Full wwPDB X-ray Structure Validation Report ⓘ

Oct 12, 2021 – 08:53 AM EDT

PDB ID	:	1YV0
Title	:	Crystal structure of skeletal muscle troponin in the Ca2+-free state
Authors	:	Vinogradova, M.V.; Stone, D.B.; Malanina, G.G.; Karatzaferi, C.; Cooke, R.; Mendelson, R.A.; Fletterick, R.J.
Deposited on	:	2005-02-14
Resolution	:	7.00 Å(reported)

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

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

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

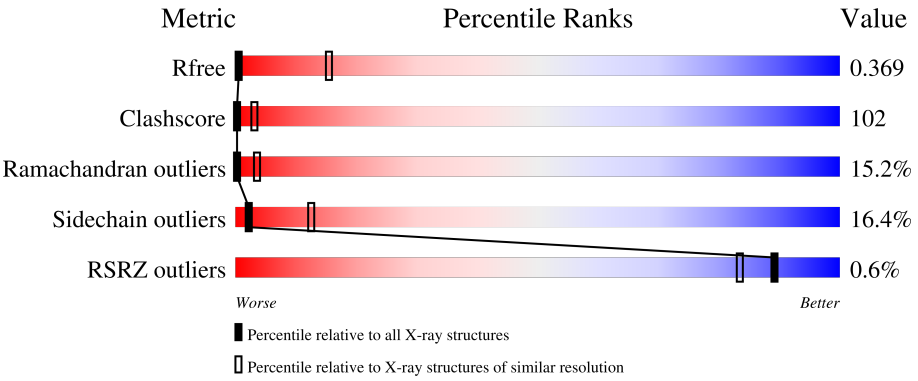
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.23.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.23.2

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 7.00 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	1004 (10.00-3.90)
Clashscore	141614	1069 (10.00-3.90)
Ramachandran outliers	138981	1002 (10.00-3.90)
Sidechain outliers	138945	1002 (10.00-3.86)
RSRZ outliers	127900	1004 (9.50-3.80)

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	T	107	20% 44% 16% 21%
2	I	137	16% 45% 20% • 15%
3	C	162	% 17% 56% 15% • 9%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 2844 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 Troponin T, fast skeletal muscle isoforms.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
1	T	85	Total	C	N	O	0	0	0
			731	459	141	131			

- Molecule 2 is a protein called Troponin I, fast skeletal muscle.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	I	116	Total	C	N	O	S	0	0	0
			944	586	176	179	3			

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
I	48	SER	CYS	engineered mutation	UNP P68246
I	64	SER	CYS	engineered mutation	UNP P68246

- Molecule 3 is a protein called Troponin C, skeletal muscle.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	148	Total	C	N	O	S	0	0	0
			1167	720	185	252	10			

- Molecule 4 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

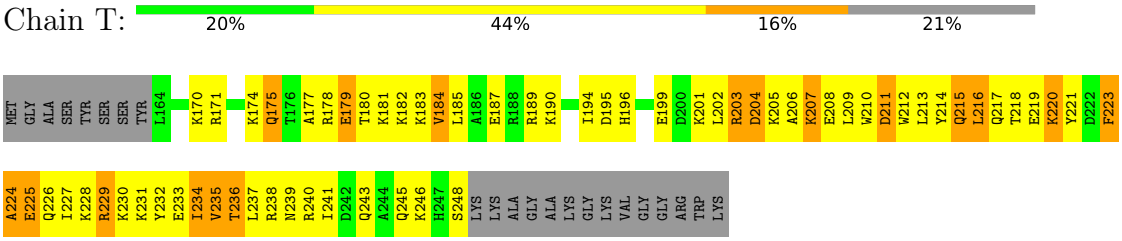
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	C	2	Total	Mg	0	0
			2	2		

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.

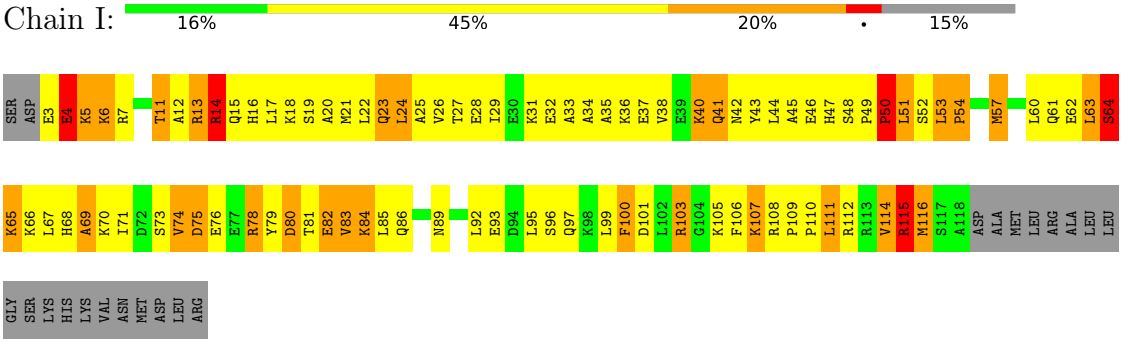
• Molecule 1: Troponin T, fast skeletal muscle isoforms

Chain T:



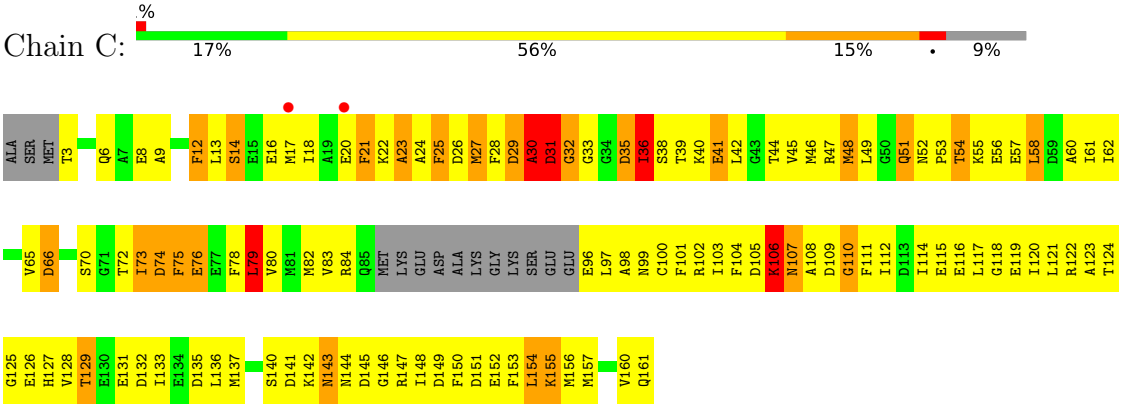
• Molecule 2: Troponin I, fast skeletal muscle

Chain I:



• Molecule 3: Troponin C, skeletal muscle

Chain C:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α, β, γ	134.66Å 134.66Å 102.07Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	25.00 – 7.00 24.65 – 6.99	Depositor EDS
% Data completeness (in resolution range)	(Not available) (25.00-7.00) 94.4 (24.65-6.99)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.36 (at 7.13Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.358 , 0.359 0.334 , 0.369	Depositor DCC
R_{free} test set	71 reflections (4.63%)	wwPDB-VP
Wilson B-factor (Å^2)	382.5	Xtriage
Anisotropy	0.533	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.23 , 293.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.33$, $< L^2 > = 0.16$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.85	EDS
Total number of atoms	2844	wwPDB-VP
Average B, all atoms (Å^2)	30.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.90% 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	T	0.49	0/741	0.71	0/986
2	I	0.62	1/955 (0.1%)	0.94	4/1274 (0.3%)
3	C	0.62	0/1178	0.90	5/1574 (0.3%)
All	All	0.59	1/2874 (0.0%)	0.87	9/3834 (0.2%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	I	115	ARG	CZ-NH1	-5.01	1.26	1.33

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	C	36	ILE	CG1-CB-CG2	-9.51	90.49	111.40
3	C	41	GLU	N-CA-C	-6.67	93.00	111.00
2	I	57	MET	N-CA-C	6.63	128.90	111.00
2	I	14	ARG	NE-CZ-NH2	-5.79	117.40	120.30
3	C	30	ALA	N-CA-C	5.79	126.62	111.00
3	C	31	ASP	CB-CG-OD1	5.64	123.37	118.30
2	I	115	ARG	N-CA-C	5.42	125.64	111.00
3	C	56	GLU	N-CA-C	-5.21	96.95	111.00
2	I	4	GLU	N-CA-C	5.01	124.53	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	T	731	0	764	120	0
2	I	944	0	982	199	0
3	C	1167	0	1089	300	0
4	C	2	0	0	0	0
All	All	2844	0	2835	577	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 102.

All (577) 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)
2:I:115:ARG:HD3	2:I:116:MET:N	1.42	1.32
2:I:108:ARG:O	2:I:111:LEU:HD21	1.27	1.30
2:I:115:ARG:NH1	2:I:116:MET:HB2	1.53	1.20
3:C:29:ASP:CG	3:C:36:ILE:HD13	1.64	1.17
3:C:45:VAL:HA	3:C:48:MET:HB2	1.21	1.16
3:C:160:VAL:O	3:C:161:GLN:O	1.68	1.10
3:C:25:PHE:CE1	3:C:36:ILE:HG12	1.86	1.09
3:C:28:PHE:HB2	3:C:36:ILE:CD1	1.83	1.07
2:I:115:ARG:HH11	2:I:116:MET:HB2	0.98	1.06
3:C:96:GLU:HA	3:C:99:ASN:HD22	1.17	1.06
2:I:111:LEU:HD23	2:I:112:ARG:H	1.19	1.05
3:C:74:ASP:OD2	3:C:76:GLU:HB2	1.58	1.04
2:I:111:LEU:CD2	2:I:112:ARG:H	1.71	1.02
2:I:111:LEU:HD23	2:I:112:ARG:HG2	1.41	1.02
2:I:108:ARG:O	2:I:111:LEU:CD2	2.08	1.01
2:I:115:ARG:NH1	2:I:116:MET:CB	2.24	1.00
2:I:46:GLU:HA	2:I:49:PRO:HG3	1.44	0.98
1:T:204:ASP:O	1:T:208:GLU:HG3	1.65	0.97
1:T:231:LYS:HA	1:T:234:ILE:HD12	1.46	0.96
3:C:47:ARG:CZ	3:C:53:PRO:HD2	1.94	0.96
2:I:115:ARG:CD	2:I:116:MET:H	1.78	0.96
3:C:45:VAL:CA	3:C:48:MET:HB2	1.97	0.95
3:C:51:GLN:O	3:C:53:PRO:HD3	1.66	0.95

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:29:ASP:OD2	3:C:36:ILE:HD13	1.66	0.95
3:C:74:ASP:O	3:C:78:PHE:HB2	1.65	0.94
2:I:111:LEU:HD13	2:I:111:LEU:H	1.27	0.94
3:C:28:PHE:HB2	3:C:36:ILE:HD11	1.50	0.92
1:T:240:ARG:HH11	3:C:150:PHE:HD2	1.01	0.92
3:C:70:SER:O	3:C:72:THR:HG23	1.69	0.91
3:C:36:ILE:CG2	3:C:73:ILE:HG23	2.02	0.90
2:I:103:ARG:HE	2:I:103:ARG:HA	1.38	0.88
3:C:31:ASP:OD1	3:C:31:ASP:O	1.91	0.87
3:C:13:LEU:C	3:C:18:ILE:HD11	1.94	0.87
1:T:202:LEU:HD22	1:T:202:LEU:H	1.39	0.87
1:T:240:ARG:NH1	3:C:150:PHE:HD2	1.73	0.87
3:C:26:ASP:C	3:C:28:PHE:H	1.74	0.87
3:C:36:ILE:O	3:C:72:THR:HA	1.74	0.87
3:C:14:SER:O	3:C:18:ILE:HD13	1.76	0.86
2:I:111:LEU:HD23	2:I:112:ARG:N	1.91	0.86
3:C:36:ILE:HG21	3:C:73:ILE:HG23	1.56	0.86
2:I:29:ILE:HD11	3:C:99:ASN:HB3	1.57	0.85
2:I:13:ARG:O	2:I:17:LEU:N	2.09	0.85
3:C:13:LEU:HB3	3:C:18:ILE:HD11	1.57	0.85
1:T:204:ASP:O	1:T:207:LYS:HG3	1.75	0.84
3:C:29:ASP:OD2	3:C:36:ILE:CD1	2.26	0.84
2:I:109:PRO:HG2	2:I:110:PRO:HD3	1.58	0.84
2:I:111:LEU:N	2:I:111:LEU:HD22	1.90	0.84
2:I:107:LYS:C	2:I:109:PRO:HD2	1.97	0.84
3:C:96:GLU:HA	3:C:99:ASN:ND2	1.91	0.83
2:I:26:VAL:HG13	2:I:27:THR:H	1.43	0.83
3:C:36:ILE:HG21	3:C:73:ILE:O	1.77	0.83
1:T:240:ARG:HD2	3:C:150:PHE:HB3	1.59	0.83
2:I:107:LYS:O	2:I:110:PRO:HD2	1.78	0.83
3:C:13:LEU:HB3	3:C:18:ILE:CD1	2.08	0.83
2:I:115:ARG:NH1	2:I:116:MET:CG	2.41	0.83
1:T:233:GLU:O	1:T:237:LEU:HD13	1.77	0.82
3:C:55:LYS:HA	3:C:58:LEU:HB3	1.62	0.82
3:C:45:VAL:HA	3:C:48:MET:CB	2.07	0.82
3:C:53:PRO:HB2	3:C:57:GLU:O	1.79	0.82
1:T:217:GLN:O	1:T:220:LYS:HB2	1.80	0.82
3:C:28:PHE:C	3:C:36:ILE:HD12	2.00	0.82
1:T:207:LYS:HA	1:T:210:TRP:HB3	1.60	0.82
2:I:110:PRO:O	2:I:114:VAL:HG13	1.80	0.81
1:T:205:LYS:HD2	1:T:209:LEU:HG	1.62	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:25:PHE:CZ	3:C:36:ILE:HG12	2.16	0.80
3:C:150:PHE:O	3:C:154:LEU:HD23	1.81	0.80
2:I:75:ASP:OD2	2:I:78:ARG:HD3	1.82	0.79
3:C:149:ASP:OD1	3:C:151:ASP:HB2	1.83	0.79
2:I:111:LEU:CD2	2:I:112:ARG:N	2.45	0.79
3:C:118:GLY:HA2	3:C:133:ILE:HD13	1.63	0.79
3:C:142:LYS:HE2	3:C:155:LYS:HG2	1.63	0.79
2:I:115:ARG:HD3	2:I:116:MET:H	1.01	0.78
3:C:28:PHE:CB	3:C:36:ILE:CD1	2.60	0.78
3:C:26:ASP:HA	3:C:29:ASP:OD2	1.83	0.78
3:C:45:VAL:HG22	3:C:48:MET:SD	2.23	0.78
3:C:35:ASP:C	3:C:72:THR:HB	2.04	0.77
3:C:129:THR:HG22	3:C:132:ASP:OD2	1.84	0.77
3:C:105:ASP:HA	3:C:112:ILE:HG12	1.65	0.77
3:C:28:PHE:CB	3:C:36:ILE:HD12	2.15	0.77
3:C:55:LYS:HA	3:C:58:LEU:CB	2.15	0.77
2:I:86:GLN:O	2:I:89:ASN:HB2	1.84	0.76
1:T:205:LYS:HA	1:T:208:GLU:CD	2.05	0.76
3:C:116:GLU:O	3:C:119:GLU:HB2	1.85	0.76
2:I:110:PRO:O	2:I:114:VAL:CG1	2.33	0.76
1:T:223:PHE:CE1	2:I:82:GLU:HB2	2.21	0.75
3:C:40:LYS:C	3:C:41:GLU:HG2	2.06	0.75
3:C:98:ALA:HA	3:C:150:PHE:CZ	2.21	0.75
2:I:38:VAL:HG12	2:I:42:ASN:OD1	1.86	0.75
2:I:53:LEU:HD22	2:I:53:LEU:H	1.51	0.75
1:T:240:ARG:NH1	3:C:150:PHE:CD2	2.51	0.75
1:T:178:ARG:O	1:T:181:LYS:HB3	1.85	0.74
3:C:25:PHE:CE1	3:C:36:ILE:CG1	2.67	0.74
3:C:149:ASP:CG	3:C:151:ASP:HB2	2.07	0.74
1:T:234:ILE:HG22	1:T:235:VAL:N	2.02	0.74
3:C:24:ALA:HA	3:C:27:MET:HG3	1.68	0.74
1:T:224:ALA:O	1:T:227:ILE:N	2.19	0.73
3:C:36:ILE:O	3:C:72:THR:CA	2.36	0.73
1:T:205:LYS:HD2	1:T:209:LEU:CG	2.19	0.73
3:C:121:LEU:HD23	3:C:133:ILE:HG12	1.71	0.73
1:T:230:LYS:O	1:T:234:ILE:HG13	1.89	0.72
3:C:25:PHE:O	3:C:36:ILE:HD11	1.88	0.72
2:I:26:VAL:HG13	2:I:27:THR:N	2.04	0.72
3:C:129:THR:C	3:C:131:GLU:H	1.91	0.72
2:I:14:ARG:O	2:I:18:LYS:HG3	1.88	0.72
1:T:215:GLN:O	1:T:218:THR:HG22	1.90	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:183:LYS:C	1:T:185:LEU:H	1.92	0.71
3:C:26:ASP:O	3:C:28:PHE:N	2.23	0.71
3:C:13:LEU:HB3	3:C:18:ILE:CG1	2.20	0.71
2:I:25:ALA:HA	3:C:103:ILE:HG21	1.73	0.71
3:C:42:LEU:HD21	3:C:61:ILE:HG22	1.71	0.71
1:T:223:PHE:HB3	2:I:81:THR:HG21	1.73	0.70
3:C:36:ILE:CG2	3:C:73:ILE:O	2.38	0.70
3:C:58:LEU:O	3:C:58:LEU:HD12	1.90	0.70
2:I:28:GLU:HB3	3:C:103:ILE:HG21	1.72	0.70
1:T:215:GLN:HA	1:T:218:THR:HG22	1.74	0.70
2:I:111:LEU:CD2	2:I:112:ARG:HG2	2.20	0.70
2:I:32:GLU:O	2:I:36:LYS:HB2	1.91	0.69
2:I:83:VAL:C	2:I:85:LEU:H	1.96	0.69
3:C:20:GLU:C	3:C:22:LYS:H	1.95	0.69
2:I:108:ARG:N	2:I:109:PRO:HD2	2.06	0.69
3:C:13:LEU:CB	3:C:18:ILE:HD11	2.23	0.69
3:C:98:ALA:HA	3:C:150:PHE:HZ	1.58	0.69
3:C:117:LEU:HA	3:C:120:ILE:HG22	1.75	0.69
2:I:79:TYR:O	2:I:81:THR:N	2.25	0.69
3:C:119:GLU:O	3:C:123:ALA:N	2.26	0.69
1:T:184:VAL:HA	1:T:187:GLU:OE1	1.93	0.68
3:C:35:ASP:O	3:C:72:THR:HB	1.94	0.68
3:C:74:ASP:OD1	3:C:76:GLU:N	2.26	0.68
1:T:210:TRP:CD1	1:T:213:LEU:HD23	2.28	0.68
3:C:13:LEU:HB3	3:C:18:ILE:HG13	1.76	0.68
3:C:45:VAL:HG13	3:C:48:MET:CE	2.24	0.68
2:I:62:GLU:O	2:I:65:LYS:N	2.27	0.68
3:C:78:PHE:C	3:C:80:VAL:H	1.96	0.67
1:T:216:LEU:HD22	2:I:75:ASP:OD2	1.94	0.67
3:C:74:ASP:CG	3:C:76:GLU:HB2	2.14	0.67
2:I:66:LYS:HA	2:I:69:ALA:HB3	1.77	0.67
2:I:78:ARG:O	2:I:81:THR:HB	1.95	0.67
2:I:86:GLN:HA	2:I:89:ASN:HB2	1.77	0.67
3:C:120:ILE:HA	3:C:123:ALA:HB3	1.77	0.67
1:T:205:LYS:HD2	1:T:209:LEU:CD1	2.26	0.66
2:I:51:LEU:HD23	2:I:52:SER:N	2.10	0.66
3:C:17:MET:O	3:C:18:ILE:HD12	1.95	0.66
3:C:129:THR:H	3:C:132:ASP:HB2	1.59	0.66
2:I:115:ARG:HH12	2:I:116:MET:HG3	1.60	0.66
1:T:205:LYS:CD	1:T:209:LEU:HG	2.26	0.66
2:I:70:LYS:HA	2:I:73:SER:HB3	1.77	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:12:ALA:O	2:I:16:HIS:N	2.18	0.65
3:C:75:PHE:CE1	3:C:79:LEU:HD11	2.31	0.65
2:I:3:GLU:O	2:I:5:LYS:N	2.25	0.65
1:T:210:TRP:O	1:T:213:LEU:HB3	1.97	0.65
2:I:105:LYS:O	2:I:106:PHE:HB2	1.96	0.65
3:C:75:PHE:CE1	3:C:79:LEU:HD21	2.32	0.65
2:I:111:LEU:HD22	2:I:112:ARG:H	1.61	0.65
3:C:17:MET:C	3:C:18:ILE:HD12	2.17	0.65
1:T:215:GLN:O	1:T:216:LEU:C	2.35	0.65
3:C:25:PHE:HE1	3:C:73:ILE:O	1.80	0.65
2:I:24:LEU:HD13	3:C:120:ILE:CD1	2.28	0.64
2:I:34:ALA:O	2:I:38:VAL:HG23	1.98	0.64
2:I:25:ALA:O	3:C:103:ILE:HD12	1.98	0.64
2:I:62:GLU:O	2:I:64:SER:N	2.30	0.64
1:T:224:ALA:O	1:T:227:ILE:HG13	1.97	0.64
2:I:38:VAL:C	2:I:40:LYS:N	2.51	0.64
3:C:13:LEU:CA	3:C:18:ILE:HD11	2.28	0.64
2:I:79:TYR:C	2:I:81:THR:N	2.50	0.64
3:C:8:GLU:HG3	3:C:9:ALA:N	2.13	0.64
3:C:97:LEU:HB3	3:C:154:LEU:CD1	2.28	0.64
3:C:47:ARG:HA	3:C:51:GLN:H	1.61	0.64
3:C:156:MET:HG3	3:C:157:MET:N	2.13	0.64
3:C:14:SER:C	3:C:18:ILE:HD13	2.18	0.63
3:C:128:VAL:HA	3:C:132:ASP:OD2	1.98	0.63
3:C:129:THR:C	3:C:131:GLU:N	2.52	0.63
3:C:28:PHE:CE1	3:C:45:VAL:HG11	2.33	0.63
3:C:75:PHE:HD1	3:C:78:PHE:HD2	1.44	0.63
2:I:83:VAL:C	2:I:85:LEU:N	2.52	0.63
1:T:237:LEU:O	1:T:241:ILE:HG13	1.99	0.63
1:T:184:VAL:HG12	1:T:184:VAL:O	1.98	0.63
1:T:235:VAL:O	1:T:236:THR:C	2.37	0.62
3:C:13:LEU:HD11	3:C:79:LEU:HD22	1.81	0.62
3:C:25:PHE:HZ	3:C:74:ASP:HA	1.64	0.62
2:I:22:LEU:HD21	3:C:157:MET:SD	2.39	0.62
2:I:115:ARG:CD	2:I:116:MET:N	2.37	0.62
3:C:14:SER:N	3:C:18:ILE:HD11	2.14	0.62
2:I:112:ARG:NH1	3:C:57:GLU:OE1	2.32	0.62
3:C:31:ASP:O	3:C:31:ASP:CG	2.38	0.62
3:C:28:PHE:CZ	3:C:45:VAL:HB	2.34	0.62
1:T:214:TYR:HA	1:T:217:GLN:OE1	2.00	0.62
1:T:202:LEU:O	1:T:206:ALA:N	2.21	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:30:ALA:O	3:C:31:ASP:CB	2.47	0.62
3:C:28:PHE:HB2	3:C:36:ILE:CG1	2.30	0.61
3:C:29:ASP:N	3:C:36:ILE:CD1	2.64	0.61
2:I:115:ARG:HH12	2:I:116:MET:CG	2.14	0.61
3:C:3:THR:HG23	3:C:6:GLN:OE1	2.01	0.61
2:I:24:LEU:HD11	3:C:123:ALA:O	1.99	0.61
2:I:11:THR:HG23	2:I:14:ARG:NH2	2.16	0.61
1:T:235:VAL:O	1:T:238:ARG:N	2.34	0.61
2:I:68:HIS:O	2:I:71:ILE:HB	1.99	0.61
3:C:13:LEU:HD11	3:C:79:LEU:CD2	2.31	0.61
1:T:181:LYS:HG3	2:I:79:TYR:CE2	2.35	0.60
1:T:224:ALA:O	1:T:226:GLN:N	2.34	0.60
2:I:64:SER:O	2:I:67:LEU:N	2.35	0.60
3:C:47:ARG:C	3:C:49:LEU:H	2.04	0.60
1:T:234:ILE:O	1:T:237:LEU:HB2	2.00	0.60
1:T:210:TRP:HA	1:T:213:LEU:HB3	1.82	0.60
1:T:238:ARG:O	1:T:241:ILE:HB	2.01	0.60
3:C:36:ILE:CG2	3:C:73:ILE:CG2	2.77	0.60
3:C:105:ASP:HA	3:C:112:ILE:CG1	2.31	0.60
3:C:31:ASP:O	3:C:32:GLY:C	2.40	0.60
1:T:220:LYS:O	1:T:223:PHE:N	2.34	0.60
1:T:231:LYS:HD2	1:T:234:ILE:HD12	1.83	0.59
2:I:53:LEU:HD13	2:I:53:LEU:N	2.18	0.59
2:I:66:LYS:O	2:I:69:ALA:HB3	2.02	0.59
3:C:140:SER:OG	3:C:156:MET:HB3	2.03	0.59
2:I:86:GLN:C	2:I:89:ASN:HB2	2.23	0.59
2:I:107:LYS:O	2:I:111:LEU:HD11	2.03	0.59
2:I:49:PRO:O	2:I:51:LEU:N	2.35	0.59
3:C:54:THR:O	3:C:57:GLU:C	2.41	0.59
2:I:29:ILE:HA	3:C:103:ILE:HD11	1.85	0.59
2:I:64:SER:O	2:I:65:LYS:C	2.41	0.59
3:C:140:SER:O	3:C:152:GLU:HB3	2.03	0.59
2:I:31:LYS:C	2:I:33:ALA:H	2.04	0.58
3:C:75:PHE:CD1	3:C:79:LEU:HD11	2.38	0.58
3:C:28:PHE:HE1	3:C:45:VAL:HG11	1.69	0.58
2:I:108:ARG:N	2:I:109:PRO:CD	2.66	0.58
2:I:109:PRO:CG	2:I:110:PRO:HD3	2.30	0.58
2:I:86:GLN:CA	2:I:89:ASN:HB2	2.33	0.58
3:C:36:ILE:O	3:C:72:THR:CB	2.51	0.58
3:C:36:ILE:O	3:C:72:THR:HB	2.03	0.58
2:I:75:ASP:HA	2:I:78:ARG:HB3	1.84	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:47:ARG:HH22	3:C:58:LEU:CD2	2.16	0.58
3:C:75:PHE:CD1	3:C:78:PHE:HD2	2.22	0.58
3:C:115:GLU:O	3:C:119:GLU:N	2.34	0.58
1:T:241:ILE:HG12	2:I:99:LEU:HD13	1.85	0.57
3:C:45:VAL:C	3:C:48:MET:HB2	2.24	0.57
3:C:47:ARG:HG2	3:C:51:GLN:O	2.04	0.57
3:C:119:GLU:O	3:C:122:ARG:N	2.35	0.57
1:T:183:LYS:O	1:T:185:LEU:N	2.35	0.57
2:I:13:ARG:O	2:I:16:HIS:N	2.38	0.57
2:I:62:GLU:O	2:I:63:LEU:C	2.42	0.57
1:T:205:LYS:HD2	1:T:209:LEU:HD11	1.86	0.57
2:I:13:ARG:O	2:I:15:GLN:N	2.37	0.57
2:I:114:VAL:HG22	2:I:115:ARG:N	2.18	0.57
3:C:75:PHE:HD1	3:C:78:PHE:CD2	2.23	0.57
2:I:32:GLU:O	2:I:32:GLU:HG2	2.02	0.57
2:I:5:LYS:N	2:I:5:LYS:HD3	2.19	0.57
1:T:202:LEU:H	1:T:202:LEU:CD2	2.14	0.57
2:I:12:ALA:O	2:I:16:HIS:CB	2.53	0.56
3:C:149:ASP:OD2	3:C:152:GLU:N	2.30	0.56
2:I:76:GLU:O	2:I:79:TYR:HB3	2.05	0.56
2:I:114:VAL:CG2	2:I:115:ARG:N	2.68	0.56
3:C:20:GLU:O	3:C:22:LYS:N	2.36	0.56
3:C:97:LEU:HB3	3:C:154:LEU:HD13	1.86	0.56
3:C:103:ILE:HG22	3:C:103:ILE:O	2.04	0.56
1:T:205:LYS:O	1:T:208:GLU:N	2.35	0.56
3:C:28:PHE:O	3:C:38:SER:OG	2.23	0.56
1:T:220:LYS:O	1:T:221:TYR:C	2.43	0.56
2:I:70:LYS:O	2:I:73:SER:HB3	2.05	0.56
1:T:232:TYR:O	1:T:233:GLU:C	2.44	0.56
3:C:127:HIS:HD2	3:C:128:VAL:H	1.54	0.56
2:I:26:VAL:CG1	2:I:27:THR:H	2.18	0.56
3:C:36:ILE:HG22	3:C:73:ILE:CG2	2.36	0.56
2:I:79:TYR:C	2:I:81:THR:H	2.09	0.55
1:T:202:LEU:O	1:T:203:ARG:O	2.23	0.55
1:T:207:LYS:CA	1:T:210:TRP:HB3	2.32	0.55
1:T:215:GLN:O	1:T:218:THR:N	2.40	0.55
1:T:238:ARG:NH1	2:I:95:LEU:HD11	2.22	0.55
2:I:24:LEU:HD13	3:C:120:ILE:HD12	1.89	0.55
2:I:33:ALA:C	2:I:35:ALA:N	2.56	0.55
2:I:67:LEU:O	2:I:71:ILE:HG13	2.06	0.55
3:C:78:PHE:O	3:C:80:VAL:N	2.39	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:33:ALA:O	2:I:37:GLU:N	2.40	0.55
3:C:109:ASP:C	3:C:111:PHE:H	2.10	0.55
3:C:141:ASP:OD2	3:C:145:ASP:OD1	2.25	0.55
3:C:75:PHE:HE1	3:C:79:LEU:HD21	1.70	0.55
2:I:18:LYS:HE2	3:C:156:MET:HE2	1.89	0.55
3:C:106:LYS:O	3:C:107:ASN:HB3	2.07	0.55
1:T:229:ARG:O	1:T:232:TYR:HB3	2.06	0.55
2:I:81:THR:C	2:I:83:VAL:N	2.58	0.54
3:C:142:LYS:O	3:C:144:ASN:N	2.39	0.54
1:T:207:LYS:O	1:T:211:ASP:N	2.34	0.54
2:I:40:LYS:O	2:I:43:TYR:N	2.40	0.54
2:I:103:ARG:HA	2:I:103:ARG:NE	2.14	0.54
2:I:83:VAL:O	2:I:85:LEU:N	2.41	0.54
2:I:25:ALA:HB1	3:C:103:ILE:HB	1.90	0.54
3:C:42:LEU:O	3:C:46:MET:HG3	2.06	0.54
3:C:109:ASP:O	3:C:111:PHE:N	2.40	0.54
1:T:182:LYS:O	1:T:185:LEU:HB2	2.07	0.54
1:T:205:LYS:HA	1:T:208:GLU:CG	2.38	0.54
1:T:230:LYS:O	1:T:234:ILE:CG1	2.55	0.54
2:I:31:LYS:C	2:I:33:ALA:N	2.61	0.54
3:C:36:ILE:HG22	3:C:73:ILE:N	2.23	0.54
3:C:65:VAL:O	3:C:66:ASP:HB3	2.07	0.54
3:C:102:ARG:O	3:C:106:LYS:HD3	2.08	0.54
3:C:115:GLU:O	3:C:118:GLY:N	2.40	0.54
1:T:243:GLN:HG2	3:C:149:ASP:HB3	1.88	0.54
2:I:66:LYS:O	2:I:67:LEU:C	2.46	0.54
1:T:214:TYR:CA	1:T:217:GLN:OE1	2.56	0.54
2:I:24:LEU:HD11	3:C:123:ALA:C	2.28	0.54
3:C:53:PRO:O	3:C:54:THR:O	2.26	0.54
2:I:108:ARG:CA	2:I:111:LEU:HD11	2.38	0.53
3:C:39:THR:HG22	3:C:73:ILE:HG21	1.90	0.53
2:I:33:ALA:C	2:I:35:ALA:H	2.12	0.53
2:I:35:ALA:C	2:I:37:GLU:H	2.11	0.53
3:C:74:ASP:CG	3:C:76:GLU:H	2.12	0.53
3:C:47:ARG:HG2	3:C:52:ASN:HA	1.90	0.53
3:C:127:HIS:CD2	3:C:128:VAL:N	2.77	0.53
3:C:47:ARG:NH1	3:C:53:PRO:HD2	2.23	0.53
2:I:13:ARG:NH2	3:C:132:ASP:CG	2.63	0.53
2:I:22:LEU:O	2:I:24:LEU:N	2.42	0.53
3:C:36:ILE:CB	3:C:73:ILE:O	2.57	0.53
2:I:108:ARG:HA	2:I:111:LEU:HD11	1.90	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:38:VAL:HG12	2:I:42:ASN:CG	2.30	0.52
1:T:232:TYR:O	1:T:234:ILE:N	2.42	0.52
1:T:239:ASN:C	1:T:241:ILE:H	2.13	0.52
3:C:29:ASP:OD2	3:C:36:ILE:HD11	2.10	0.52
1:T:170:LYS:O	1:T:170:LYS:HG2	2.10	0.52
2:I:38:VAL:C	2:I:40:LYS:H	2.11	0.52
3:C:28:PHE:C	3:C:36:ILE:CD1	2.77	0.52
2:I:17:LEU:O	2:I:20:ALA:N	2.34	0.52
2:I:79:TYR:O	2:I:80:ASP:C	2.48	0.52
3:C:40:LYS:C	3:C:41:GLU:CG	2.76	0.52
2:I:35:ALA:C	2:I:37:GLU:N	2.64	0.52
3:C:127:HIS:HD2	3:C:128:VAL:N	2.07	0.51
3:C:156:MET:HG3	3:C:157:MET:HG2	1.90	0.51
1:T:215:GLN:CA	1:T:218:THR:HG22	2.40	0.51
1:T:248:SER:O	1:T:248:SER:OG	2.27	0.51
2:I:11:THR:O	2:I:12:ALA:C	2.48	0.51
3:C:29:ASP:O	3:C:30:ALA:HB2	2.11	0.51
3:C:153:PHE:HD2	3:C:154:LEU:HD22	1.76	0.51
1:T:213:LEU:HD22	2:I:67:LEU:HD22	1.91	0.51
1:T:239:ASN:C	1:T:241:ILE:N	2.62	0.51
2:I:5:LYS:C	2:I:7:ARG:H	2.14	0.51
2:I:79:TYR:O	2:I:83:VAL:HG23	2.11	0.51
3:C:47:ARG:NH2	3:C:53:PRO:O	2.43	0.51
3:C:78:PHE:C	3:C:80:VAL:N	2.63	0.51
3:C:25:PHE:O	3:C:28:PHE:CD1	2.64	0.51
2:I:107:LYS:O	2:I:111:LEU:CD1	2.58	0.51
3:C:31:ASP:O	3:C:32:GLY:O	2.28	0.51
3:C:45:VAL:HG13	3:C:48:MET:HE2	1.92	0.51
3:C:14:SER:O	3:C:18:ILE:CD1	2.53	0.51
3:C:35:ASP:HB3	3:C:72:THR:HG21	1.91	0.51
3:C:124:THR:HG23	3:C:126:GLU:H	1.75	0.51
3:C:143:ASN:O	3:C:144:ASN:HB3	2.11	0.51
2:I:81:THR:O	2:I:83:VAL:N	2.44	0.51
3:C:55:LYS:HA	3:C:58:LEU:HB2	1.93	0.51
2:I:85:LEU:HD23	2:I:86:GLN:N	2.26	0.50
3:C:53:PRO:C	3:C:54:THR:O	2.49	0.50
3:C:156:MET:CG	3:C:157:MET:N	2.74	0.50
2:I:23:GLN:C	2:I:26:VAL:HG12	2.32	0.50
3:C:47:ARG:NH2	3:C:53:PRO:HD2	2.26	0.50
3:C:42:LEU:CD2	3:C:61:ILE:HG22	2.41	0.50
3:C:78:PHE:CD2	3:C:79:LEU:HG	2.46	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:86:GLN:HA	2:I:89:ASN:CB	2.41	0.50
3:C:36:ILE:HG23	3:C:38:SER:N	2.25	0.50
3:C:47:ARG:C	3:C:49:LEU:N	2.64	0.50
3:C:29:ASP:OD1	3:C:36:ILE:HD13	2.08	0.50
3:C:118:GLY:O	3:C:122:ARG:HB2	2.11	0.50
2:I:46:GLU:O	2:I:49:PRO:HD3	2.12	0.50
1:T:213:LEU:O	1:T:217:GLN:OE1	2.29	0.50
3:C:101:PHE:O	3:C:105:ASP:HB3	2.12	0.50
3:C:106:LYS:O	3:C:107:ASN:CB	2.60	0.50
1:T:187:GLU:C	1:T:189:ARG:H	2.14	0.49
1:T:220:LYS:O	1:T:223:PHE:HB2	2.12	0.49
2:I:45:ALA:O	2:I:49:PRO:HG3	2.11	0.49
2:I:54:PRO:HD2	2:I:60:LEU:HD21	1.94	0.49
3:C:13:LEU:HD11	3:C:79:LEU:CD1	2.42	0.49
2:I:93:GLU:HA	2:I:96:SER:HB2	1.93	0.49
3:C:25:PHE:CZ	3:C:74:ASP:HA	2.44	0.49
3:C:29:ASP:N	3:C:36:ILE:HD12	2.25	0.49
3:C:150:PHE:O	3:C:153:PHE:HB3	2.12	0.49
3:C:24:ALA:O	3:C:27:MET:HG3	2.12	0.49
3:C:150:PHE:CE1	3:C:153:PHE:CD2	3.00	0.49
2:I:28:GLU:HB3	3:C:103:ILE:HD13	1.93	0.49
2:I:28:GLU:HG2	3:C:103:ILE:HG23	1.94	0.49
2:I:70:LYS:O	2:I:74:VAL:N	2.41	0.49
1:T:223:PHE:HB3	2:I:81:THR:CG2	2.41	0.49
1:T:232:TYR:C	1:T:234:ILE:N	2.59	0.49
3:C:58:LEU:O	3:C:62:ILE:HG13	2.12	0.49
3:C:21:PHE:HB3	3:C:75:PHE:CE1	2.47	0.49
3:C:24:ALA:CA	3:C:27:MET:HG3	2.38	0.49
3:C:23:ALA:HA	3:C:26:ASP:OD2	2.12	0.49
1:T:183:LYS:C	1:T:185:LEU:N	2.60	0.49
1:T:210:TRP:O	1:T:213:LEU:N	2.46	0.49
1:T:230:LYS:C	1:T:232:TYR:N	2.61	0.49
2:I:22:LEU:C	2:I:24:LEU:N	2.66	0.48
2:I:22:LEU:C	2:I:24:LEU:H	2.16	0.48
3:C:28:PHE:HZ	3:C:45:VAL:HB	1.75	0.48
3:C:35:ASP:HB3	3:C:72:THR:CG2	2.43	0.48
1:T:212:TRP:O	1:T:215:GLN:HB2	2.13	0.48
2:I:29:ILE:HD11	3:C:99:ASN:CB	2.37	0.48
2:I:66:LYS:O	2:I:69:ALA:N	2.46	0.48
3:C:26:ASP:C	3:C:28:PHE:N	2.45	0.48
3:C:28:PHE:HB2	3:C:36:ILE:HG13	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:T:227:ILE:HD12	1:T:228:LYS:N	2.29	0.48
3:C:114:ILE:HB	3:C:137:MET:SD	2.53	0.48
3:C:149:ASP:OD2	3:C:151:ASP:HB2	2.13	0.48
3:C:107:ASN:O	3:C:108:ALA:HB3	2.13	0.48
3:C:12:PHE:HD2	3:C:12:PHE:O	1.97	0.48
2:I:68:HIS:HA	2:I:71:ILE:HD12	1.96	0.48
1:T:227:ILE:HD12	1:T:227:ILE:C	2.34	0.48
3:C:28:PHE:CE2	3:C:41:GLU:O	2.67	0.48
1:T:207:LYS:HA	1:T:210:TRP:CB	2.39	0.48
2:I:62:GLU:C	2:I:64:SER:N	2.64	0.48
2:I:111:LEU:HD22	2:I:112:ARG:N	2.23	0.48
2:I:115:ARG:HD3	2:I:115:ARG:C	2.14	0.48
1:T:205:LYS:HD3	1:T:205:LYS:C	2.34	0.48
3:C:47:ARG:O	3:C:49:LEU:N	2.47	0.48
3:C:141:ASP:CG	3:C:141:ASP:O	2.51	0.48
3:C:76:GLU:C	3:C:78:PHE:H	2.17	0.47
3:C:107:ASN:HD21	3:C:109:ASP:CG	2.17	0.47
3:C:145:ASP:CG	3:C:146:GLY:H	2.17	0.47
1:T:212:TRP:O	1:T:213:LEU:C	2.52	0.47
2:I:82:GLU:O	2:I:85:LEU:HB3	2.14	0.47
2:I:14:ARG:HA	2:I:17:LEU:HD12	1.97	0.47
1:T:203:ARG:O	1:T:204:ASP:C	2.51	0.47
1:T:216:LEU:HD22	2:I:75:ASP:CG	2.35	0.47
2:I:26:VAL:CG1	2:I:27:THR:N	2.73	0.47
3:C:13:LEU:HD11	3:C:79:LEU:HD13	1.97	0.47
3:C:20:GLU:C	3:C:22:LYS:N	2.65	0.47
3:C:24:ALA:HA	3:C:27:MET:CG	2.42	0.47
3:C:25:PHE:O	3:C:28:PHE:HB2	2.14	0.47
3:C:30:ALA:O	3:C:31:ASP:HB3	2.12	0.47
3:C:40:LYS:HA	3:C:40:LYS:HD3	1.29	0.47
3:C:101:PHE:O	3:C:105:ASP:CB	2.63	0.47
3:C:35:ASP:O	3:C:36:ILE:HB	2.15	0.47
3:C:75:PHE:CD1	3:C:78:PHE:CD2	3.01	0.47
1:T:215:GLN:HA	1:T:218:THR:CG2	2.42	0.46
2:I:40:LYS:HB3	2:I:41:GLN:H	1.58	0.46
3:C:129:THR:O	3:C:132:ASP:N	2.46	0.46
3:C:28:PHE:CZ	3:C:45:VAL:CB	2.99	0.46
1:T:205:LYS:O	1:T:205:LYS:HD3	2.15	0.46
2:I:89:ASN:O	2:I:92:LEU:HG	2.16	0.46
2:I:13:ARG:HH21	3:C:132:ASP:CG	2.19	0.46
2:I:81:THR:C	2:I:83:VAL:H	2.19	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:16:GLU:HG3	3:C:16:GLU:O	2.16	0.46
3:C:74:ASP:OD1	3:C:75:PHE:N	2.49	0.46
1:T:189:ARG:O	1:T:189:ARG:HG2	2.16	0.46
3:C:104:PHE:CE1	3:C:120:ILE:HG12	2.51	0.46
1:T:204:ASP:OD1	1:T:205:LYS:N	2.49	0.46
1:T:218:THR:HG23	1:T:219:GLU:N	2.31	0.46
3:C:13:LEU:CD1	3:C:79:LEU:HD13	2.45	0.46
3:C:74:ASP:O	3:C:78:PHE:CB	2.51	0.46
1:T:229:ARG:O	1:T:233:GLU:HG2	2.16	0.46
2:I:108:ARG:C	2:I:111:LEU:HD11	2.36	0.46
3:C:25:PHE:CE1	3:C:73:ILE:O	2.65	0.46
1:T:240:ARG:HD2	3:C:150:PHE:CB	2.38	0.45
2:I:111:LEU:H	2:I:111:LEU:CD1	2.01	0.45
3:C:61:ILE:HG22	3:C:61:ILE:O	2.16	0.45
2:I:13:ARG:O	2:I:14:ARG:C	2.55	0.45
2:I:70:LYS:CA	2:I:73:SER:HB3	2.44	0.45
1:T:230:LYS:C	1:T:232:TYR:H	2.19	0.45
3:C:12:PHE:HE1	3:C:83:VAL:HG13	1.82	0.45
3:C:101:PHE:HD2	3:C:153:PHE:CD1	2.35	0.45
1:T:174:LYS:O	1:T:177:ALA:HB3	2.17	0.45
1:T:213:LEU:HD11	1:T:217:GLN:NE2	2.31	0.45
2:I:11:THR:O	2:I:15:GLN:N	2.41	0.45
2:I:19:SER:O	2:I:23:GLN:HB2	2.16	0.45
3:C:101:PHE:CD2	3:C:153:PHE:CD1	3.05	0.45
3:C:14:SER:N	3:C:18:ILE:CD1	2.80	0.45
3:C:44:THR:O	3:C:44:THR:HG22	2.17	0.45
1:T:217:GLN:O	1:T:220:LYS:N	2.45	0.44
2:I:64:SER:O	2:I:67:LEU:HB2	2.17	0.44
2:I:92:LEU:C	2:I:92:LEU:HD12	2.37	0.44
2:I:74:VAL:O	2:I:75:ASP:C	2.55	0.44
3:C:54:THR:O	3:C:58:LEU:HB2	2.18	0.44
3:C:150:PHE:HA	3:C:153:PHE:HB3	1.98	0.44
1:T:223:PHE:CE1	2:I:78:ARG:NH1	2.85	0.44
3:C:47:ARG:HH22	3:C:58:LEU:HD22	1.80	0.44
3:C:140:SER:OG	3:C:156:MET:CB	2.64	0.44
1:T:234:ILE:O	1:T:235:VAL:C	2.54	0.44
1:T:236:THR:HG23	3:C:101:PHE:HE1	1.82	0.44
1:T:227:ILE:O	1:T:231:LYS:HB2	2.17	0.44
2:I:11:THR:HG23	2:I:14:ARG:HH21	1.81	0.44
2:I:82:GLU:C	2:I:85:LEU:HB3	2.37	0.44
3:C:6:GLN:O	3:C:9:ALA:HB3	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:97:LEU:O	3:C:150:PHE:CE1	2.71	0.44
3:C:101:PHE:CE1	3:C:150:PHE:HB2	2.52	0.44
1:T:230:LYS:HA	1:T:233:GLU:HB2	2.00	0.44
3:C:111:PHE:HB3	3:C:147:ARG:HB3	1.99	0.44
3:C:117:LEU:CA	3:C:120:ILE:HG22	2.47	0.44
1:T:195:ASP:O	1:T:196:HIS:HB2	2.18	0.44
2:I:107:LYS:HD2	2:I:107:LYS:N	2.33	0.43
3:C:108:ALA:C	3:C:110:GLY:H	2.20	0.43
3:C:154:LEU:N	3:C:154:LEU:CD2	2.81	0.43
2:I:5:LYS:O	2:I:7:ARG:N	2.51	0.43
2:I:21:MET:O	3:C:104:PHE:HZ	2.02	0.43
3:C:129:THR:N	3:C:132:ASP:OD2	2.51	0.43
2:I:15:GLN:C	2:I:17:LEU:N	2.71	0.43
2:I:24:LEU:O	2:I:27:THR:HG22	2.17	0.43
3:C:25:PHE:O	3:C:28:PHE:HD1	2.00	0.43
3:C:101:PHE:HB2	3:C:150:PHE:CE1	2.53	0.43
3:C:124:THR:HG23	3:C:125:GLY:N	2.33	0.43
3:C:129:THR:O	3:C:131:GLU:N	2.51	0.43
3:C:140:SER:HB2	3:C:148:ILE:CD1	2.48	0.43
3:C:141:ASP:OD2	3:C:141:ASP:C	2.57	0.43
2:I:99:LEU:O	2:I:103:ARG:HB2	2.19	0.43
1:T:224:ALA:O	1:T:227:ILE:HG23	2.17	0.43
2:I:24:LEU:HD13	3:C:120:ILE:HD11	2.00	0.43
1:T:177:ALA:O	1:T:181:LYS:HB2	2.19	0.43
1:T:179:GLU:C	1:T:181:LYS:N	2.71	0.43
3:C:13:LEU:HD21	3:C:79:LEU:HD22	2.00	0.43
1:T:214:TYR:CD1	1:T:215:GLN:N	2.86	0.43
1:T:217:GLN:H	1:T:217:GLN:HG3	1.49	0.43
3:C:39:THR:O	3:C:42:LEU:CB	2.67	0.43
1:T:223:PHE:CZ	2:I:82:GLU:HB2	2.52	0.43
2:I:66:LYS:O	2:I:70:LYS:N	2.49	0.43
3:C:96:GLU:CA	3:C:99:ASN:HD22	2.08	0.43
2:I:103:ARG:HE	2:I:103:ARG:CA	2.20	0.43
3:C:39:THR:O	3:C:42:LEU:HB2	2.17	0.43
2:I:4:GLU:OE1	2:I:4:GLU:C	2.56	0.43
3:C:120:ILE:HG23	3:C:121:LEU:N	2.33	0.43
2:I:26:VAL:O	2:I:29:ILE:HB	2.19	0.42
2:I:50:PRO:O	2:I:51:LEU:O	2.37	0.42
2:I:80:ASP:O	2:I:84:LYS:HG3	2.19	0.42
2:I:7:ARG:O	2:I:7:ARG:HG2	2.19	0.42
2:I:22:LEU:HD23	3:C:104:PHE:HE2	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:100:PHE:CG	2:I:101:ASP:N	2.87	0.42
3:C:26:ASP:O	3:C:29:ASP:N	2.42	0.42
3:C:121:LEU:HG	3:C:128:VAL:HG11	2.00	0.42
2:I:17:LEU:C	2:I:19:SER:N	2.71	0.42
2:I:29:ILE:HG13	3:C:103:ILE:HD12	2.01	0.42
3:C:141:ASP:OD2	3:C:141:ASP:O	2.37	0.42
2:I:46:GLU:HA	2:I:49:PRO:CG	2.33	0.42
3:C:36:ILE:O	3:C:36:ILE:HG22	2.17	0.42
1:T:212:TRP:O	1:T:215:GLN:N	2.52	0.42
2:I:105:LYS:HA	2:I:105:LYS:HD3	1.66	0.42
3:C:96:GLU:O	3:C:99:ASN:HB2	2.19	0.42
3:C:99:ASN:O	3:C:102:ARG:N	2.47	0.42
1:T:179:GLU:C	1:T:181:LYS:H	2.23	0.42
3:C:45:VAL:HA	3:C:48:MET:SD	2.60	0.42
3:C:54:THR:OG1	3:C:57:GLU:HB2	2.19	0.42
3:C:128:VAL:CA	3:C:132:ASP:OD2	2.66	0.42
1:T:213:LEU:C	1:T:217:GLN:OE1	2.58	0.42
2:I:86:GLN:HA	2:I:89:ASN:CG	2.40	0.42
2:I:115:ARG:NH2	3:C:52:ASN:OD1	2.53	0.42
1:T:231:LYS:HD2	1:T:234:ILE:CD1	2.50	0.42
3:C:150:PHE:CE1	3:C:154:LEU:HD21	2.55	0.42
3:C:97:LEU:HD23	3:C:97:LEU:HA	1.91	0.42
3:C:106:LYS:HD2	3:C:106:LYS:HA	1.67	0.41
3:C:114:ILE:HD12	3:C:133:ILE:HG22	2.01	0.41
2:I:11:THR:HA	2:I:14:ARG:HB2	2.01	0.41
1:T:225:GLU:OE1	1:T:228:LYS:HD3	2.20	0.41
3:C:79:LEU:HA	3:C:82:MET:HB2	2.03	0.41
2:I:96:SER:O	2:I:107:LYS:HE2	2.21	0.41
3:C:102:ARG:O	3:C:106:LYS:CD	2.67	0.41
1:T:213:LEU:HD22	2:I:67:LEU:CD2	2.51	0.41
1:T:224:ALA:O	1:T:225:GLU:C	2.58	0.41
1:T:237:LEU:O	1:T:238:ARG:C	2.58	0.41
3:C:53:PRO:O	3:C:54:THR:C	2.59	0.41
1:T:208:GLU:O	1:T:209:LEU:C	2.59	0.41
2:I:67:LEU:HD23	2:I:67:LEU:HA	1.98	0.41
3:C:6:GLN:HA	3:C:9:ALA:HB3	2.02	0.41
3:C:118:GLY:CA	3:C:133:ILE:HD13	2.41	0.41
2:I:92:LEU:HD12	2:I:93:GLU:N	2.36	0.41
3:C:36:ILE:HG22	3:C:73:ILE:H	1.86	0.41
3:C:40:LYS:O	3:C:41:GLU:HG2	2.21	0.41
2:I:71:ILE:O	2:I:74:VAL:HB	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:I:99:LEU:HD12	2:I:99:LEU:HA	1.91	0.41
3:C:28:PHE:CA	3:C:36:ILE:HD12	2.51	0.41
2:I:60:LEU:O	2:I:61:GLN:C	2.59	0.40
3:C:60:ALA:C	3:C:62:ILE:H	2.25	0.40
3:C:109:ASP:O	3:C:111:PHE:CD2	2.74	0.40
3:C:114:ILE:CD1	3:C:133:ILE:HG22	2.51	0.40
2:I:40:LYS:O	2:I:42:ASN:N	2.54	0.40
2:I:46:GLU:C	2:I:48:SER:N	2.75	0.40
3:C:8:GLU:HG3	3:C:9:ALA:H	1.86	0.40
3:C:35:ASP:HB2	3:C:36:ILE:H	1.52	0.40
3:C:100:CYS:HB3	3:C:104:PHE:CE2	2.56	0.40
3:C:121:LEU:O	3:C:128:VAL:HG21	2.21	0.40
3:C:141:ASP:CG	3:C:145:ASP:OD1	2.59	0.40
2:I:70:LYS:HA	2:I:73:SER:CB	2.49	0.40
3:C:114:ILE:N	3:C:137:MET:HE3	2.36	0.40
1:T:175:GLN:HE21	1:T:175:GLN:HB2	1.62	0.40
1:T:215:GLN:C	1:T:218:THR:HG22	2.41	0.40
2:I:51:LEU:HD23	2:I:51:LEU:C	2.41	0.40
3:C:40:LYS:O	3:C:41:GLU:OE2	2.39	0.40
1:T:210:TRP:O	1:T:214:TYR:N	2.43	0.40
3:C:150:PHE:HA	3:C:153:PHE:CB	2.51	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	T	83/107 (78%)	42 (51%)	28 (34%)	13 (16%)	0	3
2	I	114/137 (83%)	57 (50%)	36 (32%)	21 (18%)	0	2
3	C	144/162 (89%)	91 (63%)	35 (24%)	18 (12%)	0	5
All	All	341/406 (84%)	190 (56%)	99 (29%)	52 (15%)	0	3

All (52) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	T	184	VAL
1	T	194	ILE
1	T	203	ARG
1	T	225	GLU
1	T	245	GLN
1	T	246	LYS
2	I	4	GLU
2	I	51	LEU
2	I	57	MET
3	C	27	MET
3	C	31	ASP
3	C	54	THR
3	C	79	LEU
3	C	106	LYS
3	C	107	ASN
3	C	143	ASN
1	T	215	GLN
1	T	216	LEU
1	T	235	VAL
2	I	6	LYS
2	I	14	ARG
2	I	41	GLN
2	I	63	LEU
2	I	80	ASP
3	C	21	PHE
3	C	23	ALA
3	C	30	ALA
3	C	32	GLY
3	C	36	ILE
3	C	73	ILE
3	C	110	GLY
1	T	224	ALA
1	T	234	ILE
2	I	13	ARG
2	I	23	GLN
2	I	40	LYS
2	I	50	PRO
2	I	54	PRO
2	I	65	LYS
2	I	69	ALA
2	I	64	SER
2	I	84	LYS

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Mol	Chain	Res	Type
3	C	48	MET
1	T	236	THR
2	I	74	VAL
2	I	75	ASP
2	I	82	GLU
3	C	33	GLY
3	C	35	ASP
1	T	220	LYS
3	C	66	ASP
2	I	83	VAL

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	T	77/91 (85%)	65 (84%)	12 (16%)	2 14
2	I	103/121 (85%)	84 (82%)	19 (18%)	1 9
3	C	125/136 (92%)	106 (85%)	19 (15%)	3 14
All	All	305/348 (88%)	255 (84%)	50 (16%)	2 12

All (50) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	T	171	ARG
1	T	175	GLN
1	T	179	GLU
1	T	180	THR
1	T	190	LYS
1	T	199	GLU
1	T	201	LYS
1	T	204	ASP
1	T	207	LYS
1	T	211	ASP
1	T	223	PHE
1	T	229	ARG

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Mol	Chain	Res	Type
2	I	4	GLU
2	I	5	LYS
2	I	6	LYS
2	I	11	THR
2	I	24	LEU
2	I	44	LEU
2	I	47	HIS
2	I	50	PRO
2	I	53	LEU
2	I	64	SER
2	I	78	ARG
2	I	97	GLN
2	I	100	PHE
2	I	103	ARG
2	I	107	LYS
2	I	111	LEU
2	I	114	VAL
2	I	115	ARG
2	I	116	MET
3	C	12	PHE
3	C	14	SER
3	C	25	PHE
3	C	29	ASP
3	C	31	ASP
3	C	36	ILE
3	C	51	GLN
3	C	58	LEU
3	C	74	ASP
3	C	75	PHE
3	C	76	GLU
3	C	79	LEU
3	C	84	ARG
3	C	106	LYS
3	C	129	THR
3	C	135	ASP
3	C	136	LEU
3	C	154	LEU
3	C	155	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (12) such sidechains are listed below:

Mol	Chain	Res	Type
1	T	175	GLN
1	T	193	ASN
1	T	198	ASN
1	T	245	GLN
2	I	58	GLN
2	I	61	GLN
2	I	86	GLN
2	I	97	GLN
3	C	51	GLN
3	C	99	ASN
3	C	107	ASN
3	C	127	HIS

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 2 ligands modelled in this entry, 2 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	T	85/107 (79%)	-0.60	0	100	100	17, 24, 27, 35	0
2	I	116/137 (84%)	-0.57	0	100	100	9, 24, 44, 81	0
3	C	148/162 (91%)	-0.31	2 (1%)	75	66	15, 25, 98, 107	0
All	All	349/406 (85%)	-0.47	2 (0%)	89	83	9, 24, 83, 107	0

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	C	20	GLU	2.4
3	C	17	MET	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
4	MG	C	163	1/1	0.91	0.15	25,25,25,25	0
4	MG	C	162	1/1	0.94	0.26	35,35,35,35	0

6.5 Other polymers (i)

There are no such residues in this entry.