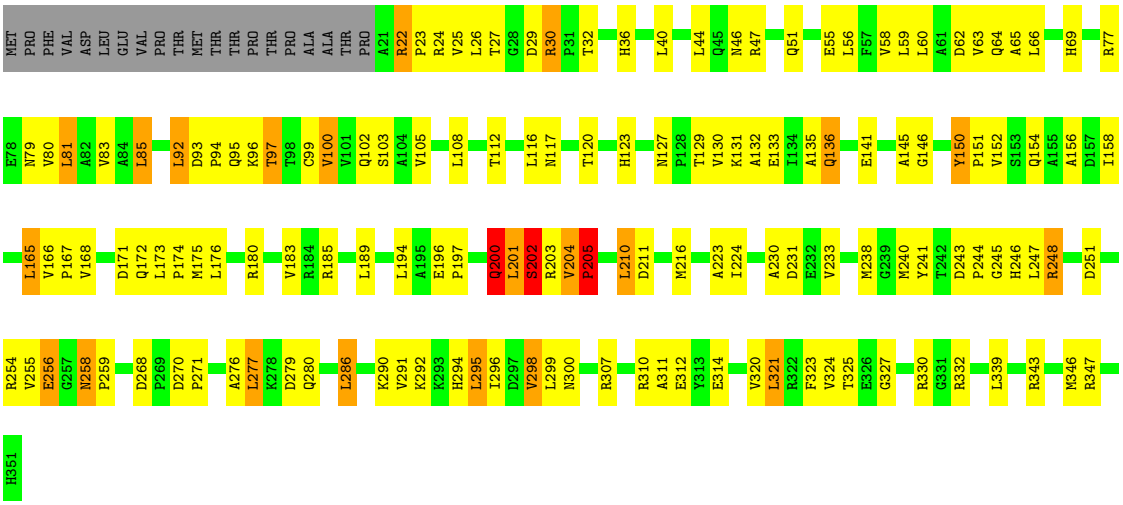
Chain A:





• Molecule 1: tryptophanyl-tRNA synthetase

Chain C:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	212.20Å 58.40Å 86.80Å 90.00° 96.50° 90.00°	Depositor
Resolution (Å)	30.00 – 3.70 105.42 – 3.73	Depositor EDS
% Data completeness (in resolution range)	(Not available) (30.00-3.70) 80.4 (105.42-3.73)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	6.42 (at 3.78Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.280 , 0.290 0.247 , 0.242	Depositor DCC
R_{free} test set	439 reflections (3.89%)	wwPDB-VP
Wilson B-factor (Å^2)	74.3	Xtriage
Anisotropy	0.748	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.26 , 64.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.89	EDS
Total number of atoms	7603	wwPDB-VP
Average B, all atoms (Å^2)	78.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.85% 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: HRP

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	A	0.68	0/2558	0.81	0/3478
1	B	0.65	0/2591	0.80	0/3519
1	C	0.68	0/2579	0.82	1/3505 (0.0%)
All	All	0.67	0/7728	0.81	1/10502 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	200	GLN	N-CA-C	-5.15	97.09	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	2511	0	2507	274	0
1	B	2544	0	2568	190	0
1	C	2532	0	2546	164	0
2	B	16	0	9	14	0
All	All	7603	0	7630	622	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 41.

All (622) 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:238:MET:CE	1:C:238:MET:SD	2.04	1.43
2:B:1154:HRP:HE3	2:B:1154:HRP:N	1.52	1.24
1:B:51:GLN:HE21	1:B:97:THR:HG22	1.09	1.16
1:A:168:VAL:HG23	1:A:172:GLN:HB2	1.15	1.12
1:A:35:LEU:HD11	1:A:86:ASP:HB3	1.38	1.03
2:B:1154:HRP:HE3	2:B:1154:HRP:H	1.10	1.02
1:B:47:ARG:HA	1:B:50:LEU:HG	1.39	1.02
1:B:280:GLN:HB2	1:B:286:LEU:HD12	1.44	1.00
1:C:204:VAL:HG12	1:C:205:PRO:HD2	1.43	1.00
1:A:226:LEU:HB3	1:A:306:ILE:HD11	1.43	0.99
1:C:51:GLN:HE22	1:C:93:ASP:H	1.07	0.99
1:B:154:GLN:HG2	2:B:1154:HRP:NE1	1.79	0.98
1:C:216:MET:HE3	1:C:224:ILE:H	1.27	0.97
2:B:1154:HRP:H	2:B:1154:HRP:CE3	1.78	0.96
1:C:120:THR:HG23	1:C:123:HIS:H	1.31	0.95
2:B:1154:HRP:N	2:B:1154:HRP:CE3	2.29	0.95
1:A:207:LEU:HD12	1:A:208:PRO:HD2	1.49	0.94
1:B:154:GLN:CG	2:B:1154:HRP:NE1	2.30	0.94
1:A:73:PRO:O	1:A:76:VAL:HG12	1.67	0.94
1:B:254:ARG:HD3	1:B:256:GLU:HG2	1.49	0.93
1:C:254:ARG:HD3	1:C:256:GLU:HG2	1.49	0.93
1:A:288:ASP:HA	1:A:291:VAL:HG12	1.48	0.91
1:B:51:GLN:NE2	1:B:97:THR:HG22	1.86	0.91
1:C:180:ARG:HG3	1:C:180:ARG:HH11	1.36	0.91
1:B:51:GLN:HE22	1:B:93:ASP:H	0.94	0.90
1:A:207:LEU:HD23	1:A:216:MET:HE1	1.51	0.90
1:B:154:GLN:NE2	1:B:175:MET:HE1	1.87	0.89
1:B:51:GLN:HE22	1:B:93:ASP:N	1.72	0.88
1:B:295:LEU:O	1:B:298:VAL:HG12	1.72	0.88
1:B:154:GLN:HG2	2:B:1154:HRP:HE1	1.34	0.87
1:C:311:ALA:HA	1:C:314:GLU:HG3	1.56	0.87
1:A:35:LEU:CD1	1:A:86:ASP:HB3	2.05	0.86
1:A:193:VAL:HG21	1:A:341:GLN:HB3	1.56	0.86
1:C:93:ASP:HB3	1:C:96:LYS:HB2	1.57	0.85
1:A:127:ASN:HB3	1:A:130:VAL:HG12	1.58	0.85
1:B:68:ASP:HB3	1:B:69:HIS:HD2	1.41	0.84
1:A:30:ARG:HH22	1:A:68:ASP:HB3	1.43	0.82
1:B:154:GLN:NE2	2:B:1154:HRP:CE2	2.43	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:92:LEU:HG	1:C:97:THR:HG21	1.62	0.82
1:B:154:GLN:HE21	2:B:1154:HRP:CE2	1.93	0.82
1:B:168:VAL:HG23	1:B:172:GLN:HB2	1.63	0.81
1:C:51:GLN:HE21	1:C:97:THR:HG22	1.44	0.81
1:A:207:LEU:CD1	1:A:208:PRO:HD2	2.09	0.81
1:A:254:ARG:HB2	1:A:256:GLU:OE1	1.82	0.80
1:C:77:ARG:O	1:C:80:VAL:HG12	1.82	0.80
1:A:303:LEU:O	1:A:307:ARG:HB2	1.81	0.80
1:A:60:LEU:O	1:A:62:ASP:N	2.15	0.79
1:B:154:GLN:NE2	1:B:175:MET:CE	2.45	0.79
1:A:85:LEU:HD13	1:A:310:ARG:NH2	1.98	0.78
1:A:168:VAL:CG2	1:A:172:GLN:HB2	2.05	0.78
1:C:216:MET:HE2	1:C:223:ALA:HB1	1.65	0.78
1:A:218:LYS:HA	1:A:218:LYS:HE2	1.63	0.78
1:C:233:VAL:HG21	1:C:307:ARG:HH21	1.47	0.78
1:A:27:THR:O	1:A:58:VAL:HA	1.82	0.78
1:A:127:ASN:HB3	1:A:130:VAL:CG1	2.13	0.78
1:A:288:ASP:CA	1:A:291:VAL:HG12	2.14	0.78
1:B:146:GLY:HA3	1:C:117:ASN:ND2	1.99	0.78
1:B:68:ASP:OD1	1:B:137:LYS:HE2	1.82	0.78
1:B:36:HIS:HD2	1:B:38:GLY:H	1.33	0.77
1:A:273:ARG:O	1:A:276:ALA:HB3	1.85	0.77
1:A:288:ASP:HA	1:A:291:VAL:CG1	2.14	0.77
1:B:316:ASP:OD2	1:B:319:ALA:HB2	1.85	0.76
1:A:254:ARG:HH11	1:A:256:GLU:HB2	1.48	0.76
1:B:44:LEU:O	1:B:48:VAL:HG23	1.85	0.76
1:B:50:LEU:HD11	1:B:56:LEU:HD13	1.68	0.75
1:B:277:LEU:HD12	1:B:286:LEU:HD11	1.68	0.75
1:A:168:VAL:HG22	1:A:169:GLY:O	1.86	0.75
1:A:40:LEU:HA	1:A:44:LEU:HB3	1.68	0.75
1:A:260:VAL:HG13	1:A:295:LEU:CD2	2.16	0.75
1:A:269:PRO:HD2	1:A:273:ARG:NH1	2.02	0.74
1:A:169:GLY:H	1:A:172:GLN:HG3	1.53	0.74
1:B:51:GLN:HE21	1:B:97:THR:CG2	1.95	0.74
1:A:173:LEU:N	1:A:174:PRO:HD2	2.03	0.74
1:C:290:LYS:HE2	1:C:290:LYS:HA	1.70	0.74
1:A:260:VAL:HG13	1:A:295:LEU:HD22	1.69	0.73
1:C:201:LEU:HD23	1:C:202:SER:H	1.52	0.73
1:C:22:ARG:HB2	1:C:23:PRO:CD	2.17	0.73
1:A:168:VAL:HG11	1:A:199:ALA:HB1	1.70	0.73
1:B:68:ASP:HB3	1:B:69:HIS:CD2	2.24	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:254:ARG:CD	1:C:256:GLU:HG2	2.18	0.72
1:C:56:LEU:HD12	1:C:97:THR:HB	1.72	0.72
1:B:349:PHE:CD2	1:C:80:VAL:HG11	2.24	0.72
1:B:154:GLN:HG3	2:B:1154:HRP:CD1	2.21	0.71
1:A:125:ARG:HG3	1:A:125:ARG:HH21	1.53	0.71
1:A:259:PRO:HA	1:A:262:THR:CG2	2.20	0.71
1:C:51:GLN:NE2	1:C:97:THR:HG22	2.06	0.70
1:C:40:LEU:HA	1:C:44:LEU:HD12	1.74	0.70
1:A:112:THR:HG22	1:A:153:SER:HA	1.72	0.70
1:C:26:LEU:HD23	1:C:158:ILE:HD13	1.74	0.69
1:B:273:ARG:NH2	1:B:294:HIS:NE2	2.40	0.69
1:B:51:GLN:NE2	1:B:93:ASP:H	1.79	0.69
1:A:52:ASP:HB3	1:A:96:LYS:NZ	2.08	0.68
1:B:207:LEU:HD12	1:B:208:PRO:HD2	1.75	0.68
1:A:112:THR:O	1:A:116:LEU:HG	1.92	0.68
1:C:22:ARG:HB2	1:C:23:PRO:HD3	1.75	0.68
1:B:255:VAL:HG21	1:B:278:LYS:HG3	1.76	0.68
1:A:248:ARG:HD3	1:A:248:ARG:N	2.09	0.68
1:A:110:GLU:O	1:A:113:VAL:HG12	1.93	0.68
1:A:208:PRO:HG3	1:A:262:THR:HG23	1.76	0.67
1:B:33:GLY:HA2	1:B:79:ASN:OD1	1.94	0.67
1:A:98:THR:CG2	1:A:330:ARG:HD2	2.25	0.67
1:B:22:ARG:CG	1:B:23:PRO:HD3	2.25	0.67
1:A:333:GLU:O	1:A:337:GLN:HG2	1.94	0.67
1:A:184:ARG:HD2	1:A:196:GLU:OE1	1.93	0.67
1:A:216:MET:HG3	1:A:223:ALA:HA	1.76	0.67
1:A:139:TYR:CD2	1:A:143:VAL:HG13	2.30	0.67
1:A:296:ILE:HG13	1:A:297:ASP:N	2.10	0.67
1:C:180:ARG:HG3	1:C:180:ARG:NH1	2.08	0.67
1:C:166:VAL:HG21	1:C:176:LEU:HD23	1.77	0.67
1:B:40:LEU:HD23	1:B:226:LEU:HD21	1.76	0.67
1:A:180:ARG:HG2	1:A:196:GLU:HG2	1.77	0.67
1:C:127:ASN:OD1	1:C:129:THR:HG22	1.95	0.67
1:B:154:GLN:CG	2:B:1154:HRP:CD1	2.72	0.66
1:B:259:PRO:HA	1:B:262:THR:CG2	2.26	0.66
1:A:85:LEU:HD13	1:A:310:ARG:HH22	1.57	0.66
1:A:139:TYR:O	1:A:142:ARG:HG3	1.96	0.66
1:A:226:LEU:HD23	1:A:306:ILE:CD1	2.25	0.66
1:A:229:SER:OG	1:A:232:GLU:HB2	1.95	0.66
1:A:98:THR:OG1	1:A:330:ARG:NH1	2.29	0.66
1:A:305:PRO:HG2	1:A:306:ILE:H	1.60	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:317:PRO:O	1:A:320:VAL:HG12	1.96	0.65
1:B:146:GLY:HA3	1:C:117:ASN:HD22	1.60	0.65
1:B:22:ARG:HH21	1:B:53:GLU:HG3	1.60	0.65
1:A:202:SER:OG	1:A:205:PRO:HB3	1.97	0.65
1:C:171:ASP:HB2	1:C:172:GLN:NE2	2.10	0.65
1:B:22:ARG:CB	1:B:23:PRO:HD3	2.26	0.65
1:B:145:ALA:HB3	1:C:116:LEU:O	1.95	0.65
1:A:160:ALA:HA	1:A:338:THR:HG21	1.78	0.65
1:A:226:LEU:HD12	1:A:226:LEU:H	1.60	0.65
1:A:63:VAL:HG13	1:A:102:GLN:HG2	1.78	0.65
1:B:154:GLN:HE21	2:B:1154:HRP:CZ2	2.09	0.65
1:B:268:ASP:OD2	1:B:274:VAL:HG23	1.95	0.65
1:C:175:MET:SD	1:C:175:MET:C	2.75	0.65
1:C:56:LEU:HD11	1:C:58:VAL:HG13	1.78	0.65
1:A:36:HIS:H	1:A:39:HIS:HD2	1.44	0.65
1:A:242:THR:HB	1:A:258:ASN:HD21	1.62	0.64
1:A:304:ALA:N	1:A:305:PRO:HD2	2.13	0.64
1:B:36:HIS:CE1	1:B:39:HIS:CE1	2.86	0.64
1:A:175:MET:SD	1:A:176:LEU:N	2.71	0.64
1:A:254:ARG:HD2	1:A:256:GLU:HB2	1.80	0.64
1:C:180:ARG:HD3	1:C:197:PRO:O	1.97	0.64
1:A:230:ALA:HB1	1:A:300:ASN:HD21	1.61	0.64
1:A:294:HIS:HA	1:A:297:ASP:OD2	1.98	0.64
1:B:40:LEU:HA	1:B:44:LEU:HB2	1.80	0.63
1:A:265:ASP:HB3	1:A:274:VAL:HG11	1.81	0.63
1:C:183:VAL:HG13	1:C:194:LEU:HB2	1.80	0.63
1:A:30:ARG:O	1:A:32:THR:N	2.32	0.63
1:B:43:SER:O	1:B:46:ASN:N	2.32	0.63
1:A:277:LEU:HD12	1:A:286:LEU:HD11	1.81	0.63
1:B:254:ARG:CD	1:B:256:GLU:HG2	2.26	0.63
1:A:30:ARG:HH22	1:A:68:ASP:CB	2.12	0.63
1:C:166:VAL:HG23	1:C:166:VAL:O	1.99	0.63
1:C:204:VAL:O	1:C:205:PRO:O	2.17	0.63
1:B:322:ARG:HG2	1:B:322:ARG:HH21	1.64	0.62
1:C:171:ASP:HB2	1:C:172:GLN:HE22	1.62	0.62
1:C:59:LEU:HD12	1:C:100:VAL:HG22	1.80	0.62
1:C:254:ARG:CG	1:C:256:GLU:HG2	2.29	0.62
1:B:184:ARG:HG2	1:B:184:ARG:HH21	1.64	0.62
1:C:258:ASN:C	1:C:258:ASN:HD22	2.02	0.62
1:B:173:LEU:N	1:B:174:PRO:HD2	2.14	0.62
1:B:237:VAL:HG13	1:B:240:MET:HE2	1.81	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:232:GLU:O	1:A:236:LYS:HB2	1.99	0.62
1:A:176:LEU:O	1:A:176:LEU:HD13	1.99	0.62
1:A:255:VAL:HG22	1:A:261:PHE:CE1	2.33	0.62
1:A:133:GLU:O	1:A:137:LYS:HG3	2.00	0.62
1:A:208:PRO:HG2	1:A:263:PHE:CE2	2.35	0.62
1:A:229:SER:O	1:A:233:VAL:HG23	2.00	0.61
1:A:105:VAL:HG13	1:A:105:VAL:O	2.00	0.61
1:B:255:VAL:HG22	1:B:261:PHE:CE2	2.34	0.61
1:A:158:ILE:HG23	1:A:163:ALA:HB3	1.82	0.61
1:A:293:LYS:O	1:A:296:ILE:HG12	2.00	0.61
1:B:175:MET:SD	1:B:175:MET:C	2.78	0.61
1:A:33:GLY:HA2	1:A:79:ASN:ND2	2.15	0.61
1:A:273:ARG:O	1:A:277:LEU:HD23	2.00	0.61
1:C:51:GLN:HE22	1:C:93:ASP:N	1.89	0.61
1:A:79:ASN:HA	1:A:82:ALA:HB3	1.82	0.61
1:B:247:LEU:HB2	1:B:248:ARG:HH21	1.66	0.60
1:A:288:ASP:O	1:A:291:VAL:HG12	2.00	0.60
1:A:125:ARG:HG3	1:A:125:ARG:NH2	2.17	0.60
1:C:230:ALA:HB1	1:C:300:ASN:HD21	1.65	0.60
1:C:254:ARG:HD3	1:C:256:GLU:CG	2.27	0.60
1:A:259:PRO:HA	1:A:262:THR:HG22	1.82	0.60
1:C:51:GLN:NE2	1:C:93:ASP:H	1.89	0.60
1:B:255:VAL:HG13	1:B:261:PHE:CD2	2.36	0.60
1:A:149:VAL:O	1:A:149:VAL:HG12	2.01	0.60
1:A:241:TYR:O	1:A:259:PRO:HD2	2.00	0.60
1:A:254:ARG:HH11	1:A:256:GLU:CB	2.13	0.60
1:A:260:VAL:O	1:A:264:LEU:HB2	2.00	0.60
1:A:201:LEU:CD2	1:A:202:SER:H	2.14	0.60
1:A:201:LEU:HD23	1:A:202:SER:H	1.66	0.60
1:B:36:HIS:CD2	1:B:38:GLY:H	2.17	0.60
1:B:296:ILE:HD12	1:B:300:ASN:ND2	2.17	0.59
1:C:108:LEU:O	1:C:112:THR:HG23	2.02	0.59
1:A:56:LEU:HD22	1:A:57:PHE:N	2.17	0.59
1:A:142:ARG:O	1:A:142:ARG:HD3	2.02	0.59
1:C:294:HIS:O	1:C:298:VAL:HG12	2.03	0.59
1:A:168:VAL:CG1	1:A:199:ALA:HB1	2.33	0.59
1:A:261:PHE:CE1	1:A:278:LYS:HG2	2.37	0.59
1:B:248:ARG:H	1:B:248:ARG:HD3	1.68	0.59
1:A:32:THR:HG22	1:A:32:THR:O	2.03	0.59
1:A:173:LEU:O	1:A:177:GLU:HB2	2.02	0.59
1:B:240:MET:HE3	1:B:260:VAL:HG12	1.84	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:293:LYS:O	1:B:296:ILE:HG23	2.02	0.58
1:A:321:LEU:O	1:A:325:THR:HG23	2.02	0.58
1:C:311:ALA:CA	1:C:314:GLU:HG3	2.31	0.58
1:A:290:LYS:HE2	1:A:290:LYS:N	2.18	0.58
1:C:40:LEU:HA	1:C:44:LEU:HB2	1.85	0.58
1:A:76:VAL:HG13	1:A:77:ARG:N	2.19	0.58
1:A:253:GLY:O	1:A:282:ARG:HA	2.02	0.58
1:C:56:LEU:CD1	1:C:58:VAL:HG13	2.33	0.58
1:B:254:ARG:HH11	1:B:256:GLU:CG	2.17	0.58
1:B:51:GLN:NE2	1:B:97:THR:CG2	2.59	0.58
1:A:175:MET:SD	1:A:175:MET:C	2.81	0.58
1:C:36:HIS:HB2	1:C:216:MET:CE	2.34	0.58
1:C:65:ALA:O	1:C:69:HIS:HB2	2.04	0.58
1:B:248:ARG:HD3	1:B:248:ARG:N	2.18	0.58
1:A:33:GLY:HA2	1:A:79:ASN:CG	2.24	0.58
1:B:22:ARG:HH21	1:B:53:GLU:CG	2.17	0.57
1:A:44:LEU:O	1:A:48:VAL:HG23	2.04	0.57
1:A:259:PRO:O	1:A:263:PHE:HB2	2.03	0.57
1:C:168:VAL:CG2	1:C:172:GLN:HB2	2.33	0.57
1:A:116:LEU:HD23	1:A:152:VAL:HG21	1.86	0.57
1:A:180:ARG:O	1:A:184:ARG:HD3	2.05	0.57
1:C:95:GLN:HA	1:C:95:GLN:NE2	2.20	0.57
1:B:296:ILE:CD1	1:B:300:ASN:ND2	2.68	0.57
1:B:60:LEU:O	1:B:62:ASP:N	2.36	0.56
1:A:220:LEU:C	1:A:222:ASN:H	2.08	0.56
1:A:295:LEU:O	1:A:299:LEU:HG	2.05	0.56
1:A:225:ALA:N	1:A:228:ASP:OD2	2.37	0.56
1:A:288:ASP:C	1:A:291:VAL:HG12	2.25	0.56
1:C:310:ARG:O	1:C:314:GLU:HG2	2.05	0.56
1:B:101:VAL:HG13	1:B:101:VAL:O	2.04	0.56
1:C:60:LEU:HD22	1:C:83:VAL:HG21	1.87	0.56
1:B:229:SER:O	1:B:233:VAL:HG12	2.06	0.56
1:B:296:ILE:HG13	1:B:297:ASP:N	2.20	0.56
1:C:112:THR:HG22	1:C:156:ALA:CB	2.35	0.56
1:A:136:GLN:O	1:A:136:GLN:HG3	2.05	0.56
1:B:53:GLU:OE1	1:B:53:GLU:HA	2.06	0.56
1:A:149:VAL:O	1:A:152:VAL:HG13	2.06	0.56
1:A:216:MET:CG	1:A:223:ALA:HA	2.36	0.56
1:C:64:GLN:H	1:C:102:GLN:HE22	1.54	0.56
1:A:130:VAL:O	1:A:134:ILE:HG13	2.05	0.55
1:C:201:LEU:HD23	1:C:202:SER:N	2.21	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:137:LYS:HD3	1:B:139:TYR:CE2	2.42	0.55
1:B:206:ARG:NH1	1:B:215:LYS:HE2	2.21	0.55
1:C:166:VAL:HG21	1:C:176:LEU:CD2	2.36	0.55
1:B:240:MET:CE	1:B:260:VAL:HG12	2.37	0.55
1:A:277:LEU:HA	1:A:280:GLN:NE2	2.22	0.55
1:B:22:ARG:HB2	1:B:23:PRO:HD3	1.88	0.55
1:C:339:LEU:O	1:C:343:ARG:HG3	2.06	0.55
1:A:41:ALA:CB	1:A:207:LEU:HD22	2.37	0.55
1:A:185:ARG:HD2	1:A:189:LEU:HD22	1.89	0.55
1:C:51:GLN:NE2	1:C:97:THR:CG2	2.69	0.55
1:A:58:VAL:HG13	1:A:58:VAL:O	2.05	0.55
1:B:66:LEU:C	1:B:68:ASP:H	2.09	0.54
1:C:233:VAL:HG21	1:C:307:ARG:NH2	2.20	0.54
1:B:233:VAL:O	1:B:237:VAL:HG23	2.07	0.54
1:A:41:ALA:HB2	1:A:207:LEU:HD22	1.89	0.54
1:A:110:GLU:HG2	1:A:114:TYR:CE1	2.42	0.54
1:C:286:LEU:HD12	1:C:291:VAL:HG23	1.89	0.54
1:B:237:VAL:HG13	1:B:240:MET:CE	2.37	0.54
1:B:270:ASP:O	1:B:273:ARG:HB3	2.08	0.54
1:A:193:VAL:HG21	1:A:341:GLN:CB	2.31	0.54
1:A:232:GLU:HA	1:A:232:GLU:OE1	2.07	0.54
1:C:254:ARG:HD2	1:C:256:GLU:O	2.08	0.54
1:A:23:PRO:O	1:A:54:ALA:HB1	2.08	0.54
1:A:56:LEU:HD13	1:A:97:THR:HG23	1.89	0.54
1:A:107:GLU:HB3	1:A:339:LEU:HG	1.89	0.54
1:A:207:LEU:CG	1:A:208:PRO:HD2	2.37	0.54
1:A:237:VAL:O	1:A:240:MET:N	2.34	0.54
1:B:277:LEU:CD1	1:B:286:LEU:HD11	2.38	0.53
1:B:330:ARG:O	1:B:333:GLU:HB3	2.08	0.53
1:C:127:ASN:OD1	1:C:129:THR:CG2	2.56	0.53
1:B:99:CYS:HB2	1:B:323:PHE:CZ	2.44	0.53
1:B:25:VAL:HG22	1:B:165:LEU:HB3	1.90	0.53
1:C:40:LEU:CA	1:C:44:LEU:HD12	2.38	0.53
1:B:168:VAL:HG22	1:B:169:GLY:O	2.08	0.53
1:A:220:LEU:C	1:A:222:ASN:N	2.61	0.53
1:C:180:ARG:HD2	1:C:196:GLU:HG3	1.91	0.53
1:A:98:THR:OG1	1:A:330:ARG:HD2	2.09	0.53
1:C:295:LEU:CD2	1:C:299:LEU:HG	2.38	0.53
1:C:346:MET:O	1:C:347:ARG:HB2	2.08	0.53
1:A:52:ASP:HB3	1:A:96:LYS:HZ3	1.74	0.53
1:C:105:VAL:O	1:C:105:VAL:HG13	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:117:ASN:ND2	1:C:146:GLY:HA3	2.24	0.52
1:B:263:PHE:HB3	1:B:295:LEU:HD11	1.91	0.52
1:B:64:GLN:H	1:B:102:GLN:HE22	1.58	0.52
1:C:211:ASP:OD1	1:C:211:ASP:O	2.27	0.52
1:B:36:HIS:CD2	1:B:216:MET:SD	3.02	0.52
1:B:243:ASP:OD1	1:B:244:PRO:O	2.28	0.52
1:A:173:LEU:N	1:A:174:PRO:CD	2.73	0.52
1:A:22:ARG:N	1:A:23:PRO:CD	2.73	0.52
1:A:35:LEU:HD12	1:A:226:LEU:HD13	1.91	0.52
1:A:260:VAL:HG13	1:A:295:LEU:HD23	1.92	0.52
1:A:260:VAL:HA	1:A:295:LEU:HD22	1.91	0.52
1:A:261:PHE:HZ	1:A:281:TYR:CG	2.27	0.52
1:A:290:LYS:HE2	1:A:290:LYS:CA	2.40	0.52
1:B:231:ASP:O	1:B:235:ARG:HG3	2.10	0.52
1:A:170:ASP:OD1	1:A:203:ARG:NH2	2.43	0.52
1:A:237:VAL:HA	1:A:240:MET:HG3	1.91	0.52
1:A:112:THR:CG2	1:A:153:SER:HA	2.38	0.52
1:A:289:VAL:O	1:A:293:LYS:HB2	2.10	0.52
1:C:40:LEU:HD12	1:C:44:LEU:HB2	1.91	0.52
1:C:60:LEU:HD22	1:C:83:VAL:CG2	2.40	0.52
1:C:295:LEU:HD22	1:C:299:LEU:HG	1.92	0.52
1:B:259:PRO:HA	1:B:262:THR:HG23	1.92	0.51
1:A:226:LEU:HD23	1:A:306:ILE:HD12	1.92	0.51
1:C:29:ASP:OD2	1:C:47:ARG:NH2	2.41	0.51
1:B:186:PHE:CD1	1:B:186:PHE:C	2.83	0.51
1:B:254:ARG:HD3	1:B:256:GLU:CG	2.30	0.51
1:A:276:ALA:O	1:A:280:GLN:HG3	2.11	0.51
1:A:302:VAL:HG13	1:A:303:LEU:HD13	1.93	0.51
1:C:105:VAL:O	1:C:105:VAL:HG22	2.10	0.51
1:A:130:VAL:HG13	1:A:131:LYS:N	2.24	0.51
1:A:208:PRO:HG2	1:A:263:PHE:HE2	1.75	0.51
1:A:298:VAL:O	1:A:302:VAL:HG12	2.10	0.51
1:B:35:LEU:HD13	1:B:44:LEU:HD11	1.92	0.51
1:B:254:ARG:NH1	1:B:256:GLU:HG3	2.25	0.51
1:B:289:VAL:O	1:B:293:LYS:HG3	2.10	0.51
1:B:333:GLU:HG3	1:B:337:GLN:HE21	1.76	0.51
1:A:237:VAL:HG13	1:A:295:LEU:HD23	1.93	0.51
1:B:292:LYS:O	1:B:296:ILE:CG2	2.60	0.50
1:A:112:THR:HG22	1:A:156:ALA:CB	2.41	0.50
1:A:130:VAL:CG1	1:A:131:LYS:N	2.73	0.50
1:A:193:VAL:HG22	1:A:193:VAL:O	2.12	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:56:LEU:HD11	1:C:58:VAL:CG1	2.40	0.50
1:C:171:ASP:CB	1:C:172:GLN:NE2	2.73	0.50
1:C:210:LEU:HD21	1:C:224:ILE:HG13	1.93	0.50
1:A:63:VAL:HG13	1:A:102:GLN:CG	2.41	0.50
1:A:108:LEU:O	1:A:112:THR:HG23	2.11	0.50
1:A:215:LYS:NZ	1:A:217:SER:OG	2.44	0.50
1:B:211:ASP:OD1	1:B:222:ASN:HB3	2.11	0.50
1:C:58:VAL:O	1:C:58:VAL:HG23	2.10	0.50
1:C:276:ALA:O	1:C:280:GLN:HG3	2.11	0.50
1:B:58:VAL:HG23	1:B:99:CYS:HA	1.93	0.50
1:C:80:VAL:HG13	1:C:81:LEU:N	2.27	0.50
1:A:68:ASP:OD2	1:A:137:LYS:NZ	2.45	0.50
1:A:99:CYS:SG	1:A:324:VAL:HG12	2.52	0.50
1:B:154:GLN:NE2	1:B:175:MET:HE2	2.27	0.50
1:B:295:LEU:HA	1:B:298:VAL:HG12	1.94	0.50
1:B:50:LEU:C	1:B:50:LEU:HD12	2.33	0.50
1:B:66:LEU:C	1:B:68:ASP:N	2.65	0.50
1:B:101:VAL:HG12	1:B:328:THR:OG1	2.12	0.50
1:A:211:ASP:C	1:A:213:GLN:H	2.15	0.50
1:A:305:PRO:HG2	1:A:306:ILE:HG22	1.93	0.50
1:B:40:LEU:O	1:B:45:GLN:HG2	2.12	0.49
1:A:190:TYR:O	1:A:191:ALA:C	2.49	0.49
1:A:248:ARG:HD3	1:A:248:ARG:H	1.78	0.49
1:C:295:LEU:HD22	1:C:299:LEU:CD1	2.42	0.49
1:B:140:GLY:O	1:B:143:VAL:HG23	2.13	0.49
1:B:298:VAL:O	1:B:302:VAL:HG12	2.13	0.49
1:A:265:ASP:CB	1:A:274:VAL:HG11	2.43	0.49
1:C:295:LEU:HA	1:C:298:VAL:CG1	2.43	0.49
1:B:102:GLN:HG3	1:B:108:LEU:HD12	1.95	0.49
1:A:205:PRO:O	1:A:206:ARG:C	2.51	0.49
1:A:241:TYR:O	1:A:259:PRO:CD	2.60	0.49
1:A:260:VAL:CG1	1:A:295:LEU:HD22	2.40	0.49
1:A:66:LEU:HD21	1:A:76:VAL:HG11	1.93	0.49
1:A:98:THR:HG23	1:A:330:ARG:HD2	1.94	0.49
1:A:293:LYS:O	1:A:296:ILE:CG1	2.60	0.49
1:C:180:ARG:HE	1:C:196:GLU:CD	2.15	0.49
1:C:241:TYR:OH	1:C:244:PRO:HD3	2.13	0.49
1:B:213:GLN:OE1	1:B:220:LEU:HD13	2.13	0.49
1:C:310:ARG:O	1:C:314:GLU:CG	2.61	0.49
1:A:274:VAL:HG12	1:A:278:LYS:HE3	1.95	0.48
1:A:30:ARG:HD2	1:A:65:ALA:HA	1.94	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:76:VAL:CG1	1:A:77:ARG:N	2.77	0.48
1:B:278:LYS:HG2	1:B:282:ARG:NH2	2.28	0.48
1:A:255:VAL:HG21	1:A:278:LYS:HD3	1.93	0.48
1:B:30:ARG:HH22	1:B:68:ASP:HB2	1.77	0.48
1:B:74:GLU:OE1	1:C:347:ARG:NH1	2.46	0.48
1:A:288:ASP:O	1:A:292:LYS:HG3	2.14	0.48
1:C:120:THR:HG22	1:C:123:HIS:HB2	1.95	0.48
1:B:315:ARG:O	1:B:315:ARG:HG2	2.14	0.48
1:A:277:LEU:HD13	1:A:280:GLN:NE2	2.29	0.48
1:B:264:LEU:HG	1:B:295:LEU:HD12	1.95	0.48
1:C:254:ARG:HG2	1:C:255:VAL:N	2.29	0.48
1:C:295:LEU:O	1:C:298:VAL:HG13	2.12	0.48
1:A:37:LEU:HD21	1:A:303:LEU:HD11	1.95	0.48
1:B:101:VAL:HG13	1:B:104:ALA:HB3	1.96	0.48
1:B:273:ARG:O	1:B:276:ALA:HB3	2.13	0.48
1:C:62:ASP:O	1:C:66:LEU:HG	2.13	0.48
1:B:241:TYR:O	1:B:259:PRO:HG2	2.14	0.47
1:A:37:LEU:O	1:A:41:ALA:N	2.28	0.47
1:B:154:GLN:HE22	1:B:175:MET:CE	2.23	0.47
1:A:261:PHE:CD1	1:A:278:LYS:HG2	2.48	0.47
1:A:269:PRO:HD2	1:A:273:ARG:HH12	1.74	0.47
1:C:201:LEU:HD22	1:C:202:SER:HB3	1.96	0.47
1:A:21:ALA:HB3	1:A:53:GLU:O	2.14	0.47
1:C:256:GLU:H	1:C:256:GLU:CD	2.16	0.47
1:B:43:SER:C	1:B:47:ARG:HD2	2.35	0.47
1:A:248:ARG:NE	1:A:251:ASP:OD1	2.48	0.47
1:A:294:HIS:O	1:A:296:ILE:N	2.48	0.47
1:C:127:ASN:HB3	1:C:130:VAL:HG22	1.97	0.47
1:B:22:ARG:HE	1:B:53:GLU:HG3	1.79	0.47
1:B:43:SER:O	1:B:47:ARG:HD2	2.14	0.47
1:A:253:GLY:HA3	1:A:281:TYR:CE2	2.50	0.47
1:B:22:ARG:NH2	1:B:53:GLU:HG3	2.28	0.47
1:B:296:ILE:CD1	1:B:300:ASN:HD21	2.28	0.47
1:A:237:VAL:O	1:A:240:MET:HB2	2.15	0.47
1:C:154:GLN:O	1:C:158:ILE:HG12	2.15	0.47
1:C:321:LEU:HD22	1:C:325:THR:HG23	1.97	0.47
1:B:22:ARG:HG3	1:B:23:PRO:HD3	1.95	0.47
1:B:130:VAL:HG13	1:B:131:LYS:N	2.30	0.47
1:B:260:VAL:HG23	1:B:261:PHE:N	2.28	0.47
1:C:58:VAL:CG2	1:C:99:CYS:HA	2.45	0.47
1:B:29:ASP:O	1:B:31:PRO:HD3	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:105:VAL:HG13	1:A:108:LEU:HG	1.96	0.47
1:B:278:LYS:HB2	1:B:278:LYS:HE3	1.71	0.46
1:A:37:LEU:HG	1:A:224:ILE:HG12	1.97	0.46
1:C:258:ASN:C	1:C:258:ASN:ND2	2.69	0.46
1:A:110:GLU:O	1:A:113:VAL:CG1	2.61	0.46
1:B:127:ASN:HB3	1:B:130:VAL:HG12	1.98	0.46
1:A:36:HIS:HD2	1:A:38:GLY:H	1.62	0.46
1:A:212:GLY:O	1:A:213:GLN:C	2.53	0.46
1:C:22:ARG:CB	1:C:23:PRO:CD	2.91	0.46
1:A:52:ASP:OD2	1:A:52:ASP:N	2.36	0.46
1:C:210:LEU:HD12	1:C:240:MET:HG2	1.97	0.46
1:B:254:ARG:NH1	1:B:256:GLU:CG	2.79	0.46
1:A:40:LEU:HA	1:A:44:LEU:CB	2.42	0.46
1:A:208:PRO:HG3	1:A:262:THR:CG2	2.43	0.46
1:A:209:GLY:O	1:A:210:LEU:C	2.53	0.46
1:A:62:ASP:H	1:A:102:GLN:HB3	1.81	0.46
1:A:127:ASN:HB3	1:A:130:VAL:HG11	1.96	0.46
1:A:299:LEU:O	1:A:303:LEU:HD13	2.16	0.46
1:B:232:GLU:O	1:B:233:VAL:C	2.55	0.46
1:B:253:GLY:O	1:B:282:ARG:HA	2.15	0.46
1:B:255:VAL:HG22	1:B:261:PHE:CD2	2.51	0.46
1:C:168:VAL:HG23	1:C:172:GLN:HB2	1.97	0.46
1:A:84:ALA:O	1:A:87:TYR:HB2	2.16	0.46
1:B:43:SER:O	1:B:46:ASN:HB3	2.17	0.45
1:A:215:LYS:O	1:A:222:ASN:ND2	2.49	0.45
1:C:32:THR:HG22	1:C:32:THR:O	2.16	0.45
1:C:203:ARG:C	1:C:204:VAL:HG23	2.37	0.45
1:A:293:LYS:NZ	1:A:296:ILE:HD11	2.31	0.45
1:B:66:LEU:HD12	1:B:70:PHE:HA	1.97	0.45
1:B:127:ASN:HB3	1:B:130:VAL:CG1	2.46	0.45
1:B:211:ASP:HB3	1:B:213:GLN:HG3	1.98	0.45
1:C:63:VAL:H	1:C:102:GLN:HE21	1.63	0.45
1:A:269:PRO:HD2	1:A:273:ARG:HH11	1.78	0.45
1:A:302:VAL:O	1:A:305:PRO:HD2	2.17	0.45
1:C:112:THR:HG22	1:C:156:ALA:HB3	1.97	0.45
1:A:63:VAL:CG1	1:A:102:GLN:HG2	2.45	0.45
1:A:308:THR:O	1:A:311:ALA:HB3	2.17	0.45
1:B:173:LEU:HD23	1:B:173:LEU:HA	1.84	0.45
1:B:316:ASP:N	1:B:317:PRO:CD	2.79	0.45
1:A:230:ALA:CB	1:A:300:ASN:HD21	2.30	0.45
1:C:32:THR:O	1:C:32:THR:CG2	2.65	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:180:ARG:NH1	1:C:180:ARG:CG	2.77	0.45
1:A:93:ASP:HA	1:A:94:PRO:HD3	1.84	0.45
1:C:56:LEU:HD13	1:C:56:LEU:C	2.37	0.45
1:B:92:LEU:HD12	1:B:92:LEU:HA	1.84	0.45
1:A:136:GLN:O	1:A:136:GLN:CG	2.65	0.45
1:A:256:GLU:H	1:A:256:GLU:CD	2.20	0.45
1:C:216:MET:HE2	1:C:223:ALA:CB	2.42	0.45
1:A:241:TYR:O	1:A:241:TYR:CD1	2.69	0.45
1:C:165:LEU:HD22	1:C:200:GLN:HB2	1.99	0.45
1:A:180:ARG:HB3	1:A:184:ARG:HH11	1.82	0.45
1:C:30:ARG:HD2	1:C:64:GLN:HE21	1.82	0.45
1:B:263:PHE:CB	1:B:295:LEU:HD11	2.48	0.44
1:A:210:LEU:HB2	1:A:222:ASN:OD1	2.17	0.44
1:A:242:THR:CB	1:A:258:ASN:HD21	2.28	0.44
1:A:296:ILE:CG1	1:A:297:ASP:N	2.79	0.44
1:C:92:LEU:HD12	1:C:92:LEU:HA	1.81	0.44
1:A:216:MET:HA	1:A:222:ASN:O	2.17	0.44
1:C:25:VAL:HG22	1:C:165:LEU:HB3	1.98	0.44
1:C:243:ASP:HA	1:C:244:PRO:HD2	1.82	0.44
1:B:22:ARG:CB	1:B:23:PRO:CD	2.95	0.44
1:B:273:ARG:O	1:B:277:LEU:HD22	2.18	0.44
1:B:292:LYS:O	1:B:296:ILE:HG23	2.17	0.44
1:A:52:ASP:HB3	1:A:96:LYS:HZ1	1.82	0.44
1:A:290:LYS:HE2	1:A:290:LYS:HA	1.98	0.44
1:A:35:LEU:O	1:A:226:LEU:CD1	2.66	0.44
1:A:36:HIS:HA	1:A:226:LEU:HD12	1.99	0.44
1:A:63:VAL:HG13	1:A:102:GLN:CD	2.37	0.44
1:A:193:VAL:HG21	1:A:341:GLN:HE21	1.82	0.44
1:A:274:VAL:C	1:A:276:ALA:H	2.19	0.44
1:A:296:ILE:HG13	1:A:297:ASP:H	1.78	0.44
1:A:296:ILE:O	1:A:300:ASN:HB2	2.17	0.44
1:C:166:VAL:O	1:C:166:VAL:CG2	2.65	0.44
1:C:185:ARG:HH11	1:C:189:LEU:HD22	1.82	0.44
1:C:216:MET:CE	1:C:224:ILE:H	2.14	0.44
1:B:75:GLN:O	1:B:79:ASN:ND2	2.51	0.44
1:B:117:ASN:HD22	1:C:146:GLY:HA3	1.81	0.44
1:A:121:VAL:O	1:A:125:ARG:HB2	2.18	0.44
1:A:226:LEU:HD12	1:A:226:LEU:N	2.29	0.44
1:A:233:VAL:O	1:A:236:LYS:HB3	2.18	0.44
1:C:25:VAL:HG13	1:C:167:PRO:HD3	1.99	0.44
1:C:150:TYR:N	1:C:151:PRO:CD	2.80	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:244:PRO:C	1:B:246:HIS:H	2.21	0.43
1:B:268:ASP:OD1	1:B:273:ARG:NH2	2.51	0.43
1:A:35:LEU:CG	1:A:86:ASP:HB3	2.48	0.43
1:A:150:TYR:O	1:A:154:GLN:HG3	2.18	0.43
1:A:237:VAL:O	1:A:240:MET:CB	2.66	0.43
1:A:346:MET:O	1:A:347:ARG:HB2	2.17	0.43
1:C:173:LEU:N	1:C:174:PRO:HD2	2.33	0.43
1:C:292:LYS:O	1:C:296:ILE:HG13	2.18	0.43
1:B:23:PRO:HD2	1:B:54:ALA:HB2	2.00	0.43
1:A:214:ALA:C	1:A:215:LYS:HG3	2.38	0.43
1:C:248:ARG:O	1:C:251:ASP:HB2	2.18	0.43
1:C:277:LEU:HD13	1:C:277:LEU:HA	1.83	0.43
1:B:241:TYR:OH	1:B:244:PRO:HD3	2.18	0.43
1:A:242:THR:HB	1:A:258:ASN:ND2	2.31	0.43
1:C:79:ASN:O	1:C:83:VAL:HG22	2.17	0.43
1:C:93:ASP:O	1:C:97:THR:HG23	2.18	0.43
1:C:201:LEU:CD2	1:C:202:SER:N	2.81	0.43
1:B:295:LEU:C	1:B:295:LEU:HD23	2.38	0.43
1:A:149:VAL:O	1:A:149:VAL:CG1	2.66	0.43
1:A:252:PRO:CB	1:A:282:ARG:O	2.66	0.43
1:A:261:PHE:CZ	1:A:281:TYR:CG	3.07	0.43
1:C:204:VAL:O	1:C:205:PRO:C	2.56	0.43
1:B:58:VAL:HG23	1:B:58:VAL:O	2.19	0.43
1:B:187:ASN:OD1	1:B:192:PRO:HA	2.18	0.43
1:A:154:GLN:NE2	1:A:175:MET:HG3	2.33	0.43
1:A:300:ASN:O	1:A:304:ALA:HB2	2.19	0.43
1:B:186:PHE:CD1	1:B:186:PHE:O	2.72	0.43
1:B:316:ASP:OD1	1:B:318:ASP:OD2	2.36	0.43
1:C:241:TYR:CZ	1:C:244:PRO:HD3	2.54	0.43
1:B:111:LEU:HD11	1:B:115:PHE:CE1	2.53	0.43
1:A:237:VAL:O	1:A:240:MET:HG3	2.18	0.43
1:C:243:ASP:OD2	1:C:246:HIS:HB2	2.19	0.43
1:B:22:ARG:HB2	1:B:23:PRO:CD	2.49	0.43
1:A:29:ASP:O	1:A:31:PRO:HD3	2.19	0.43
1:A:245:GLY:O	1:A:247:LEU:HD13	2.19	0.43
1:A:255:VAL:HG22	1:A:261:PHE:CD1	2.53	0.43
1:C:30:ARG:H	1:C:30:ARG:HG2	1.62	0.43
1:C:99:CYS:O	1:C:327:GLY:HA3	2.19	0.43
1:B:59:LEU:HD12	1:B:100:VAL:O	2.19	0.42
1:B:122:SER:OG	1:C:141:GLU:HB3	2.18	0.42
1:B:258:ASN:HA	1:B:259:PRO:HD2	1.94	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:149:VAL:CG1	1:A:152:VAL:HG13	2.49	0.42
1:A:180:ARG:HG2	1:A:197:PRO:HD2	2.00	0.42
1:A:247:LEU:HD23	1:A:248:ARG:NH2	2.34	0.42
1:A:200:GLN:HE21	1:A:200:GLN:HB3	1.68	0.42
1:B:293:LYS:C	1:B:296:ILE:HG23	2.40	0.42
1:B:296:ILE:HD12	1:B:296:ILE:O	2.18	0.42
1:C:24:ARG:HD3	1:C:55:GLU:OE2	2.19	0.42
1:A:97:THR:HG22	1:A:98:THR:N	2.35	0.42
1:A:105:VAL:HA	1:A:106:PRO:HD2	1.86	0.42
1:A:119:VAL:HG22	1:A:120:THR:N	2.34	0.42
1:A:129:THR:O	1:A:132:ALA:HB3	2.19	0.42
1:C:132:ALA:O	1:C:135:ALA:HB3	2.19	0.42
1:C:268:ASP:OD1	1:C:294:HIS:HE1	2.02	0.42
1:B:248:ARG:NE	1:B:251:ASP:OD2	2.51	0.42
1:A:58:VAL:O	1:A:58:VAL:CG1	2.68	0.42
1:B:255:VAL:HG13	1:B:261:PHE:CG	2.55	0.42
2:B:1154:HRP:H	2:B:1154:HRP:CD2	2.31	0.42
1:C:63:VAL:HB	1:C:102:GLN:NE2	2.34	0.42
1:C:254:ARG:HG2	1:C:256:GLU:HG2	2.02	0.42
1:A:291:VAL:HG13	1:A:292:LYS:N	2.35	0.42
1:B:69:HIS:CD2	1:B:69:HIS:N	2.88	0.42
1:B:149:VAL:O	1:B:149:VAL:CG1	2.67	0.42
1:B:218:LYS:HE3	1:B:218:LYS:HB2	1.91	0.42
1:C:133:GLU:HA	1:C:136:GLN:HG3	2.01	0.42
1:C:270:ASP:HA	1:C:271:PRO:HD2	1.73	0.42
1:B:32:THR:O	1:B:75:GLN:NE2	2.53	0.42
1:B:154:GLN:CG	2:B:1154:HRP:HE1	2.06	0.42
1:B:232:GLU:O	1:B:235:ARG:N	2.53	0.42
1:A:234:ALA:O	1:A:238:MET:HG2	2.20	0.42
1:C:245:GLY:O	1:C:247:LEU:HD13	2.20	0.42
1:B:116:LEU:O	1:C:145:ALA:HB3	2.20	0.42
1:B:184:ARG:HG2	1:B:184:ARG:NH2	2.33	0.42
1:B:299:LEU:HA	1:B:302:VAL:CG1	2.49	0.42
1:A:246:HIS:ND1	1:A:288:ASP:OD1	2.53	0.42
1:B:44:LEU:HA	1:B:47:ARG:CD	2.49	0.41
1:B:61:ALA:HB1	1:B:64:GLN:HB3	2.02	0.41
1:A:61:ALA:HB1	1:A:64:GLN:HB3	2.01	0.41
1:C:85:LEU:CD1	1:C:310:ARG:CZ	2.98	0.41
1:C:93:ASP:HA	1:C:94:PRO:HD3	1.95	0.41
1:C:165:LEU:HA	1:C:165:LEU:HD23	1.79	0.41
1:A:58:VAL:CG1	1:A:99:CYS:HA	2.51	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:237:VAL:CG2	1:A:296:ILE:HG22	2.50	0.41
1:A:258:ASN:HA	1:A:259:PRO:HD2	1.90	0.41
1:C:58:VAL:HG23	1:C:99:CYS:HA	2.01	0.41
1:C:324:VAL:HG23	1:C:325:THR:N	2.36	0.41
1:B:58:VAL:CG2	1:B:99:CYS:HA	2.49	0.41
1:B:243:ASP:OD2	1:B:254:ARG:HG3	2.20	0.41
1:B:260:VAL:CG2	1:B:261:PHE:N	2.82	0.41
1:A:30:ARG:NH2	1:A:68:ASP:CB	2.82	0.41
1:A:327:GLY:O	1:A:330:ARG:HB3	2.20	0.41
1:C:295:LEU:HD22	1:C:299:LEU:CG	2.51	0.41
1:B:173:LEU:N	1:B:174:PRO:CD	2.83	0.41
1:B:304:ALA:N	1:B:305:PRO:HD2	2.35	0.41
1:A:104:ALA:CB	1:A:328:THR:HG21	2.50	0.41
1:A:242:THR:HG23	1:A:292:LYS:CE	2.51	0.41
1:C:133:GLU:O	1:C:136:GLN:HG3	2.20	0.41
1:B:211:ASP:CB	1:B:213:GLN:HG3	2.51	0.41
1:C:51:GLN:HB2	1:C:96:LYS:HB3	2.02	0.41
1:C:127:ASN:O	1:C:131:LYS:HB2	2.20	0.41
1:A:58:VAL:HG12	1:A:99:CYS:HA	2.03	0.41
1:C:27:THR:HG22	1:C:167:PRO:HD2	2.01	0.41
1:A:222:ASN:O	1:A:222:ASN:CG	2.58	0.41
1:A:308:THR:HG22	1:A:312:GLU:OE2	2.20	0.41
1:C:238:MET:CE	1:C:238:MET:CG	2.96	0.41
1:B:77:ARG:NE	1:C:347:ARG:NH2	2.68	0.41
1:B:333:GLU:HA	1:B:333:GLU:OE2	2.20	0.41
1:B:349:PHE:CD2	1:C:80:VAL:CG1	3.00	0.41
1:A:116:LEU:HD21	1:A:149:VAL:HG11	2.02	0.41
1:C:62:ASP:OD2	1:C:103:SER:OG	2.30	0.41
1:B:23:PRO:HD2	1:B:54:ALA:CB	2.51	0.41
1:B:62:ASP:OD1	1:B:103:SER:OG	2.33	0.41
1:B:292:LYS:O	1:B:293:LYS:C	2.59	0.41
1:A:32:THR:O	1:A:32:THR:CG2	2.67	0.41
1:A:144:PRO:O	1:A:145:ALA:C	2.56	0.41
1:A:172:GLN:C	1:A:174:PRO:HD2	2.39	0.41
1:A:337:GLN:HG2	1:A:337:GLN:H	1.65	0.41
1:C:204:VAL:HG12	1:C:205:PRO:CD	2.32	0.41
1:C:320:VAL:O	1:C:323:PHE:HB3	2.20	0.41
1:B:93:ASP:OD2	1:B:94:PRO:HD2	2.21	0.41
1:B:277:LEU:HD22	1:B:277:LEU:H	1.85	0.41
1:A:218:LYS:HA	1:A:218:LYS:CE	2.42	0.41
1:A:254:ARG:CD	1:A:256:GLU:HB2	2.49	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:254:ARG:CD	1:C:256:GLU:O	2.69	0.41
1:C:258:ASN:HA	1:C:259:PRO:HD2	1.94	0.41
1:A:191:ALA:HA	1:A:192:PRO:HD3	1.87	0.40
1:A:255:VAL:HG13	1:A:261:PHE:CD1	2.57	0.40
1:A:79:ASN:O	1:A:80:VAL:C	2.58	0.40
1:A:234:ALA:HA	1:A:296:ILE:CG2	2.51	0.40
1:C:216:MET:CE	1:C:223:ALA:HB1	2.44	0.40
1:B:274:VAL:C	1:B:276:ALA:N	2.74	0.40
1:A:167:PRO:HA	1:A:200:GLN:HB3	2.03	0.40
1:A:72:ARG:N	1:A:73:PRO:CD	2.84	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	329/351 (94%)	282 (86%)	32 (10%)	15 (5%)	2 23
1	B	329/351 (94%)	299 (91%)	21 (6%)	9 (3%)	5 33
1	C	329/351 (94%)	307 (93%)	18 (6%)	4 (1%)	13 48
All	All	987/1053 (94%)	888 (90%)	71 (7%)	28 (3%)	5 33

All (28) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	22	ARG
1	B	61	ALA
1	A	61	ALA
1	C	202	SER
1	C	205	PRO
1	B	284	GLY
1	A	31	PRO

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Mol	Chain	Res	Type
1	A	249	ALA
1	A	295	LEU
1	C	22	ARG
1	B	43	SER
1	A	205	PRO
1	A	213	GLN
1	A	269	PRO
1	A	37	LEU
1	C	279	ASP
1	B	283	ALA
1	A	242	THR
1	B	206	ARG
1	B	250	SER
1	A	73	PRO
1	A	206	ARG
1	A	238	MET
1	B	285	GLY
1	A	192	PRO
1	A	208	PRO
1	A	22	ARG
1	B	31	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	256/282 (91%)	227 (89%)	29 (11%)	6 28
1	B	264/282 (94%)	230 (87%)	34 (13%)	4 22
1	C	262/282 (93%)	233 (89%)	29 (11%)	6 28
All	All	782/846 (92%)	690 (88%)	92 (12%)	5 26

All (92) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	22	ARG

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Mol	Chain	Res	Type
1	B	40	LEU
1	B	47	ARG
1	B	52	ASP
1	B	68	ASP
1	B	75	GLN
1	B	81	LEU
1	B	85	LEU
1	B	92	LEU
1	B	97	THR
1	B	136	GLN
1	B	141	GLU
1	B	150	TYR
1	B	152	VAL
1	B	165	LEU
1	B	170	ASP
1	B	171	ASP
1	B	184	ARG
1	B	185	ARG
1	B	189	LEU
1	B	201	LEU
1	B	226	LEU
1	B	235	ARG
1	B	248	ARG
1	B	254	ARG
1	B	262	THR
1	B	263	PHE
1	B	290	LYS
1	B	296	ILE
1	B	297	ASP
1	B	318	ASP
1	B	322	ARG
1	B	344	ARG
1	B	347	ARG
1	A	35	LEU
1	A	40	LEU
1	A	46	ASN
1	A	49	ARG
1	A	52	ASP
1	A	56	LEU
1	A	85	LEU
1	A	124	LEU
1	A	125	ARG

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Mol	Chain	Res	Type
1	A	126	GLN
1	A	142	ARG
1	A	150	TYR
1	A	152	VAL
1	A	165	LEU
1	A	172	GLN
1	A	200	GLN
1	A	201	LEU
1	A	203	ARG
1	A	215	LYS
1	A	224	ILE
1	A	232	GLU
1	A	246	HIS
1	A	248	ARG
1	A	268	ASP
1	A	286	LEU
1	A	290	LYS
1	A	300	ASN
1	A	306	ILE
1	A	348	LEU
1	C	30	ARG
1	C	46	ASN
1	C	81	LEU
1	C	85	LEU
1	C	92	LEU
1	C	97	THR
1	C	100	VAL
1	C	136	GLN
1	C	150	TYR
1	C	152	VAL
1	C	165	LEU
1	C	200	GLN
1	C	201	LEU
1	C	202	SER
1	C	204	VAL
1	C	205	PRO
1	C	210	LEU
1	C	231	ASP
1	C	248	ARG
1	C	256	GLU
1	C	258	ASN
1	C	277	LEU

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Mol	Chain	Res	Type
1	C	286	LEU
1	C	295	LEU
1	C	298	VAL
1	C	312	GLU
1	C	321	LEU
1	C	330	ARG
1	C	332	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (35) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	36	HIS
1	B	46	ASN
1	B	51	GLN
1	B	69	HIS
1	B	102	GLN
1	B	117	ASN
1	B	136	GLN
1	B	154	GLN
1	B	200	GLN
1	B	280	GLN
1	B	300	ASN
1	B	337	GLN
1	A	36	HIS
1	A	39	HIS
1	A	46	ASN
1	A	69	HIS
1	A	79	ASN
1	A	123	HIS
1	A	154	GLN
1	A	172	GLN
1	A	200	GLN
1	A	280	GLN
1	A	300	ASN
1	A	341	GLN
1	C	46	ASN
1	C	51	GLN
1	C	69	HIS
1	C	95	GLN
1	C	102	GLN
1	C	117	ASN
1	C	126	GLN

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Mol	Chain	Res	Type
1	C	200	GLN
1	C	246	HIS
1	C	258	ASN
1	C	300	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

1 ligand is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	HRP	B	1154	-	15,17,17	1.80	2 (13%)	17,24,24	1.65	4 (23%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	HRP	B	1154	-	-	4/7/8/8	0/2/2/2

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1154	HRP	OX-CZ3	-5.13	1.25	1.37
2	B	1154	HRP	CH2-CZ3	2.45	1.43	1.38

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	1154	HRP	CB-CA-C	3.68	131.72	111.83
2	B	1154	HRP	CH2-CZ2-CE2	-2.55	117.63	120.84
2	B	1154	HRP	CZ3-CE3-CD2	-2.08	119.18	120.64
2	B	1154	HRP	OXT-C-O	2.04	128.73	124.09

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	1154	HRP	O-C-CA-CB
2	B	1154	HRP	CA-CB-CG-CD1
2	B	1154	HRP	C-CA-CB-CG
2	B	1154	HRP	OXT-C-CA-CB

There are no ring outliers.

1 monomer is involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	B	1154	HRP	14	0

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	331/351 (94%)	-0.11	8 (2%) 59 47	27, 96, 156, 167	0
1	B	331/351 (94%)	-0.39	2 (0%) 89 83	19, 67, 126, 170	1 (0%)
1	C	331/351 (94%)	-0.40	0 100 100	20, 64, 95, 123	0
All	All	993/1053 (94%)	-0.30	10 (1%) 82 73	19, 72, 140, 170	1 (0%)

All (10) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	247	LEU	7.0
1	A	219	SER	7.0
1	B	248	ARG	6.3
1	A	221	GLY	4.4
1	A	220	LEU	4.4
1	A	21	ALA	3.1
1	A	271	PRO	2.9
1	A	202	SER	2.6
1	A	275	GLN	2.5
1	A	274	VAL	2.1

6.2 Non-standard residues in protein, DNA, RNA chains

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

6.3 Carbohydrates

There are no monosaccharides in this entry.

6.4 Ligands

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 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	HRP	B	1154	16/16	0.85	0.34	88,92,107,109	0

6.5 Other polymers

There are no such residues in this entry.