Full wwPDB X-ray Structure Validation Report ⓘ

May 26, 2020 – 02:46 am BST

PDB ID	:	2YWB
Title	:	Crystal structure of GMP synthetase from Thermus thermophilus
Authors	:	Baba, S.; Kanagawa, M.; Yanai, H.; Ishii, T.; Kuramitsu, S.; Yokoyama, S.; Sampei, G.; Kawai, G.; RIKEN Structural Genomics/Proteomics Initiative (RSGI)
Deposited on	:	2007-04-20
Resolution	:	2.10 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The following versions of software and data (see references ①) were used in the production of this report:

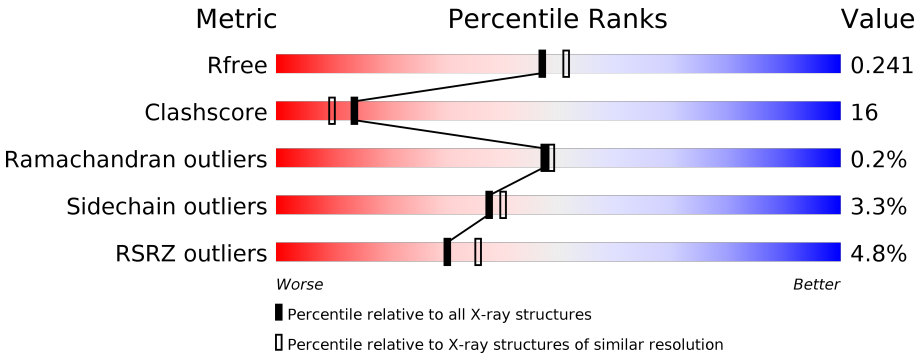
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

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 2.10 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	5197 (2.10-2.10)
Clashscore	141614	5710 (2.10-2.10)
Ramachandran outliers	138981	5647 (2.10-2.10)
Sidechain outliers	138945	5648 (2.10-2.10)
RSRZ outliers	127900	5083 (2.10-2.10)

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 on 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	503	4% 68% 24% • 6%
1	B	503	3% 61% 29% • 8%
1	C	503	5% 66% 25% • 7%
1	D	503	5% 61% 29% • 8%

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 15065 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 GMP synthase [glutamine-hydrolyzing].

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	471	Total	C	N	O	S	0	0	0
			3718	2382	658	672	6			
1	B	463	Total	C	N	O	S	0	0	0
			3656	2344	650	656	6			
1	C	466	Total	C	N	O	S	0	0	0
			3676	2355	653	662	6			
1	D	463	Total	C	N	O	S	0	0	0
			3659	2347	650	656	6			

- Molecule 2 is water.

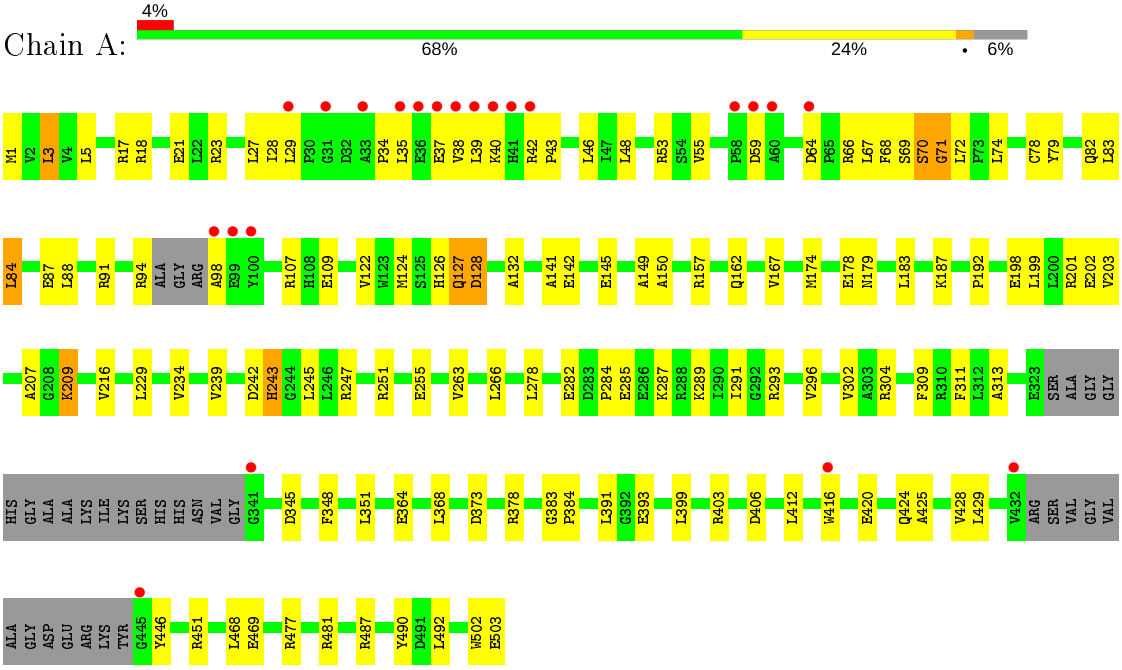
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	99	Total	O	0	0
			99	99		
2	B	101	Total	O	0	0
			101	101		
2	C	85	Total	O	0	0
			85	85		
2	D	71	Total	O	0	0
			71	71		

3 Residue-property plots (i)

These plots are drawn for all protein, RNA and DNA 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.

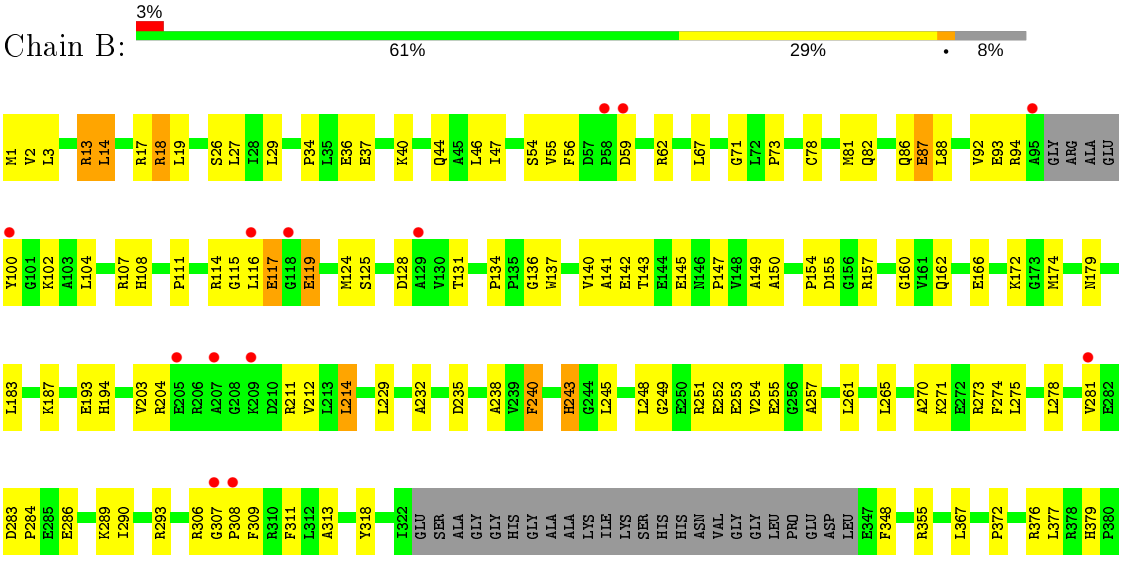
- Molecule 1: GMP synthase [glutamine-hydrolyzing]

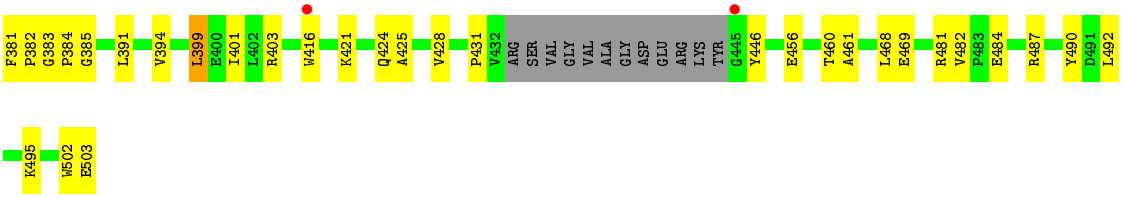
Chain A:



- Molecule 1: GMP synthase [glutamine-hydrolyzing]

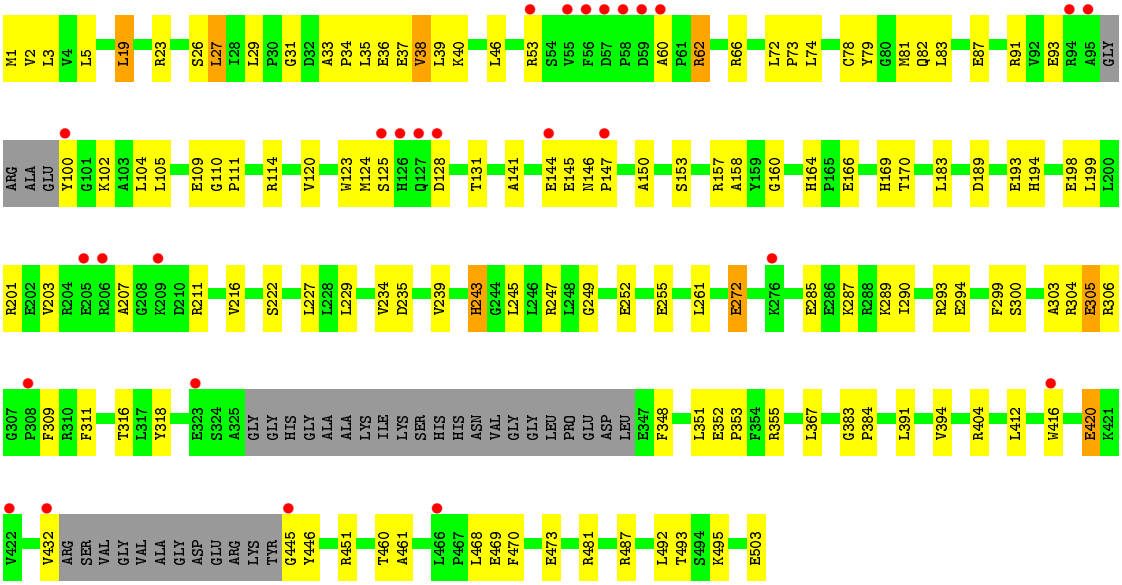
Chain B:





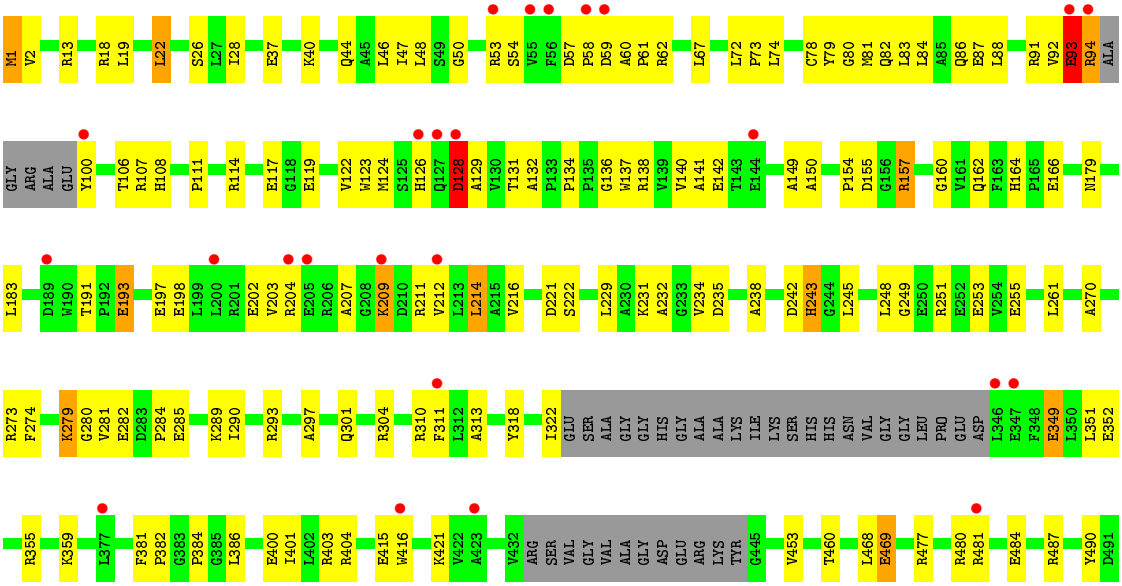
• Molecule 1: GMP synthase [glutamine-hydrolyzing]

Chain C:



• Molecule 1: GMP synthase [glutamine-hydrolyzing]

Chain D:




L492
K495
P496
P497
I500
E501
W502
E503

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	140.95Å 114.85Å 160.03Å 90.00° 93.37° 90.00°	Depositor
Resolution (Å)	43.28 – 2.10 43.27 – 2.10	Depositor EDS
% Data completeness (in resolution range)	91.3 (43.28-2.10) 98.1 (43.27-2.10)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.04 (at 2.10Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.233 , 0.272 0.243 , 0.241	Depositor DCC
R_{free} test set	7310 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	39.5	Xtriage
Anisotropy	0.243	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 58.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	15065	wwPDB-VP
Average B, all atoms (Å^2)	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.18% 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

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	0.35	0/3795	0.65	3/5146 (0.1%)
1	B	0.34	0/3732	0.61	1/5060 (0.0%)
1	C	0.34	0/3752	0.60	1/5087 (0.0%)
1	D	0.33	0/3735	0.63	3/5064 (0.1%)
All	All	0.34	0/15014	0.62	8/20357 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	4
1	D	0	3
All	All	0	7

There are no bond length outliers.

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	127	GLN	O-C-N	8.45	136.21	122.70
1	D	93	GLU	O-C-N	-7.10	111.33	122.70
1	A	127	GLN	CA-C-N	-7.08	101.62	117.20
1	B	116	LEU	O-C-N	6.55	133.18	122.70
1	D	128	ASP	O-C-N	-5.92	113.23	122.70
1	A	126	HIS	O-C-N	-5.71	113.56	122.70
1	C	170	THR	N-CA-C	-5.10	97.24	111.00
1	D	93	GLU	C-N-CA	5.01	134.23	121.70

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	128	ASP	Mainchain
1	A	23	ARG	Sidechain
1	A	69	SER	Mainchain
1	A	70	SER	Mainchain
1	D	128	ASP	Mainchain
1	D	93	GLU	Mainchain,Peptide

5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3718	0	3787	102	0
1	B	3656	0	3733	128	0
1	C	3676	0	3749	120	0
1	D	3659	0	3739	148	0
2	A	99	0	0	5	0
2	B	101	0	0	8	0
2	C	85	0	0	9	0
2	D	71	0	0	3	0
All	All	15065	0	15008	470	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 16.

All (470) 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:D:94:ARG:HH11	1:D:94:ARG:HG3	1.15	1.05
1:C:82:GLN:HE22	1:C:128:ASP:HB2	1.15	1.03
1:C:3:LEU:HD21	1:C:29:LEU:HD12	1.41	1.02
1:A:3:LEU:HD11	1:A:29:LEU:HB2	1.44	0.97
1:D:111:PRO:HB2	1:D:183:LEU:HD21	1.47	0.95
1:A:3:LEU:HD21	1:A:29:LEU:HD13	1.47	0.94
1:B:248:LEU:HG	1:B:403:ARG:HG2	1.50	0.91
1:D:46:LEU:HB2	1:D:74:LEU:HD23	1.51	0.91
1:C:82:GLN:NE2	1:C:128:ASP:HB2	1.85	0.90
1:C:62:ARG:HB3	1:C:62:ARG:HH11	1.36	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:17:ARG:HD2	2:B:583:HOH:O	1.72	0.88
1:C:111:PRO:HB2	1:C:183:LEU:HD21	1.58	0.85
1:D:81:MET:HE1	1:D:162:GLN:HB2	1.59	0.85
1:A:468:LEU:HD21	1:B:468:LEU:HD21	1.59	0.85
1:B:115:GLY:HA2	1:B:117:GLU:OE2	1.79	0.82
1:B:111:PRO:HB2	1:B:183:LEU:CD2	2.09	0.82
1:C:62:ARG:HB3	1:C:62:ARG:NH1	1.95	0.82
1:A:287:LYS:O	1:A:291:ILE:HG12	1.80	0.81
1:D:94:ARG:NH1	1:D:94:ARG:HG3	1.83	0.80
1:C:468:LEU:HD21	1:D:468:LEU:HD21	1.64	0.79
1:A:70:SER:C	1:A:72:LEU:H	1.85	0.79
1:A:278:LEU:HD11	1:A:291:ILE:HD11	1.66	0.78
1:B:111:PRO:HB2	1:B:183:LEU:HD21	1.67	0.77
1:D:111:PRO:HA	1:D:114:ARG:HG3	1.67	0.76
1:A:242:ASP:OD2	1:A:251:ARG:HD3	1.85	0.76
1:D:82:GLN:HE22	1:D:128:ASP:CB	1.99	0.75
1:A:412:LEU:HD21	1:A:477:ARG:NH1	2.02	0.75
1:D:204:ARG:HG3	1:D:232:ALA:HB1	1.68	0.75
1:A:477:ARG:HG3	1:A:481:ARG:NH1	2.01	0.75
1:D:82:GLN:HE22	1:D:128:ASP:HB2	1.52	0.73
1:B:278:LEU:O	1:B:281:VAL:HG12	1.87	0.73
1:D:243:HIS:HD2	1:D:245:LEU:H	1.36	0.73
1:A:481:ARG:HE	1:C:104:LEU:HD21	1.55	0.72
1:B:401:ILE:HG12	1:B:484:GLU:HG3	1.72	0.72
1:B:179:ASN:O	1:B:183:LEU:HG	1.90	0.71
1:B:214:LEU:HD13	1:B:238:ALA:HA	1.71	0.71
1:C:416:TRP:HH2	1:C:469:GLU:OE1	1.72	0.71
1:A:424:GLN:HE21	1:A:425:ALA:H	1.38	0.71
1:C:207:ALA:HA	1:C:311:PHE:CE2	2.26	0.70
1:A:203:VAL:HG12	1:A:234:VAL:HG11	1.74	0.70
1:B:119:GLU:HG2	1:D:481:ARG:NH1	2.07	0.69
1:A:216:VAL:HG13	2:A:573:HOH:O	1.94	0.68
1:C:198:GLU:HG3	1:C:201:ARG:NH2	2.08	0.68
1:C:203:VAL:HG12	1:C:234:VAL:HG11	1.76	0.68
1:A:37:GLU:O	1:A:40:LYS:HG2	1.94	0.67
1:C:91:ARG:HH11	1:C:91:ARG:HG2	1.60	0.67
1:C:81:MET:HG3	1:C:160:GLY:HA3	1.77	0.67
1:B:421:LYS:O	1:D:421:LYS:HE3	1.95	0.66
1:B:248:LEU:HG	1:B:403:ARG:CG	2.23	0.66
1:C:193:GLU:HG2	1:C:194:HIS:N	2.09	0.66
1:B:119:GLU:HG2	1:D:481:ARG:CZ	2.26	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:136:GLY:O	1:B:154:PRO:HG3	1.95	0.66
1:D:46:LEU:HB2	1:D:74:LEU:CD2	2.26	0.65
1:A:198:GLU:HG3	1:A:201:ARG:HH12	1.61	0.65
1:D:204:ARG:HH21	1:D:232:ALA:HA	1.60	0.65
1:D:242:ASP:OD2	1:D:251:ARG:HD3	1.97	0.65
1:A:71:GLY:O	1:A:157:ARG:HD2	1.97	0.65
1:D:249:GLY:O	1:D:253:GLU:HG3	1.96	0.65
1:C:198:GLU:HG3	1:C:201:ARG:HH22	1.62	0.64
1:D:1:MET:N	1:D:44:GLN:HE21	1.96	0.64
1:A:70:SER:OG	1:A:72:LEU:HB2	1.97	0.64
1:D:141:ALA:HB3	1:D:150:ALA:HB3	1.79	0.64
1:A:91:ARG:HB3	1:A:132:ALA:HB3	1.78	0.64
1:D:212:VAL:HG22	1:D:235:ASP:O	1.97	0.64
1:A:247:ARG:NH1	1:A:406:ASP:OD2	2.31	0.64
1:C:102:LYS:HE2	1:C:169:HIS:HD2	1.62	0.64
1:C:416:TRP:HZ3	2:C:572:HOH:O	1.81	0.64
1:C:316:THR:HG21	1:C:352:GLU:OE2	1.98	0.64
1:D:477:ARG:HD2	1:D:481:ARG:NE	2.12	0.64
1:B:270:ALA:HB1	1:B:273:ARG:HD3	1.80	0.63
1:B:94:ARG:HA	1:B:128:ASP:OD1	1.98	0.63
1:B:46:LEU:CD1	1:B:67:LEU:HD11	2.29	0.63
1:A:17:ARG:O	1:A:21:GLU:HG3	1.99	0.63
1:B:384:PRO:HG3	2:B:555:HOH:O	1.99	0.62
1:A:35:LEU:HD22	1:A:66:ARG:HB2	1.81	0.62
1:B:111:PRO:HB2	1:B:183:LEU:HD22	1.80	0.62
1:D:142:GLU:HA	1:D:149:ALA:CB	2.30	0.62
1:D:204:ARG:HE	1:D:232:ALA:HA	1.63	0.62
1:D:203:VAL:HG11	1:D:229:LEU:HD23	1.80	0.62
1:D:285:GLU:O	1:D:289:LYS:HG3	2.01	0.61
1:A:364:GLU:O	1:A:368:LEU:HD13	2.00	0.61
1:C:198:GLU:HA	1:C:201:ARG:NH1	2.16	0.60
1:A:70:SER:C	1:A:72:LEU:N	2.47	0.60
1:C:53:ARG:HD2	1:C:60:ALA:HA	1.83	0.60
1:D:214:LEU:HD13	1:D:238:ALA:HA	1.84	0.60
1:B:14:LEU:O	1:B:18:ARG:HG2	2.01	0.59
1:D:243:HIS:CD2	1:D:245:LEU:H	2.17	0.59
1:C:144:GLU:HG3	1:C:145:GLU:HG2	1.83	0.59
1:D:248:LEU:HD13	1:D:403:ARG:HG2	1.84	0.59
1:A:490:TYR:HB2	1:B:492:LEU:HD11	1.83	0.59
1:B:240:PHE:HB2	1:B:265:LEU:HD11	1.85	0.59
1:B:100:TYR:HB3	1:B:124:MET:O	2.03	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:248:LEU:HD22	1:D:117:GLU:HB3	1.84	0.59
1:B:37:GLU:HA	1:B:40:LYS:NZ	2.18	0.59
1:C:416:TRP:CH2	1:C:469:GLU:OE1	2.56	0.59
1:B:119:GLU:HG2	1:D:481:ARG:HD3	1.84	0.58
1:B:78:CYS:SG	1:B:125:SER:HB2	2.43	0.58
1:B:249:GLY:O	1:B:253:GLU:HG3	2.03	0.58
1:C:416:TRP:HE3	2:C:564:HOH:O	1.87	0.58
1:C:460:THR:HG23	1:C:495:LYS:O	2.04	0.58
1:C:141:ALA:HB3	1:C:150:ALA:HB3	1.85	0.58
1:B:104:LEU:HD21	1:D:481:ARG:NH2	2.19	0.58
1:A:373:ASP:OD1	1:C:23:ARG:NH1	2.31	0.58
1:C:3:LEU:HD11	1:C:29:LEU:HG	1.86	0.58
1:B:141:ALA:HB3	1:B:150:ALA:HB3	1.86	0.58
1:D:94:ARG:CG	1:D:94:ARG:NH1	2.61	0.57
1:B:142:GLU:HG2	1:B:147:PRO:O	2.05	0.57
1:C:309:PHE:HB2	1:C:348:PHE:HE1	1.69	0.57
1:C:3:LEU:HD12	1:C:27:LEU:O	2.04	0.57
1:B:115:GLY:CA	1:B:117:GLU:OE2	2.51	0.57
1:C:211:ARG:HB3	1:C:309:PHE:CD1	2.40	0.57
1:B:214:LEU:HD13	1:B:214:LEU:O	2.05	0.57
1:C:3:LEU:HD21	1:C:29:LEU:CD1	2.26	0.57
1:D:304:ARG:HB3	1:D:304:ARG:NH1	2.20	0.57
1:A:207:ALA:HA	1:A:311:PHE:CE2	2.40	0.56
1:B:155:ASP:OD2	1:B:157:ARG:HD3	2.04	0.56
1:A:1:MET:HG3	1:A:43:PRO:HA	1.87	0.56
1:C:412:LEU:HG	1:C:470:PHE:CE1	2.40	0.56
1:B:240:PHE:HE2	1:B:254:VAL:HB	1.70	0.56
1:B:93:GLU:CD	1:B:131:THR:HG21	2.26	0.56
1:A:46:LEU:HD12	1:A:74:LEU:HD21	1.86	0.56
1:A:35:LEU:HD22	1:A:66:ARG:CB	2.36	0.56
1:B:424:GLN:HE21	1:B:425:ALA:H	1.53	0.56
1:C:109:GLU:CD	1:C:110:GLY:H	2.09	0.56
1:A:304:ARG:HD3	1:A:345:ASP:OD2	2.05	0.56
1:B:211:ARG:HD3	1:B:307:GLY:HA2	1.87	0.56
1:D:53:ARG:HD2	1:D:61:PRO:HD3	1.87	0.56
1:D:136:GLY:O	1:D:154:PRO:HG3	2.05	0.56
1:D:453:VAL:HG21	1:D:500:ILE:HD12	1.88	0.56
1:B:306:ARG:HD3	2:B:568:HOH:O	2.05	0.56
1:D:231:LYS:HA	1:D:231:LYS:HE3	1.88	0.55
1:B:44:GLN:HE22	1:B:187:LYS:HG3	1.70	0.55
1:B:18:ARG:HD2	1:B:166:GLU:O	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:35:LEU:O	1:C:38:VAL:HG13	2.06	0.55
1:A:378:ARG:NH1	1:A:378:ARG:HB3	2.21	0.55
1:B:56:PHE:CZ	1:B:92:VAL:HG23	2.41	0.55
1:C:412:LEU:HG	1:C:470:PHE:HE1	1.72	0.55
1:D:48:LEU:HD11	1:D:74:LEU:HD22	1.89	0.55
1:A:35:LEU:O	1:A:38:VAL:HG22	2.05	0.55
1:D:204:ARG:NH2	1:D:232:ALA:HA	2.21	0.55
1:D:207:ALA:HA	1:D:311:PHE:CE2	2.41	0.55
1:D:209:LYS:NZ	1:D:209:LYS:HB3	2.21	0.55
1:A:481:ARG:HD2	2:A:594:HOH:O	2.06	0.55
1:C:111:PRO:HA	1:C:114:ARG:HG3	1.88	0.55
1:D:204:ARG:HE	1:D:232:ALA:CA	2.20	0.55
1:B:481:ARG:HG2	1:B:481:ARG:HH11	1.72	0.55
1:C:481:ARG:HH11	1:C:481:ARG:HG2	1.71	0.55
1:B:284:PRO:HB3	1:B:503:GLU:HB2	1.88	0.55
1:C:243:HIS:CD2	1:C:245:LEU:H	2.25	0.54
1:A:243:HIS:CD2	1:A:245:LEU:H	2.25	0.54
1:B:252:GLU:HG3	2:B:530:HOH:O	2.07	0.54
1:C:412:LEU:HD11	1:C:473:GLU:OE1	2.06	0.54
1:A:209:LYS:HB3	1:A:209:LYS:NZ	2.21	0.54
1:A:309:PHE:HB2	1:A:348:PHE:CE1	2.42	0.54
1:B:394:VAL:HG13	1:B:399:LEU:HD13	1.89	0.54
1:B:460:THR:HG23	1:B:495:LYS:O	2.07	0.54
1:B:379:HIS:HD2	2:B:603:HOH:O	1.89	0.54
1:D:134:PRO:HB2	1:D:137:TRP:CD1	2.43	0.54
1:B:203:VAL:HG21	1:B:229:LEU:HD23	1.89	0.54
1:D:108:HIS:HA	1:D:140:VAL:O	2.08	0.54
1:D:81:MET:HG3	1:D:160:GLY:HA3	1.89	0.54
1:B:257:ALA:O	1:B:261:LEU:HD13	2.08	0.53
1:A:378:ARG:HH11	1:A:378:ARG:HB3	1.73	0.53
1:C:153:SER:HB3	1:C:158:ALA:HB3	1.90	0.53
1:C:383:GLY:N	1:C:384:PRO:HD2	2.22	0.53
1:B:143:THR:HG22	1:B:145:GLU:H	1.71	0.53
1:C:73:PRO:HA	1:C:157:ARG:O	2.09	0.53
1:C:293:ARG:CG	1:C:294:GLU:N	2.71	0.53
1:C:306:ARG:HH11	1:C:306:ARG:HG3	1.74	0.53
1:A:68:PHE:HE2	1:A:87:GLU:OE2	1.92	0.53
1:B:382:PRO:HB2	1:B:384:PRO:HD2	1.91	0.53
1:C:287:LYS:HE2	1:C:394:VAL:HG23	1.90	0.53
1:B:214:LEU:HB3	1:B:313:ALA:HB3	1.91	0.52
1:A:48:LEU:N	1:A:48:LEU:HD12	2.24	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:111:PRO:CB	1:D:183:LEU:HD21	2.30	0.52
1:D:93:GLU:HB2	1:D:131:THR:OG1	2.09	0.52
1:D:107:ARG:HB2	1:D:142:GLU:HG2	1.91	0.52
1:C:78:CYS:SG	1:C:125:SER:HB2	2.49	0.52
1:C:229:LEU:HD22	1:C:234:VAL:HG21	1.92	0.52
1:D:155:ASP:CG	1:D:157:ARG:HB2	2.30	0.52
1:D:204:ARG:NE	1:D:232:ALA:HA	2.24	0.52
1:D:281:VAL:HG21	1:D:290:ILE:HD12	1.90	0.52
1:C:420:GLU:HG3	2:C:523:HOH:O	2.08	0.52
1:D:477:ARG:HD2	1:D:481:ARG:CZ	2.39	0.52
1:A:203:VAL:HG11	1:A:229:LEU:HD23	1.92	0.52
1:C:37:GLU:O	1:C:40:LYS:HB3	2.10	0.52
1:D:106:THR:HG22	1:D:142:GLU:O	2.10	0.52
1:B:13:ARG:HH11	1:B:13:ARG:HG3	1.75	0.52
1:C:82:GLN:NE2	1:C:128:ASP:CB	2.68	0.52
1:D:179:ASN:O	1:D:183:LEU:HG	2.10	0.51
1:A:70:SER:O	1:A:72:LEU:N	2.43	0.51
1:C:211:ARG:HD2	1:C:235:ASP:OD1	2.11	0.51
1:A:284:PRO:HB3	1:A:503:GLU:HB2	1.92	0.51
1:A:98:ALA:HB2	1:A:127:GLN:NE2	2.25	0.51
1:C:83:LEU:O	1:C:87:GLU:HG3	2.11	0.51
1:D:157:ARG:HH11	1:D:157:ARG:HG3	1.75	0.51
1:D:141:ALA:HB3	1:D:150:ALA:CB	2.39	0.51
1:D:142:GLU:HA	1:D:149:ALA:HB2	1.91	0.51
1:D:204:ARG:CG	1:D:232:ALA:HB1	2.38	0.51
1:B:119:GLU:OE2	1:D:481:ARG:HD3	2.11	0.51
1:A:492:LEU:HD11	1:B:490:TYR:HB2	1.92	0.51
1:B:248:LEU:HD22	1:D:117:GLU:CB	2.41	0.51
1:D:281:VAL:HG21	1:D:290:ILE:CD1	2.41	0.51
1:D:214:LEU:HB3	1:D:313:ALA:HB3	1.93	0.51
1:C:102:LYS:HG3	1:C:123:TRP:HZ3	1.75	0.51
1:B:55:VAL:HG11	1:B:82:GLN:HB2	1.92	0.50
1:C:391:LEU:HD12	1:C:503:GLU:OE2	2.11	0.50
1:B:18:ARG:HD3	1:B:174:MET:SD	2.50	0.50
1:B:416:TRP:CH2	1:B:469:GLU:OE1	2.64	0.50
1:C:252:GLU:HG3	2:C:574:HOH:O	2.10	0.50
1:B:248:LEU:HG	1:B:403:ARG:CD	2.41	0.50
1:B:484:GLU:H	1:B:484:GLU:CD	2.14	0.50
1:D:54:SER:O	1:D:57:ASP:HB3	2.11	0.50
1:D:86:GLN:HG3	1:D:87:GLU:HG2	1.94	0.50
1:B:431:PRO:HA	1:B:446:TYR:CD1	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:309:PHE:HB2	1:A:348:PHE:HE1	1.75	0.50
1:A:91:ARG:HB2	1:A:91:ARG:NH1	2.27	0.50
1:C:164:HIS:HD2	1:C:166:GLU:OE2	1.95	0.50
1:B:416:TRP:HE3	2:D:551:HOH:O	1.95	0.49
1:C:285:GLU:O	1:C:289:LYS:HG3	2.12	0.49
1:A:282:GLU:OE2	1:A:393:GLU:HB2	2.12	0.49
1:B:34:PRO:HB2	1:B:36:GLU:CD	2.33	0.49
1:B:73:PRO:HA	1:B:157:ARG:O	2.13	0.49
1:B:78:CYS:O	1:B:82:GLN:HG2	2.11	0.49
1:A:68:PHE:CE2	1:A:87:GLU:OE2	2.66	0.49
1:B:141:ALA:C	1:B:149:ALA:HB3	2.33	0.49
1:C:300:SER:O	1:C:303:ALA:HB3	2.12	0.49
2:B:594:HOH:O	1:D:416:TRP:HE3	1.95	0.49
1:B:401:ILE:CG1	1:B:484:GLU:HG3	2.42	0.49
1:B:93:GLU:OE2	1:B:131:THR:HG21	2.13	0.49
1:D:214:LEU:HD13	1:D:214:LEU:O	2.12	0.49
1:D:73:PRO:HG3	1:D:157:ARG:NH1	2.28	0.49
1:C:189:ASP:HB2	2:C:520:HOH:O	2.11	0.49
1:A:373:ASP:CG	1:C:23:ARG:HH22	2.16	0.49
1:D:270:ALA:O	1:D:274:PHE:HD2	1.95	0.49
1:D:304:ARG:HH11	1:D:304:ARG:HB3	1.76	0.49
1:C:3:LEU:HB3	1:C:46:LEU:HD23	1.94	0.49
1:D:13:ARG:HD2	2:D:509:HOH:O	2.12	0.49
1:B:482:VAL:HG12	1:B:484:GLU:HG2	1.94	0.49
1:D:381:PHE:HZ	1:D:386:LEU:HD13	1.78	0.49
1:A:5:LEU:CD1	1:A:67:LEU:HD21	2.43	0.48
1:B:204:ARG:HH21	1:B:232:ALA:HA	1.77	0.48
1:B:270:ALA:CB	1:B:273:ARG:HD3	2.42	0.48
1:B:62:ARG:HH12	1:B:86:GLN:NE2	2.11	0.48
1:D:142:GLU:HA	1:D:149:ALA:HB3	1.95	0.48
1:C:35:LEU:HD22	1:C:66:ARG:HB2	1.96	0.48
1:C:272:GLU:H	1:C:272:GLU:CD	2.17	0.48
1:C:46:LEU:HD12	1:C:74:LEU:HD21	1.95	0.48
1:D:18:ARG:O	1:D:22:LEU:HD22	2.12	0.48
1:C:460:THR:HG22	1:C:461:ALA:N	2.28	0.48
1:D:80:GLY:O	1:D:84:LEU:HD13	2.14	0.48
1:B:162:GLN:HG3	1:B:162:GLN:O	2.14	0.48
1:C:105:LEU:HD12	1:C:120:VAL:HG11	1.94	0.48
1:A:285:GLU:O	1:A:289:LYS:HG2	2.14	0.48
1:A:141:ALA:HB3	1:A:150:ALA:HB3	1.95	0.48
1:B:108:HIS:HA	1:B:140:VAL:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:94:ARG:CG	1:D:94:ARG:HH11	2.00	0.48
1:A:399:LEU:O	1:A:403:ARG:HG3	2.14	0.48
1:B:19:LEU:HD11	1:B:47:ILE:HD12	1.96	0.48
1:D:198:GLU:HG3	1:D:202:GLU:OE2	2.14	0.48
1:D:400:GLU:O	1:D:404:ARG:HG3	2.14	0.48
1:C:5:LEU:HB3	1:C:31:GLY:HA2	1.96	0.47
1:D:304:ARG:HH11	1:D:304:ARG:CB	2.27	0.47
1:A:84:LEU:HD12	1:A:88:LEU:HD12	1.95	0.47
1:B:55:VAL:HG11	1:B:82:GLN:CB	2.45	0.47
1:C:91:ARG:HH11	1:C:91:ARG:CG	2.24	0.47
1:B:372:PRO:HB2	1:D:22:LEU:HD12	1.95	0.47
1:A:239:VAL:HG21	1:A:302:VAL:HG11	1.96	0.47
1:A:391:LEU:HD13	1:A:428:VAL:CG1	2.44	0.47
1:A:55:VAL:HG21	1:A:82:GLN:HB3	1.97	0.47
1:B:460:THR:HG22	1:B:461:ALA:N	2.29	0.47
1:D:301:GLN:HA	1:D:304:ARG:HH12	1.80	0.47
1:A:179:ASN:O	1:A:183:LEU:HG	2.14	0.47
1:C:243:HIS:HD2	1:C:245:LEU:H	1.62	0.47
1:D:480:ARG:HG3	1:D:480:ARG:HH11	1.79	0.47
1:C:351:LEU:HD22	1:C:353:PRO:HG3	1.97	0.47
1:D:91:ARG:HB3	1:D:132:ALA:HB3	1.96	0.47
1:D:310:ARG:HH11	1:D:310:ARG:HG2	1.79	0.47
1:C:290:ILE:O	1:C:293:ARG:HG2	2.14	0.47
1:C:5:LEU:HD21	1:C:46:LEU:HD22	1.97	0.47
1:C:309:PHE:HB2	1:C:348:PHE:CE1	2.49	0.47
1:D:82:GLN:NE2	1:D:128:ASP:HB2	2.27	0.47
1:D:164:HIS:HD2	1:D:166:GLU:OE2	1.98	0.47
1:D:279:LYS:HD2	1:D:280:GLY:N	2.30	0.47
1:C:72:LEU:O	1:C:74:LEU:HG	2.15	0.47
1:C:109:GLU:CG	1:C:110:GLY:N	2.78	0.46
1:D:92:VAL:HG23	1:D:129:ALA:O	2.15	0.46
1:A:198:GLU:O	1:A:202:GLU:HG3	2.15	0.46
1:C:203:VAL:HG11	1:C:229:LEU:HD23	1.98	0.46
1:B:271:LYS:O	1:B:275:LEU:HD23	2.15	0.46
1:D:37:GLU:O	1:D:40:LYS:HG2	2.15	0.46
1:A:293:ARG:O	1:A:296:VAL:HG22	2.16	0.46
1:A:424:GLN:HE21	1:A:425:ALA:N	2.09	0.46
1:A:53:ARG:HD3	1:A:59:ASP:O	2.16	0.46
1:B:251:ARG:HD2	1:B:255:GLU:OE2	2.16	0.46
1:B:2:VAL:O	1:B:26:SER:HA	2.16	0.46
1:D:48:LEU:N	1:D:48:LEU:HD12	2.31	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:420:GLU:HG2	2:A:596:HOH:O	2.15	0.46
1:D:62:ARG:NH2	1:D:86:GLN:HE22	2.13	0.46
1:B:37:GLU:HA	1:B:40:LYS:HZ3	1.81	0.46
1:C:316:THR:OG1	1:C:352:GLU:HB3	2.16	0.46
1:C:46:LEU:HD12	1:C:74:LEU:CD2	2.46	0.46
1:A:412:LEU:O	1:A:416:TRP:HD1	1.99	0.46
1:B:243:HIS:CD2	1:B:245:LEU:H	2.34	0.46
1:C:247:ARG:HD3	2:C:550:HOH:O	2.15	0.46
1:C:35:LEU:O	1:C:39:LEU:HG	2.16	0.46
1:B:193:GLU:HG2	1:B:194:HIS:N	2.32	0.46
1:B:3:LEU:HD11	1:B:29:LEU:CD1	2.46	0.46
1:D:214:LEU:C	1:D:214:LEU:HD22	2.36	0.45
1:A:416:TRP:CH2	1:A:469:GLU:OE1	2.70	0.45
1:C:93:GLU:OE1	1:C:131:THR:HG21	2.16	0.45
1:A:46:LEU:HB2	1:A:74:LEU:HD23	1.99	0.45
1:B:391:LEU:HD13	1:B:428:VAL:CG1	2.46	0.45
1:D:310:ARG:HG3	1:D:311:PHE:CD2	2.51	0.45
1:A:469:GLU:HG3	1:D:469:GLU:HG3	1.98	0.45
1:A:78:CYS:O	1:A:82:GLN:HG3	2.17	0.45
1:C:293:ARG:HG3	1:C:294:GLU:N	2.31	0.45
1:A:46:LEU:HD12	1:A:74:LEU:CD2	2.47	0.45
1:D:28:ILE:HD12	1:D:322:ILE:HD13	1.98	0.45
1:D:83:LEU:O	1:D:87:GLU:HG3	2.16	0.45
1:B:399:LEU:O	1:B:403:ARG:HB2	2.17	0.45
1:C:100:TYR:HB3	1:C:124:MET:O	2.16	0.45
1:C:318:TYR:HA	1:C:355:ARG:O	2.16	0.45
1:D:46:LEU:HD13	1:D:67:LEU:HD11	1.98	0.45
1:A:82:GLN:HE22	1:A:128:ASP:HB2	1.81	0.45
1:C:404:ARG:NH2	1:C:481:ARG:O	2.50	0.45
1:C:481:ARG:HD2	2:C:563:HOH:O	2.17	0.45
1:D:203:VAL:HG12	1:D:234:VAL:HG21	1.99	0.45
1:D:2:VAL:O	1:D:26:SER:HA	2.16	0.45
1:D:460:THR:HG23	1:D:495:LYS:O	2.16	0.45
1:D:78:CYS:O	1:D:82:GLN:HG3	2.17	0.45
1:D:212:VAL:HG12	1:D:311:PHE:HB2	1.99	0.44
1:B:211:ARG:HG3	1:B:235:ASP:OD2	2.17	0.44
1:B:17:ARG:CD	2:B:583:HOH:O	2.48	0.44
1:B:193:GLU:HG2	1:B:194:HIS:CD2	2.52	0.44
1:B:211:ARG:HH11	1:B:211:ARG:HG3	1.80	0.44
1:B:245:LEU:HD23	1:B:399:LEU:HD21	1.99	0.44
1:B:318:TYR:HA	1:B:355:ARG:O	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:272:GLU:CD	1:C:272:GLU:N	2.71	0.44
1:A:84:LEU:HD13	1:A:84:LEU:HA	1.80	0.44
1:B:54:SER:C	1:B:56:PHE:H	2.20	0.44
1:C:306:ARG:HG3	1:C:306:ARG:NH1	2.32	0.44
1:A:53:ARG:NH1	1:A:59:ASP:O	2.50	0.44
1:A:82:GLN:NE2	1:A:128:ASP:HB2	2.32	0.44
1:D:293:ARG:HH11	1:D:293:ARG:HG3	1.82	0.44
1:D:86:GLN:HG3	1:D:87:GLU:CG	2.47	0.44
1:A:122:VAL:HG23	1:A:124:MET:HG2	1.99	0.44
1:A:28:ILE:O	1:A:29:LEU:HD12	2.18	0.44
1:C:93:GLU:CD	1:C:131:THR:HG21	2.38	0.44
1:B:214:LEU:CD1	1:B:238:ALA:HA	2.42	0.44
1:B:134:PRO:HB2	1:B:137:TRP:CD1	2.53	0.44
1:D:401:ILE:HD11	1:D:484:GLU:HG2	2.00	0.44
1:C:492:LEU:HD11	1:D:490:TYR:HB2	2.00	0.44
1:A:167:VAL:HG22	2:A:576:HOH:O	2.17	0.44
1:D:46:LEU:HD11	1:D:72:LEU:HD12	2.00	0.44
1:C:199:LEU:O	1:C:203:VAL:HG23	2.18	0.43
1:D:82:GLN:NE2	1:D:128:ASP:CB	2.75	0.43
1:A:27:LEU:HA	1:A:27:LEU:HD12	1.88	0.43
1:A:313:ALA:HA	1:A:351:LEU:O	2.18	0.43
1:C:46:LEU:HB2	1:C:74:LEU:CD2	2.47	0.43
1:D:138:ARG:HG3	1:D:138:ARG:HH11	1.83	0.43
1:D:496:PRO:HB2	1:D:497:PRO:HA	2.00	0.43
1:D:50:GLY:HA2	1:D:79:TYR:HB3	2.00	0.43
1:A:251:ARG:NH1	1:A:255:GLU:OE2	2.51	0.43
1:B:270:ALA:O	1:B:274:PHE:HD2	2.01	0.43
1:A:487:ARG:HD3	1:B:502:TRP:CE2	2.53	0.43
1:D:58:PRO:HG2	1:D:59:ASP:H	1.82	0.43
1:A:229:LEU:HD22	1:A:234:VAL:HG21	2.00	0.43
1:C:198:GLU:HA	1:C:201:ARG:CZ	2.48	0.43
1:C:91:ARG:NH1	1:C:91:ARG:CG	2.82	0.43
1:D:94:ARG:NH2	1:D:126:HIS:O	2.52	0.43
1:B:381:PHE:CE2	1:B:385:GLY:HA2	2.52	0.43
1:C:157:ARG:NH1	1:C:157:ARG:HG2	2.34	0.43
1:C:216:VAL:HA	1:C:222:SER:HB2	2.00	0.43
1:B:481:ARG:NE	1:D:119:GLU:OE1	2.52	0.43
1:B:119:GLU:HG2	1:D:481:ARG:CD	2.48	0.43
1:B:71:GLY:O	1:B:157:ARG:NH2	2.44	0.43
1:D:138:ARG:NH1	1:D:138:ARG:HG3	2.33	0.43
1:B:107:ARG:O	1:B:141:ALA:HA	2.17	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:307:GLY:HA3	1:B:308:PRO:C	2.38	0.43
1:C:100:TYR:HB2	1:C:123:TRP:CE2	2.53	0.43
1:D:162:GLN:O	1:D:162:GLN:HG3	2.18	0.43
1:A:416:TRP:HE3	2:A:581:HOH:O	2.01	0.43
1:C:487:ARG:HD3	1:D:502:TRP:CE2	2.54	0.43
1:A:383:GLY:N	1:A:384:PRO:HD2	2.33	0.43
1:B:243:HIS:HE1	1:B:383:GLY:O	2.02	0.43
1:C:19:LEU:HD23	1:C:26:SER:HB3	2.01	0.43
1:C:304:ARG:O	1:C:305:GLU:HG3	2.19	0.43
1:D:100:TYR:HB2	1:D:123:TRP:CZ2	2.54	0.43
1:B:114:ARG:HH21	1:D:255:GLU:HG3	1.83	0.43
1:A:429:LEU:HD11	1:A:446:TYR:HB3	2.01	0.42
1:B:1:MET:HE3	1:B:27:LEU:HD12	2.01	0.42
1:B:37:GLU:HA	1:B:40:LYS:HZ2	1.84	0.42
1:B:87:GLU:O	1:B:88:LEU:HD23	2.19	0.42
1:A:18:ARG:HD2	1:A:174:MET:SD	2.59	0.42
1:A:199:LEU:O	1:A:203:VAL:HG23	2.19	0.42
1:A:35:LEU:O	1:A:39:LEU:HG	2.20	0.42
1:A:64:ASP:O	1:A:67:LEU:HB2	2.20	0.42
1:C:1:MET:CE	1:C:3:LEU:HD13	2.49	0.42
1:A:34:PRO:HG2	1:A:37:GLU:HB3	2.01	0.42
1:D:155:ASP:OD2	1:D:157:ARG:HB2	2.18	0.42
1:D:46:LEU:HD12	1:D:74:LEU:HD21	2.02	0.42
1:A:91:ARG:CB	1:A:132:ALA:HB3	2.49	0.42
1:C:252:GLU:HA	1:C:255:GLU:OE2	2.19	0.42
1:D:141:ALA:C	1:D:149:ALA:HB3	2.40	0.42
1:D:216:VAL:HA	1:D:222:SER:HB2	2.01	0.42
1:A:477:ARG:O	1:A:481:ARG:HG2	2.20	0.42
1:B:212:VAL:HG22	1:B:311:PHE:HB2	2.01	0.42
1:C:146:ASN:HA	1:C:147:PRO:HD2	1.94	0.42
1:C:46:LEU:HB2	1:C:74:LEU:HD22	2.02	0.42
1:A:162:GLN:HG3	1:A:162:GLN:O	2.20	0.42
1:A:502:TRP:CZ2	1:B:487:ARG:HD3	2.55	0.42
1:C:239:VAL:HB	1:C:299:PHE:HE1	1.84	0.42
1:D:221:ASP:HB2	2:D:518:HOH:O	2.20	0.42
1:B:289:LYS:O	1:B:293:ARG:HG3	2.18	0.42
1:D:352:GLU:HG3	1:D:355:ARG:HD2	2.02	0.42
1:C:249:GLY:HA2	2:C:574:HOH:O	2.20	0.41
1:D:284:PRO:HB3	1:D:503:GLU:HB2	2.00	0.41
1:A:46:LEU:HB2	1:A:74:LEU:CD2	2.50	0.41
1:C:383:GLY:N	1:C:384:PRO:CD	2.84	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:468:LEU:HD21	1:D:468:LEU:CD2	2.44	0.41
1:D:122:VAL:HG23	1:D:124:MET:HG2	2.01	0.41
1:D:301:GLN:HA	1:D:304:ARG:NH1	2.34	0.41
1:B:155:ASP:OD2	1:B:157:ARG:HB2	2.20	0.41
1:B:283:ASP:HB3	1:B:286:GLU:HB2	2.01	0.41
1:C:481:ARG:NH1	1:C:481:ARG:HG2	2.35	0.41
1:A:157:ARG:HH11	1:A:157:ARG:HG2	1.86	0.41
1:C:109:GLU:HG3	1:C:110:GLY:N	2.35	0.41
1:D:193:GLU:O	1:D:197:GLU:HG3	2.20	0.41
1:D:313:ALA:HA	1:D:351:LEU:O	2.20	0.41
1:D:57:ASP:HB3	1:D:60:ALA:HB2	2.02	0.41
1:B:367:LEU:HB2	1:B:376:ARG:NE	2.35	0.41
1:D:477:ARG:HH11	1:D:481:ARG:NH2	2.19	0.41
1:B:383:GLY:N	1:B:384:PRO:CD	2.82	0.41
1:B:81:MET:HG3	1:B:160:GLY:HA3	2.02	0.41
1:C:432:VAL:HG12	1:C:446:TYR:N	2.34	0.41
1:C:33:ALA:HA	1:C:34:PRO:HD3	1.90	0.41
1:D:211:ARG:HD2	1:D:235:ASP:OD1	2.19	0.41
1:A:107:ARG:O	1:A:141:ALA:HA	2.21	0.41
1:A:79:TYR:CE2	1:A:83:LEU:HD11	2.56	0.41
1:A:94:ARG:HG2	1:A:94:ARG:NH1	2.36	0.41
1:B:290:ILE:HA	1:B:293:ARG:NH1	2.35	0.41
1:C:114:ARG:NH1	2:C:541:HOH:O	2.54	0.41
1:C:78:CYS:O	1:C:79:TYR:C	2.59	0.41
1:C:2:VAL:O	1:C:26:SER:HA	2.21	0.41
1:A:243:HIS:HD2	1:A:245:LEU:H	1.67	0.41
1:B:141:ALA:HB3	1:B:150:ALA:CB	2.51	0.41
1:D:137:TRP:CD1	1:D:154:PRO:HD3	2.56	0.41
1:D:349:GLU:HA	1:D:349:GLU:OE1	2.21	0.41
1:D:84:LEU:O	1:D:88:LEU:HB2	2.21	0.41
1:D:382:PRO:HB2	1:D:384:PRO:HD2	2.03	0.40
1:A:239:VAL:CG2	1:A:302:VAL:HG11	2.51	0.40
1:B:309:PHE:HB2	1:B:348:PHE:CE1	2.56	0.40
1:B:481:ARG:CD	1:D:119:GLU:OE1	2.70	0.40
1:D:191:THR:HB	1:D:193:GLU:OE1	2.21	0.40
1:A:142:GLU:HA	1:A:149:ALA:CB	2.51	0.40
1:B:376:ARG:NH1	1:B:377:LEU:HD21	2.36	0.40
1:B:460:THR:CG2	1:B:461:ALA:N	2.83	0.40
1:C:227:LEU:HD21	1:C:261:LEU:HD13	2.04	0.40
1:B:172:LYS:HA	2:B:528:HOH:O	2.20	0.40
1:C:432:VAL:HG12	1:C:445:GLY:C	2.42	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:318:TYR:HA	1:D:355:ARG:O	2.21	0.40
1:D:58:PRO:C	1:D:60:ALA:H	2.24	0.40
1:A:192:PRO:HG3	1:C:367:LEU:HD22	2.04	0.40
1:B:102:LYS:HE2	1:D:415:GLU:OE2	2.21	0.40
1:C:35:LEU:HA	1:C:38:VAL:CG1	2.52	0.40
1:D:273:ARG:HH22	1:D:297:ALA:HB1	1.86	0.40
1:D:19:LEU:HD11	1:D:47:ILE:HD12	2.02	0.40
1:D:60:ALA:HA	1:D:61:PRO:HD3	1.90	0.40
1:D:82:GLN:HE22	1:D:128:ASP:HB3	1.82	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	463/503 (92%)	445 (96%)	17 (4%)	1 (0%)	47	49
1	B	455/503 (90%)	441 (97%)	13 (3%)	1 (0%)	47	49
1	C	458/503 (91%)	441 (96%)	16 (4%)	1 (0%)	47	49
1	D	455/503 (90%)	438 (96%)	17 (4%)	0	100	100
All	All	1831/2012 (91%)	1765 (96%)	63 (3%)	3 (0%)	47	49

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	71	GLY
1	C	305	GLU
1	B	87	GLU

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	389/409 (95%)	377 (97%)	12 (3%)	40	43
1	B	382/409 (93%)	371 (97%)	11 (3%)	42	46
1	C	384/409 (94%)	374 (97%)	10 (3%)	46	50
1	D	383/409 (94%)	365 (95%)	18 (5%)	26	25
All	All	1538/1636 (94%)	1487 (97%)	51 (3%)	38	40

All (51) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	LEU
1	A	42	ARG
1	A	84	LEU
1	A	109	GLU
1	A	145	GLU
1	A	178	GLU
1	A	187	LYS
1	A	209	LYS
1	A	243	HIS
1	A	263	VAL
1	A	266	LEU
1	A	451	ARG
1	B	13	ARG
1	B	14	LEU
1	B	18	ARG
1	B	59	ASP
1	B	117	GLU
1	B	119	GLU
1	B	214	LEU
1	B	240	PHE
1	B	243	HIS
1	B	399	LEU
1	B	456	GLU
1	C	19	LEU

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Mol	Chain	Res	Type
1	C	27	LEU
1	C	36	GLU
1	C	38	VAL
1	C	62	ARG
1	C	243	HIS
1	C	272	GLU
1	C	420	GLU
1	C	451	ARG
1	C	493	THR
1	D	1	MET
1	D	22	LEU
1	D	93	GLU
1	D	94	ARG
1	D	128	ASP
1	D	157	ARG
1	D	193	GLU
1	D	209	LYS
1	D	214	LEU
1	D	243	HIS
1	D	261	LEU
1	D	279	LYS
1	D	282	GLU
1	D	349	GLU
1	D	359	LYS
1	D	469	GLU
1	D	487	ARG
1	D	492	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (25) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	82	GLN
1	A	108	HIS
1	A	127	GLN
1	A	179	ASN
1	A	243	HIS
1	A	424	GLN
1	B	86	GLN
1	B	162	GLN
1	B	175	GLN
1	B	243	HIS
1	B	264	ASN

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Mol	Chain	Res	Type
1	B	379	HIS
1	B	424	GLN
1	C	44	GLN
1	C	82	GLN
1	C	162	GLN
1	C	164	HIS
1	C	169	HIS
1	C	243	HIS
1	C	314	GLN
1	D	10	GLN
1	D	44	GLN
1	D	82	GLN
1	D	164	HIS
1	D	243	HIS

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 carbohydrates in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	471/503 (93%)	0.36	22 (4%)	31	37	23, 41, 83, 109	0
1	B	463/503 (92%)	0.31	15 (3%)	47	54	24, 46, 78, 96	0
1	C	466/503 (92%)	0.42	27 (5%)	23	28	21, 45, 83, 113	0
1	D	463/503 (92%)	0.44	25 (5%)	25	31	23, 48, 86, 112	0
All	All	1863/2012 (92%)	0.38	89 (4%)	30	36	21, 45, 83, 113	0

All (89) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	56	PHE	5.3
1	C	100	TYR	5.2
1	A	58	PRO	4.6
1	A	416	TRP	4.5
1	C	56	PHE	4.3
1	D	55	VAL	4.0
1	D	100	TYR	3.9
1	C	58	PRO	3.9
1	C	95	ALA	3.9
1	A	33	ALA	3.7
1	A	41	HIS	3.7
1	A	60	ALA	3.5
1	D	58	PRO	3.4
1	A	59	ASP	3.4
1	A	38	VAL	3.3
1	D	59	ASP	3.3
1	B	416	TRP	3.2
1	D	127	GLN	3.2
1	D	204	ARG	3.2
1	D	209	LYS	3.2
1	B	100	TYR	3.2

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Mol	Chain	Res	Type	RSRZ
1	B	308	PRO	3.1
1	A	40	LYS	3.1
1	D	212	VAL	3.1
1	D	53	ARG	3.0
1	B	95	ALA	2.9
1	D	94	ARG	2.8
1	B	445	GLY	2.8
1	C	94	ARG	2.8
1	D	93	GLU	2.7
1	C	209	LYS	2.7
1	C	445	GLY	2.7
1	D	128	ASP	2.7
1	B	281	VAL	2.7
1	C	128	ASP	2.7
1	A	100	TYR	2.6
1	A	341	GLY	2.6
1	D	311	PHE	2.6
1	C	125	SER	2.5
1	C	60	ALA	2.5
1	C	57	ASP	2.5
1	A	29	LEU	2.5
1	D	346	LEU	2.5
1	B	307	GLY	2.5
1	A	39	LEU	2.5
1	D	189	ASP	2.5
1	C	323	GLU	2.5
1	B	209	LYS	2.5
1	A	432	VAL	2.5
1	C	126	HIS	2.5
1	C	432	VAL	2.4
1	C	205	GLU	2.4
1	A	37	GLU	2.4
1	D	205	GLU	2.4
1	D	423	ALA	2.4
1	B	207	ALA	2.4
1	A	445	GLY	2.4
1	D	481	ARG	2.4
1	C	416	TRP	2.4
1	A	42	ARG	2.4
1	A	99	GLU	2.3
1	C	144	GLU	2.3
1	A	36	GLU	2.3

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Mol	Chain	Res	Type	RSRZ
1	D	144	GLU	2.3
1	D	347	GLU	2.3
1	C	59	ASP	2.3
1	D	126	HIS	2.3
1	B	118	GLY	2.3
1	C	466	LEU	2.2
1	A	64	ASP	2.2
1	C	308	PRO	2.2
1	A	35	LEU	2.2
1	D	200	LEU	2.2
1	C	127	GLN	2.2
1	C	55	VAL	2.2
1	A	98	ALA	2.2
1	B	129	ALA	2.2
1	B	116	LEU	2.2
1	C	53	ARG	2.2
1	A	31	GLY	2.2
1	C	276	LYS	2.1
1	D	416	TRP	2.1
1	D	377	LEU	2.1
1	B	58	PRO	2.1
1	C	206	ARG	2.0
1	C	147	PRO	2.0
1	B	205	GLU	2.0
1	B	59	ASP	2.0
1	C	422	VAL	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 carbohydrates 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.