Full wwPDB X-ray Structure Validation Report ⓘ

Nov 20, 2023 – 01:29 AM JST

PDB ID	:	7CE3
Title	:	Crystal structure of human IDH3 holoenzyme in APO form.
Authors	:	Sun, P.K.; Ding, J.P.
Deposited on	:	2020-06-21
Resolution	:	3.47 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 types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

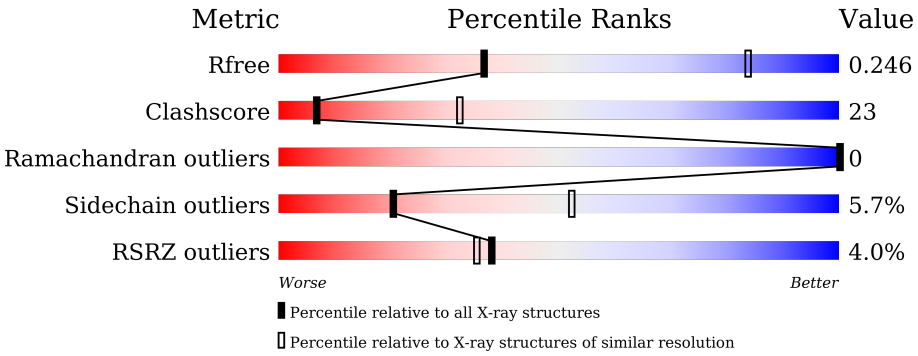
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation 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 3.47 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	1379 (3.56-3.40)
Clashscore	141614	1461 (3.56-3.40)
Ramachandran outliers	138981	1424 (3.56-3.40)
Sidechain outliers	138945	1425 (3.56-3.40)
RSRZ outliers	127900	1289 (3.56-3.40)

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	366	7% 50% 38% · 11%
1	C	366	5% 57% 31% · 8%
2	B	357	% 57% 37% · ·
3	D	359	% 57% 33% · 8%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 9853 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 Isocitrate dehydrogenase [NAD] subunit alpha, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	326	Total	C	N	O	S	0	0	0
			2346	1475	403	450	18			
1	C	335	Total	C	N	O	S	0	0	0
			2371	1480	411	461	19			

- Molecule 2 is a protein called Isocitrate dehydrogenase [NAD] subunit gamma, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	345	Total	C	N	O	S	0	0	0
			2614	1630	476	490	18			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-2	MET	-	expression tag	UNP P51553
B	-1	GLY	-	expression tag	UNP P51553
B	0	SER	-	expression tag	UNP P51553

- Molecule 3 is a protein called Isocitrate dehydrogenase [NAD] subunit beta, mitochondrial.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	D	332	Total	C	N	O	S	0	0	0
			2522	1594	439	470	19			

There are 19 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	-2	MET	-	expression tag	UNP O43837
D	-1	GLY	-	expression tag	UNP O43837
D	0	SER	-	expression tag	UNP O43837
D	341	GLU	-	expression tag	UNP O43837
D	342	ILE	-	expression tag	UNP O43837

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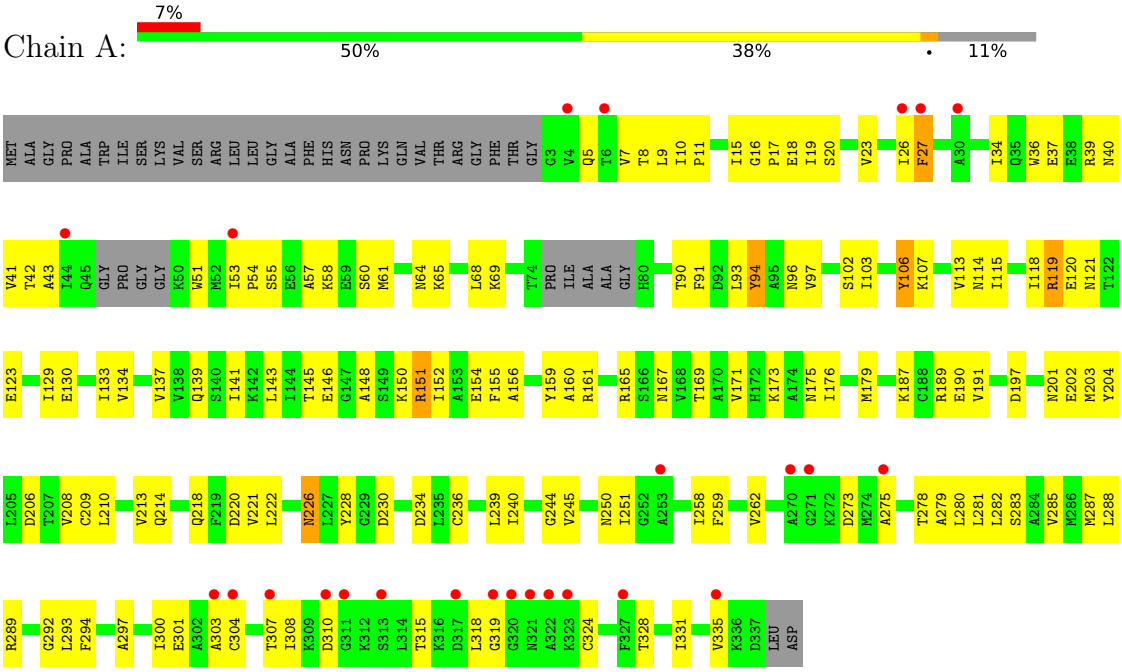
Chain	Residue	Modelled	Actual	Comment	Reference
D	343	CYS	-	expression tag	UNP O43837
D	344	ARG	-	expression tag	UNP O43837
D	345	ARG	-	expression tag	UNP O43837
D	346	VAL	-	expression tag	UNP O43837
D	347	LYS	-	expression tag	UNP O43837
D	348	ASP	-	expression tag	UNP O43837
D	349	LEU	-	expression tag	UNP O43837
D	350	ASP	-	expression tag	UNP O43837
D	351	GLU	-	expression tag	UNP O43837
D	352	ASN	-	expression tag	UNP O43837
D	353	LEU	-	expression tag	UNP O43837
D	354	TYR	-	expression tag	UNP O43837
D	355	PHE	-	expression tag	UNP O43837
D	356	GLN	-	expression tag	UNP O43837

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.

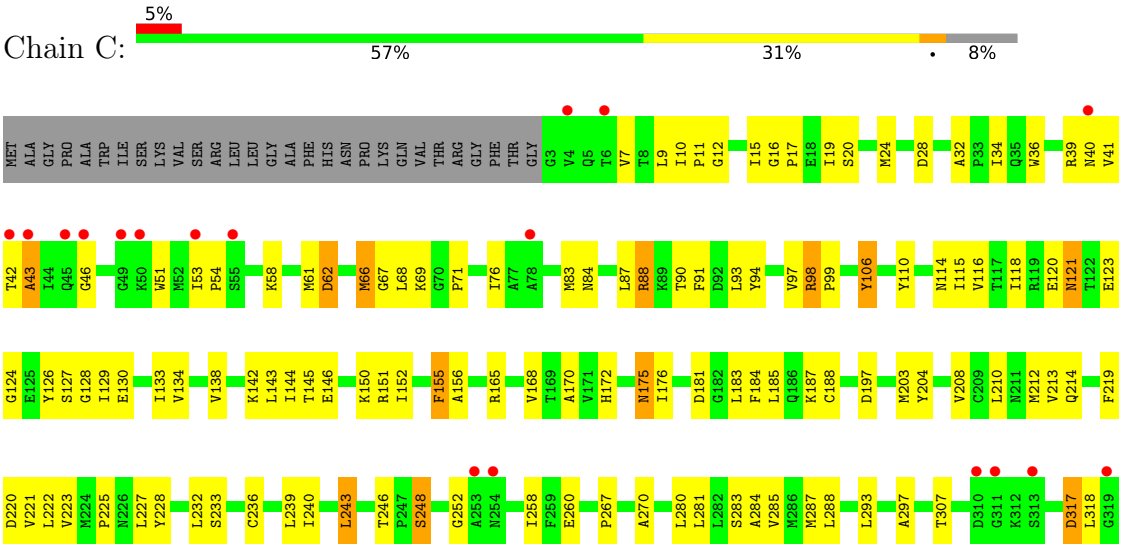
• Molecule 1: Isocitrate dehydrogenase [NAD] subunit alpha, mitochondrial

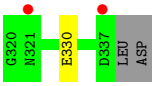
Chain A:



• Molecule 1: Isocitrate dehydrogenase [NAD] subunit alpha, mitochondrial

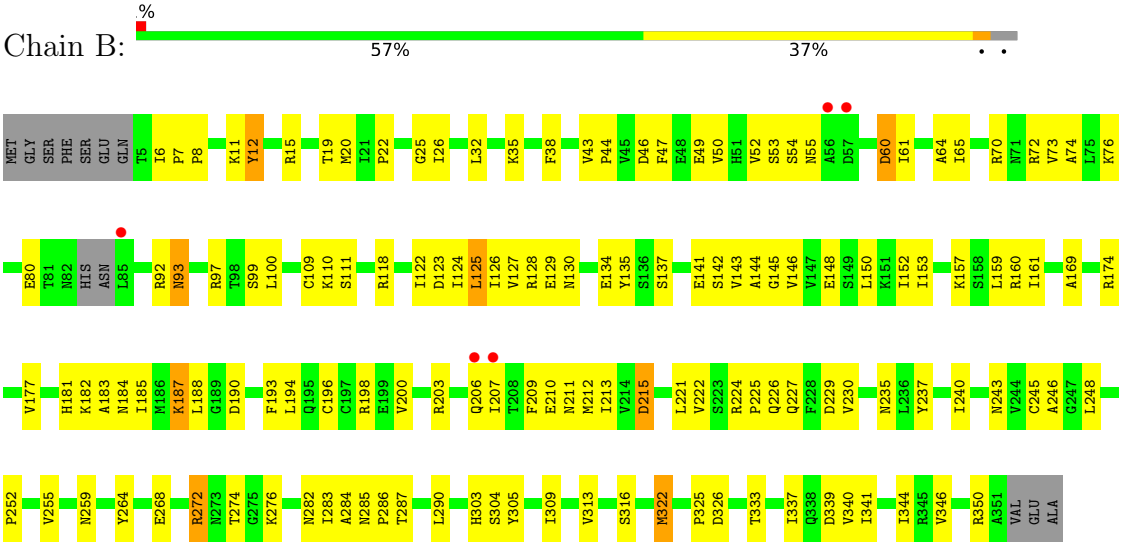
Chain C:





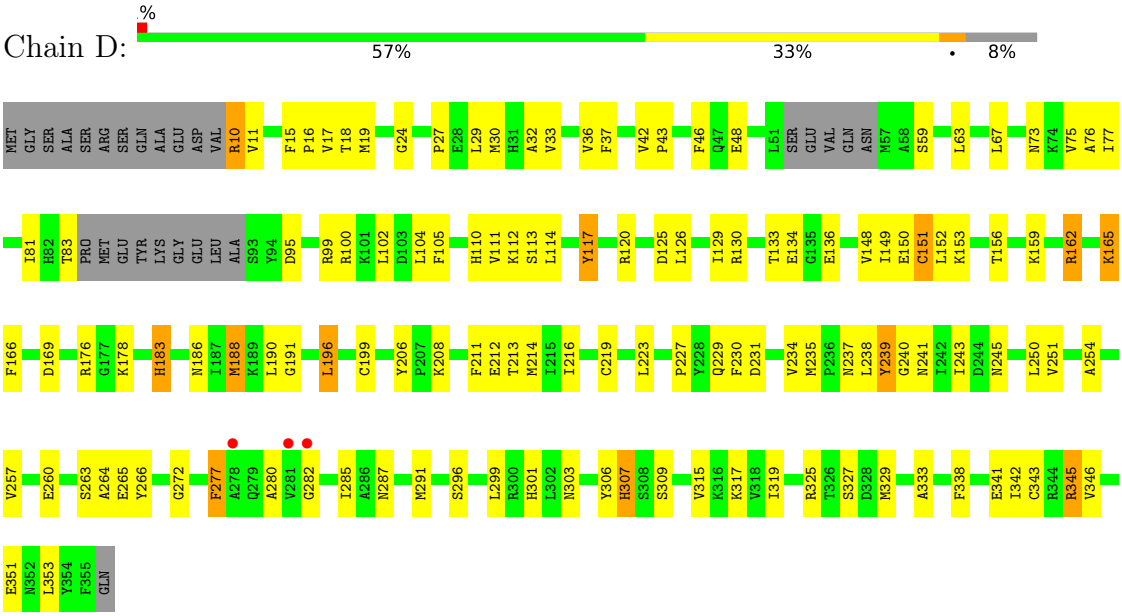
• Molecule 2: Isocitrate dehydrogenase [NAD] subunit gamma, mitochondrial

Chain B:



• Molecule 3: Isocitrate dehydrogenase [NAD] subunit beta, mitochondrial

Chain D:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 41 2 2	Depositor
Cell constants a, b, c, α, β, γ	204.57Å 204.57Å 237.88Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	46.34 – 3.47 48.57 – 3.47	Depositor EDS
% Data completeness (in resolution range)	93.0 (46.34-3.47) 93.2 (48.57-3.47)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.16 (at 3.48Å)	Xtriage
Refinement program	PHENIX 1.14_3260	Depositor
R, R_{free}	0.213 , 0.246 0.213 , 0.246	Depositor DCC
R_{free} test set	1572 reflections (5.14%)	wwPDB-VP
Wilson B-factor (Å^2)	51.8	Xtriage
Anisotropy	0.045	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.31 , 54.2	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	0.89	EDS
Total number of atoms	9853	wwPDB-VP
Average B, all atoms (Å^2)	56.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.50% 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	0.53	0/2382	0.71	0/3236
1	C	0.51	0/2406	0.72	1/3273 (0.0%)
2	B	0.65	2/2653 (0.1%)	0.82	2/3592 (0.1%)
3	D	0.68	0/2565	0.79	1/3463 (0.0%)
All	All	0.60	2/10006 (0.0%)	0.77	4/13564 (0.0%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	245	CYS	CB-SG	-5.53	1.72	1.81
2	B	109	CYS	CB-SG	-5.26	1.73	1.81

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	43	ALA	CB-CA-C	8.42	122.73	110.10
3	D	196	LEU	CB-CG-CD1	-6.12	100.60	111.00
2	B	70	ARG	NE-CZ-NH2	-5.73	117.44	120.30
2	B	125	LEU	CB-CG-CD2	-5.60	101.48	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	2346	0	2220	139	0
1	C	2371	0	2214	127	0
2	B	2614	0	2625	115	1
3	D	2522	0	2475	116	1
All	All	9853	0	9534	452	1

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 23.

All (452) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:228:TYR:OH	2:B:134:GLU:OE2	1.72	1.05
1:C:61:MET:SD	1:C:67:GLY:HA3	1.97	1.04
1:A:102:SER:HA	1:A:240:ILE:HG22	1.41	1.03
2:B:181:HIS:HD2	2:B:194:LEU:HD23	1.32	0.95
3:D:63:LEU:O	3:D:67:LEU:HD12	1.67	0.94
3:D:42:VAL:HG12	3:D:307:HIS:CD2	2.02	0.93
2:B:285:ASN:OD1	2:B:287:THR:HG22	1.71	0.88
1:C:61:MET:SD	1:C:67:GLY:CA	2.61	0.88
1:C:114:ASN:OD1	1:C:165:ARG:NH2	2.08	0.87
1:A:228:TYR:OH	2:B:134:GLU:CD	2.12	0.87
1:A:226:ASN:O	1:A:226:ASN:ND2	2.07	0.86
1:C:69:LYS:O	1:C:280:LEU:HD11	1.76	0.86
3:D:214:MET:HG2	3:D:219:CYS:HB2	1.58	0.84
3:D:42:VAL:HG12	3:D:307:HIS:HD2	1.39	0.84
1:A:102:SER:CA	1:A:240:ILE:HG22	2.09	0.83
1:C:68:LEU:CD1	1:C:284:ALA:HB2	2.09	0.81
1:C:69:LYS:NZ	1:C:84:ASN:OD1	2.13	0.81
1:C:67:GLY:O	1:C:258:ILE:HA	1.80	0.81
1:A:102:SER:HA	1:A:240:ILE:CG2	2.11	0.80
1:A:39:ARG:HG3	1:A:57:ALA:HA	1.65	0.79
3:D:117:TYR:CE2	3:D:329:MET:HG2	2.17	0.79
2:B:80:GLU:HB3	2:B:274:THR:HG21	1.65	0.79
2:B:181:HIS:CD2	2:B:194:LEU:HD23	2.19	0.78
3:D:42:VAL:CG1	3:D:307:HIS:HD2	1.96	0.78
3:D:63:LEU:O	3:D:67:LEU:CD1	2.32	0.77
1:A:273:ASP:O	1:A:324:CYS:N	2.15	0.77
1:A:294:PHE:O	1:A:297:ALA:HB3	1.85	0.76
1:C:66:MET:SD	1:C:66:MET:N	2.59	0.76
2:B:26:ILE:HD12	2:B:284:ALA:HB1	1.69	0.75
2:B:123:ASP:OD1	2:B:174:ARG:NH2	2.20	0.75

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:159:LEU:HD22	2:B:196:CYS:HB3	1.69	0.75
1:A:150:LYS:HB2	1:A:187:LYS:HD2	1.69	0.74
1:A:289:ARG:NH2	1:A:301:GLU:OE2	2.20	0.74
1:A:68:LEU:HD23	1:A:69:LYS:H	1.53	0.73
2:B:55:ASN:OD1	2:B:92:ARG:CZ	2.37	0.73
1:C:93:LEU:HD21	1:C:258:ILE:HG13	1.72	0.72
1:C:150:LYS:HB2	1:C:187:LYS:HD3	1.73	0.71
1:A:106:TYR:CE2	1:A:318:LEU:HD22	2.26	0.71
1:A:103:ILE:HD11	1:A:245:VAL:HG21	1.72	0.71
3:D:151:CYS:O	3:D:152:LEU:HD23	1.91	0.70
1:A:68:LEU:HD12	1:A:287:MET:HE1	1.73	0.70
3:D:10:ARG:HG3	3:D:11:VAL:HG23	1.74	0.70
1:A:123:GLU:OE1	1:A:145:THR:N	2.25	0.70
3:D:125:ASP:OD1	3:D:176:ARG:NH2	2.23	0.69
1:C:240:ILE:HD11	1:C:246:THR:HG22	1.73	0.69
1:C:146:GLU:HG3	1:C:187:LYS:HD2	1.73	0.69
1:A:303:ALA:O	1:A:307:THR:OG1	2.11	0.68
1:C:106:TYR:HE2	1:C:318:LEU:HD22	1.57	0.68
1:A:213:VAL:HG11	2:B:248:LEU:HD12	1.76	0.68
1:C:184:PHE:CE2	1:C:225:PRO:HD3	2.29	0.68
1:A:307:THR:HG21	1:A:331:ILE:CG1	2.24	0.68
1:A:41:VAL:HG23	1:A:53:ILE:HB	1.75	0.67
1:A:203:MET:HE2	1:A:208:VAL:HG23	1.75	0.67
3:D:111:VAL:HG22	3:D:126:LEU:HB2	1.78	0.66
3:D:32:ALA:O	3:D:36:VAL:HG23	1.95	0.66
1:A:94:TYR:CE2	1:A:151:ARG:HG2	2.30	0.66
1:A:94:TYR:HE2	1:A:151:ARG:HG2	1.59	0.66
1:A:150:LYS:NZ	1:A:154:GLU:OE2	2.28	0.66
3:D:130:ARG:HD2	3:D:240:GLY:HA3	1.77	0.66
1:C:307:THR:HG23	1:C:330:GLU:HG2	1.76	0.66
3:D:176:ARG:HD2	3:D:231:ASP:OD1	1.96	0.65
1:A:9:LEU:HD13	1:A:68:LEU:HB3	1.78	0.65
3:D:111:VAL:CG2	3:D:126:LEU:HB2	2.27	0.65
2:B:206:GLN:HG2	2:B:207:ILE:HD12	1.79	0.65
2:B:268:GLU:OE2	2:B:272:ARG:NH1	2.31	0.64
1:A:288:LEU:HD11	1:A:300:ILE:HD12	1.79	0.64
1:A:304:CYS:O	1:A:308:ILE:HG13	1.96	0.64
2:B:237:TYR:O	2:B:240:ILE:HG12	1.97	0.64
1:A:141:ILE:HG12	2:B:150:LEU:HD12	1.78	0.64
1:C:88:ARG:HA	1:C:93:LEU:HD13	1.78	0.64
1:C:133:ILE:O	1:C:134:VAL:HG13	1.99	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:81:ILE:O	3:D:83:THR:HG23	1.98	0.63
2:B:143:VAL:HG21	3:D:148:VAL:CG2	2.28	0.63
1:C:83:MET:O	1:C:84:ASN:C	2.35	0.63
2:B:153:ILE:HD11	2:B:193:PHE:HB2	1.81	0.63
1:A:307:THR:HG21	1:A:331:ILE:HG12	1.80	0.62
1:C:98:ARG:CB	1:C:98:ARG:HH11	2.12	0.62
2:B:337:ILE:O	2:B:341:ILE:HG13	1.99	0.62
1:A:278:THR:HG22	1:A:282:LEU:HD12	1.82	0.62
1:C:46:GLY:H	1:C:51:TRP:HA	1.65	0.61
2:B:97:ARG:HD3	2:B:130:ASN:OD1	2.01	0.61
3:D:24:GLY:O	3:D:27:PRO:HD2	2.00	0.61
1:C:69:LYS:HE3	1:C:87:LEU:HD12	1.83	0.61
1:A:93:LEU:HD11	1:A:258:ILE:HD12	1.83	0.60
1:C:9:LEU:HD12	1:C:36:TRP:CE3	2.35	0.60
1:A:288:LEU:HD22	1:A:293:LEU:HD12	1.83	0.60
1:C:130:GLU:OE2	3:D:188:MET:HG3	2.00	0.60
1:C:68:LEU:HD23	1:C:68:LEU:C	2.22	0.60
3:D:263:SER:HB3	3:D:266:TYR:HB2	1.83	0.60
1:A:119:ARG:NH1	1:A:226:ASN:OD1	2.35	0.59
1:A:133:ILE:HG22	1:A:134:VAL:HG13	1.83	0.59
1:C:175:ASN:ND2	1:C:204:TYR:CE1	2.70	0.59
1:C:236:CYS:O	1:C:239:LEU:N	2.35	0.59
1:A:102:SER:CB	1:A:240:ILE:HG22	2.32	0.59
2:B:346:VAL:HG12	2:B:350:ARG:O	2.03	0.59
1:A:187:LYS:NZ	1:A:190:GLU:OE2	2.33	0.59
2:B:283:ILE:HB	2:B:325:PRO:HG2	1.85	0.59
2:B:52:VAL:HG12	2:B:52:VAL:O	2.03	0.59
2:B:226:GLN:H	2:B:226:GLN:CD	2.06	0.59
2:B:11:LYS:O	2:B:11:LYS:HG2	2.02	0.59
1:C:129:ILE:N	1:C:129:ILE:HD12	2.18	0.59
3:D:165:LYS:HE2	3:D:206:TYR:OH	2.02	0.58
2:B:143:VAL:HG21	3:D:148:VAL:HG21	1.85	0.58
2:B:38:PHE:CD2	2:B:43:VAL:HG21	2.38	0.58
2:B:224:ARG:O	2:B:227:GLN:HG2	2.03	0.58
1:A:169:THR:HA	1:A:201:ASN:O	2.03	0.58
3:D:102:LEU:HG	3:D:266:TYR:HD2	1.68	0.58
2:B:54:SER:N	2:B:60:ASP:OD2	2.36	0.58
3:D:183:HIS:HD2	3:D:214:MET:O	1.86	0.58
2:B:38:PHE:O	2:B:43:VAL:HG22	2.04	0.58
1:C:12:GLY:HA3	1:C:71:PRO:HD2	1.85	0.58
1:A:173:LYS:NZ	1:A:206:ASP:OD1	2.29	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:176:ILE:HG21	3:D:136:GLU:HG2	1.86	0.57
1:A:165:ARG:NH1	1:A:220:ASP:OD1	2.37	0.57
2:B:181:HIS:HD2	2:B:194:LEU:CD2	2.10	0.57
1:C:93:LEU:HD12	1:C:93:LEU:H	1.70	0.57
3:D:129:ILE:O	3:D:234:VAL:HA	2.03	0.57
1:A:37:GLU:O	1:A:39:ARG:NH1	2.38	0.57
2:B:127:VAL:HG12	2:B:161:ILE:HD11	1.87	0.57
2:B:322:MET:SD	2:B:339:ASP:OD1	2.61	0.57
1:C:68:LEU:HD23	1:C:68:LEU:O	2.05	0.57
3:D:99:ARG:HG2	3:D:104:LEU:HD12	1.87	0.57
3:D:63:LEU:HD23	3:D:67:LEU:CD1	2.34	0.57
1:C:98:ARG:HH11	1:C:98:ARG:HB3	1.69	0.57
3:D:37:PHE:CZ	3:D:299:LEU:HD11	2.40	0.57
1:C:123:GLU:HG2	1:C:124:GLY:N	2.20	0.57
1:A:161:ARG:NH1	1:A:197:ASP:OD2	2.35	0.56
1:A:15:ILE:HD12	1:A:275:ALA:HB1	1.87	0.56
1:A:16:GLY:O	1:A:20:SER:OG	2.11	0.56
1:A:102:SER:HB3	1:A:240:ILE:HG22	1.86	0.56
1:A:259:PHE:N	1:A:259:PHE:HD1	2.02	0.56
2:B:20:MET:O	2:B:22:PRO:HD3	2.05	0.56
1:C:99:PRO:HB3	1:C:116:VAL:HG22	1.87	0.56
1:C:212:MET:HE1	1:C:232:LEU:HD21	1.88	0.56
1:C:236:CYS:HA	1:C:239:LEU:HD12	1.87	0.56
2:B:181:HIS:CD2	2:B:194:LEU:CD2	2.88	0.56
2:B:246:ALA:HA	2:B:255:VAL:HG21	1.88	0.56
2:B:190:ASP:OD2	2:B:237:TYR:OH	2.24	0.56
1:A:68:LEU:HD23	1:A:69:LYS:N	2.18	0.55
1:A:281:LEU:O	1:A:285:VAL:HG23	2.06	0.55
2:B:32:LEU:O	2:B:35:LYS:HB2	2.06	0.55
1:C:98:ARG:HB3	1:C:98:ARG:NH1	2.22	0.55
1:C:9:LEU:HD21	1:C:20:SER:HB3	1.87	0.55
1:A:259:PHE:N	1:A:259:PHE:CD1	2.75	0.55
2:B:221:LEU:O	2:B:225:PRO:HB3	2.07	0.55
1:C:168:VAL:HA	1:C:221:VAL:HG23	1.88	0.55
1:A:288:LEU:HD12	1:A:297:ALA:HA	1.89	0.55
2:B:152:ILE:HG13	1:C:133:ILE:HG23	1.87	0.55
1:C:185:LEU:O	1:C:188:CYS:N	2.35	0.55
1:A:201:ASN:N	1:A:201:ASN:OD1	2.38	0.55
1:C:214:GLN:O	3:D:120:ARG:NH2	2.40	0.55
1:C:68:LEU:HD11	1:C:284:ALA:HB2	1.87	0.54
3:D:287:ASN:ND2	3:D:329:MET:SD	2.81	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:286:PRO:HB2	2:B:290:LEU:HD12	1.90	0.54
1:C:93:LEU:HA	1:C:252:GLY:HA2	1.89	0.54
1:C:42:THR:O	1:C:43:ALA:C	2.46	0.54
2:B:20:MET:HE3	2:B:47:PHE:CD1	2.43	0.54
1:A:171:VAL:HG22	1:A:208:VAL:HG21	1.90	0.54
1:C:128:GLY:C	1:C:129:ILE:HD12	2.29	0.54
3:D:341:GLU:HG3	3:D:341:GLU:O	2.07	0.54
1:C:210:LEU:HD12	3:D:245:ASN:ND2	2.22	0.53
1:C:120:GLU:HB2	1:C:152:ILE:HG21	1.90	0.53
1:C:220:ASP:OD1	1:C:221:VAL:N	2.41	0.53
1:A:114:ASN:OD1	1:A:165:ARG:NH2	2.36	0.53
2:B:203:ARG:HG3	2:B:203:ARG:HH11	1.73	0.53
3:D:18:THR:O	3:D:76:ALA:HA	2.08	0.53
2:B:184:ASN:OD1	2:B:213:ILE:HD12	2.09	0.53
3:D:196:LEU:HD23	3:D:213:THR:HG21	1.91	0.53
1:C:155:PHE:CD1	1:C:155:PHE:C	2.81	0.53
1:A:23:VAL:HA	1:A:26:ILE:HG12	1.91	0.53
1:A:176:ILE:HD13	2:B:134:GLU:HB3	1.91	0.53
2:B:184:ASN:ND2	2:B:185:ILE:HG12	2.24	0.53
1:A:228:TYR:OH	2:B:134:GLU:OE1	2.27	0.52
1:C:97:VAL:HG22	1:C:118:ILE:HG12	1.90	0.52
1:C:168:VAL:HG22	1:C:221:VAL:HG21	1.91	0.52
2:B:177:VAL:HG22	2:B:230:VAL:HB	1.89	0.52
2:B:184:ASN:O	2:B:187:LYS:NZ	2.41	0.52
2:B:55:ASN:OD1	2:B:92:ARG:NH2	2.41	0.52
1:C:110:TYR:CD2	1:C:239:LEU:HD23	2.44	0.52
2:B:141:GLU:OE1	2:B:144:ALA:HA	2.09	0.52
1:C:98:ARG:HG2	1:C:248:SER:HB2	1.92	0.52
1:A:213:VAL:HG11	2:B:248:LEU:CD1	2.39	0.52
1:A:236:CYS:O	1:A:239:LEU:HB2	2.10	0.52
1:A:324:CYS:O	1:A:328:THR:OG1	2.25	0.52
1:C:15:ILE:HG13	1:C:270:ALA:HB2	1.92	0.52
1:A:209:CYS:SG	2:B:240:ILE:HG23	2.50	0.52
2:B:6:ILE:HG12	2:B:7:PRO:HD2	1.91	0.52
2:B:35:LYS:NZ	2:B:49:GLU:OE1	2.43	0.52
1:C:53:ILE:HD11	1:C:90:THR:HG21	1.90	0.51
1:C:130:GLU:HB3	3:D:190:LEU:HD13	1.93	0.51
1:A:189:ARG:HH21	1:A:202:GLU:CD	2.14	0.51
1:A:288:LEU:O	1:A:292:GLY:N	2.42	0.51
2:B:157:LYS:HD3	2:B:160:ARG:HH21	1.75	0.51
1:A:210:LEU:HD21	2:B:252:PRO:HD3	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:94:TYR:CD2	1:C:151:ARG:NH2	2.79	0.51
1:C:121:ASN:O	1:C:121:ASN:ND2	2.37	0.51
1:A:118:ILE:HG22	1:A:152:ILE:HD11	1.92	0.51
1:A:234:ASP:OD2	2:B:215:ASP:HB3	2.11	0.51
2:B:76:LYS:HG3	2:B:268:GLU:HB3	1.92	0.51
1:C:210:LEU:HD12	3:D:245:ASN:HD22	1.74	0.51
1:A:145:THR:HG22	2:B:146:VAL:HG22	1.93	0.51
1:A:129:ILE:HG12	1:A:141:ILE:HB	1.93	0.51
1:A:331:ILE:O	1:A:335:VAL:HG23	2.11	0.51
2:B:125:LEU:HD12	2:B:174:ARG:NE	2.26	0.51
1:C:127:SER:O	1:C:129:ILE:HD12	2.11	0.51
3:D:105:PHE:HA	3:D:133:THR:HG23	1.93	0.51
1:A:160:ALA:HA	1:A:165:ARG:HB2	1.93	0.51
2:B:50:VAL:HG11	2:B:64:ALA:HA	1.93	0.51
1:A:27:PHE:CE1	1:A:300:ILE:HD13	2.45	0.51
2:B:25:GLY:HA3	2:B:274:THR:O	2.11	0.50
1:C:168:VAL:HG22	1:C:221:VAL:CG2	2.41	0.50
1:A:129:ILE:HG13	1:A:129:ILE:O	2.12	0.50
1:C:68:LEU:HD12	1:C:284:ALA:HB2	1.93	0.50
3:D:126:LEU:CD2	3:D:230:PHE:HB2	2.41	0.50
1:A:118:ILE:HD13	1:A:156:ALA:HA	1.93	0.50
1:C:288:LEU:HD22	1:C:293:LEU:HD12	1.92	0.50
1:A:169:THR:HG22	1:A:201:ASN:CG	2.31	0.50
1:C:130:GLU:OE2	3:D:188:MET:HA	2.11	0.50
3:D:183:HIS:CG	3:D:196:LEU:HD11	2.46	0.50
1:C:76:ILE:HG13	1:C:76:ILE:O	2.11	0.50
2:B:97:ARG:NH1	2:B:135:TYR:OH	2.45	0.50
1:C:15:ILE:HD12	1:C:15:ILE:H	1.76	0.50
1:C:280:LEU:HA	1:C:283:SER:HB2	1.94	0.50
1:A:53:ILE:HB	1:A:54:PRO:HD2	1.94	0.49
1:A:259:PHE:HD2	1:A:283:SER:O	1.95	0.49
2:B:15:ARG:HA	2:B:44:PRO:HB2	1.94	0.49
3:D:199:CYS:HB3	3:D:211:PHE:CZ	2.47	0.49
1:A:39:ARG:NH2	1:A:60:SER:HB3	2.27	0.49
1:A:203:MET:HE2	1:A:208:VAL:CG2	2.42	0.49
2:B:285:ASN:HB2	2:B:326:ASP:OD1	2.11	0.49
1:C:156:ALA:HB1	1:C:223:VAL:HG11	1.94	0.49
3:D:183:HIS:CB	3:D:196:LEU:HD11	2.42	0.49
3:D:315:VAL:O	3:D:319:ILE:HG12	2.11	0.49
1:A:9:LEU:HD23	1:A:36:TRP:HB3	1.93	0.49
1:A:167:ASN:N	1:A:220:ASP:OD2	2.42	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:19:THR:HB	2:B:74:ALA:HB2	1.94	0.49
3:D:110:HIS:NE2	3:D:260:GLU:OE2	2.45	0.49
1:A:18:GLU:HG2	1:A:324:CYS:SG	2.53	0.49
2:B:194:LEU:HD12	2:B:198:ARG:CZ	2.42	0.49
3:D:42:VAL:CG1	3:D:307:HIS:CD2	2.78	0.49
3:D:126:LEU:HD21	3:D:230:PHE:HB2	1.94	0.49
3:D:277:PHE:CE1	3:D:280:ALA:HB2	2.48	0.49
1:A:97:VAL:HG11	1:A:159:TYR:CE2	2.48	0.49
1:C:219:PHE:HB3	1:C:222:LEU:HD21	1.95	0.49
3:D:102:LEU:HG	3:D:266:TYR:CD2	2.46	0.49
1:A:68:LEU:HD12	1:A:287:MET:CE	2.41	0.49
1:A:210:LEU:O	1:A:214:GLN:HG3	2.12	0.49
3:D:338:PHE:O	3:D:342:ILE:HG12	2.13	0.49
1:C:208:VAL:HG11	1:C:232:LEU:HD11	1.96	0.48
1:A:259:PHE:CE2	1:A:287:MET:HA	2.48	0.48
3:D:238:LEU:HD22	3:D:238:LEU:H	1.78	0.48
1:A:318:LEU:N	1:A:318:LEU:HD23	2.29	0.48
2:B:122:ILE:HD13	2:B:248:LEU:HD23	1.96	0.48
1:C:40:ASN:O	1:C:54:PRO:HG2	2.14	0.48
2:B:15:ARG:NH2	2:B:46:ASP:OD1	2.46	0.48
3:D:19:MET:HE3	3:D:46:PHE:CD2	2.49	0.48
1:A:19:ILE:O	1:A:23:VAL:HG23	2.13	0.48
1:C:115:ILE:HD11	1:C:236:CYS:SG	2.53	0.48
1:C:127:SER:O	1:C:127:SER:OG	2.27	0.48
1:A:139:GLN:HB2	2:B:152:ILE:CD1	2.43	0.48
1:C:69:LYS:HB3	1:C:260:GLU:HB2	1.96	0.48
1:C:127:SER:O	1:C:129:ILE:CD1	2.61	0.48
3:D:216:ILE:HG12	3:D:239:TYR:HD2	1.79	0.48
1:A:179:MET:HE2	2:B:141:GLU:HB2	1.96	0.48
2:B:206:GLN:H	2:B:206:GLN:CD	2.17	0.48
3:D:263:SER:OG	3:D:264:ALA:N	2.47	0.48
1:A:97:VAL:HG11	1:A:159:TYR:HE2	1.79	0.47
1:C:91:PHE:N	1:C:91:PHE:CD1	2.82	0.47
1:C:232:LEU:O	1:C:232:LEU:HD23	2.14	0.47
2:B:309:ILE:O	2:B:313:VAL:HG23	2.13	0.47
1:C:10:ILE:HG22	1:C:11:PRO:HD2	1.96	0.47
1:A:236:CYS:O	1:A:239:LEU:N	2.44	0.47
3:D:105:PHE:CG	3:D:162:ARG:HD3	2.49	0.47
1:A:239:LEU:CD2	2:B:222:VAL:HG21	2.45	0.47
2:B:169:ALA:HB2	2:B:230:VAL:HG21	1.96	0.47
1:C:41:VAL:HA	1:C:54:PRO:HD2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:186:ASN:OD1	3:D:186:ASN:N	2.47	0.47
1:A:175:ASN:ND2	1:A:204:TYR:CE1	2.83	0.47
1:C:156:ALA:HB1	1:C:223:VAL:CG1	2.45	0.47
2:B:183:ALA:HA	2:B:190:ASP:HB2	1.98	0.46
3:D:166:PHE:CD1	3:D:166:PHE:C	2.87	0.46
1:A:315:THR:O	1:A:319:GLY:N	2.48	0.46
3:D:63:LEU:HD23	3:D:67:LEU:HD11	1.97	0.46
1:A:113:VAL:HG13	1:A:115:ILE:HD12	1.98	0.46
1:A:206:ASP:HB3	2:B:243:ASN:HD21	1.81	0.46
1:C:181:ASP:OD2	1:C:228:TYR:OH	2.34	0.46
3:D:17:VAL:HG22	3:D:75:VAL:CG2	2.45	0.46
2:B:226:GLN:OE1	2:B:226:GLN:N	2.29	0.46
1:C:210:LEU:HB2	3:D:245:ASN:HB3	1.98	0.46
1:C:88:ARG:CZ	1:C:126:TYR:HD2	2.28	0.46
3:D:43:PRO:O	3:D:43:PRO:HG2	2.16	0.46
3:D:17:VAL:HG22	3:D:75:VAL:HG21	1.97	0.46
3:D:95:ASP:OD1	3:D:99:ARG:NH1	2.48	0.46
1:A:43:ALA:HB1	1:A:51:TRP:CE3	2.51	0.46
2:B:129:GLU:O	2:B:235:ASN:HB2	2.16	0.46
1:C:19:ILE:HG13	1:C:20:SER:N	2.31	0.45
3:D:112:LYS:HE3	3:D:125:ASP:OD2	2.16	0.45
2:B:100:LEU:HD22	2:B:264:TYR:CD2	2.51	0.45
1:C:9:LEU:HD13	1:C:24:MET:HE2	1.97	0.45
1:A:133:ILE:HB	1:A:137:VAL:HG12	1.99	0.45
3:D:277:PHE:CD1	3:D:280:ALA:HB2	2.51	0.45
2:B:282:ASN:ND2	2:B:333:THR:HB	2.31	0.45
1:C:32:ALA:O	1:C:34:ILE:N	2.48	0.45
1:A:280:LEU:HD12	1:A:280:LEU:HA	1.47	0.45
1:C:91:PHE:HB2	1:C:93:LEU:HD11	1.98	0.45
1:C:129:ILE:HG22	1:C:129:ILE:O	2.15	0.45
3:D:351:GLU:OE1	3:D:353:LEU:HB2	2.17	0.45
2:B:340:VAL:O	2:B:344:ILE:HG13	2.16	0.45
3:D:29:LEU:O	3:D:33:VAL:HG23	2.17	0.45
3:D:257:VAL:HG12	3:D:272:GLY:HA3	1.98	0.45
1:C:16:GLY:N	1:C:17:PRO:HD2	2.32	0.45
3:D:18:THR:HG23	3:D:76:ALA:HB2	1.99	0.45
3:D:301:HIS:C	3:D:303:ASN:H	2.21	0.45
1:A:262:VAL:HG12	1:A:262:VAL:O	2.17	0.45
2:B:65:ILE:HD13	2:B:99:SER:OG	2.17	0.45
2:B:196:CYS:O	2:B:200:VAL:HG23	2.17	0.45
1:C:69:LYS:HE3	1:C:87:LEU:CD1	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:16:PRO:O	3:D:73:ASN:HB3	2.17	0.44
1:A:107:LYS:HD2	1:A:107:LYS:HA	1.81	0.44
3:D:317:LYS:O	3:D:317:LYS:HG2	2.18	0.44
1:A:307:THR:CG2	1:A:331:ILE:HG12	2.48	0.44
3:D:113:SER:HA	3:D:251:VAL:HG13	1.98	0.44
1:C:67:GLY:O	1:C:258:ILE:HG23	2.18	0.44
2:B:61:ILE:HD12	2:B:92:ARG:HB3	1.99	0.44
1:C:130:GLU:OE1	3:D:190:LEU:HB2	2.18	0.44
1:C:130:GLU:OE1	3:D:191:GLY:N	2.44	0.44
1:C:281:LEU:O	1:C:285:VAL:HG23	2.18	0.44
1:A:60:SER:O	1:A:64:ASN:N	2.41	0.44
1:A:69:LYS:O	1:A:280:LEU:HD11	2.18	0.44
1:A:155:PHE:HE1	1:A:251:ILE:HG21	1.83	0.44
3:D:134:GLU:HB3	3:D:159:LYS:HD3	2.00	0.44
1:C:61:MET:SD	1:C:67:GLY:N	2.91	0.44
1:A:8:THR:HG22	1:A:9:LEU:H	1.82	0.44
1:C:145:THR:HG22	3:D:148:VAL:HG22	1.99	0.44
1:A:187:LYS:O	1:A:191:VAL:HG23	2.18	0.44
3:D:117:TYR:HE2	3:D:329:MET:HG2	1.75	0.44
1:C:144:ILE:HG13	1:C:227:LEU:HD11	2.00	0.43
1:C:267:PRO:HA	1:C:270:ALA:HB3	2.00	0.43
1:A:5:GLN:O	1:A:34:ILE:HA	2.18	0.43
1:A:40:ASN:O	1:A:54:PRO:HG3	2.19	0.43
1:A:113:VAL:HG21	1:A:239:LEU:HB3	2.00	0.43
2:B:304:SER:OG	2:B:305:TYR:N	2.50	0.43
3:D:263:SER:HB3	3:D:266:TYR:H	1.83	0.43
3:D:291:MET:HE3	3:D:291:MET:HB3	1.84	0.43
1:A:42:THR:H	1:A:54:PRO:HD3	1.83	0.43
1:C:130:GLU:OE1	3:D:190:LEU:N	2.51	0.43
1:A:10:ILE:HG21	1:A:41:VAL:HG12	2.00	0.43
1:A:90:THR:HG23	1:A:91:PHE:CD1	2.53	0.43
1:A:239:LEU:HD21	2:B:222:VAL:HG21	2.00	0.43
3:D:235:MET:CE	3:D:243:ILE:HD12	2.48	0.43
1:A:41:VAL:HA	1:A:54:PRO:HG3	2.00	0.43
3:D:196:LEU:CD2	3:D:213:THR:HG21	2.49	0.43
3:D:315:VAL:HG22	3:D:342:ILE:HD12	2.00	0.43
3:D:317:LYS:HD3	3:D:345:ARG:HD2	2.01	0.43
3:D:325:ARG:O	3:D:333:ALA:HB3	2.19	0.43
1:A:189:ARG:NE	1:A:202:GLU:OE2	2.47	0.43
2:B:8:PRO:HA	2:B:72:ARG:HH21	1.83	0.43
2:B:209:PHE:CG	2:B:210:GLU:N	2.86	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:210:LEU:HD11	3:D:254:ALA:HB2	2.00	0.43
3:D:15:PHE:N	3:D:15:PHE:CD1	2.87	0.43
1:A:130:GLU:OE2	2:B:188:LEU:N	2.52	0.43
2:B:212:MET:HG2	2:B:213:ILE:O	2.19	0.43
1:C:98:ARG:CB	1:C:98:ARG:NH1	2.82	0.43
2:B:143:VAL:HG21	3:D:148:VAL:HG22	1.99	0.42
1:C:115:ILE:HA	1:C:220:ASP:HA	1.99	0.42
1:C:183:LEU:HD23	3:D:149:ILE:HG13	2.00	0.42
1:A:11:PRO:HB3	1:A:17:PRO:HA	2.00	0.42
1:C:58:LYS:O	1:C:62:ASP:HB2	2.19	0.42
1:C:172:HIS:CD2	1:C:203:MET:O	2.73	0.42
1:C:210:LEU:O	1:C:214:GLN:HG3	2.19	0.42
1:A:159:TYR:CD1	1:A:159:TYR:C	2.93	0.42
1:A:230:ASP:HB2	2:B:215:ASP:OD2	2.19	0.42
2:B:142:SER:HB2	1:C:143:LEU:CD1	2.50	0.42
3:D:114:LEU:HD13	3:D:319:ILE:HG13	2.00	0.42
3:D:206:TYR:CD1	3:D:206:TYR:N	2.87	0.42
2:B:305:TYR:O	2:B:309:ILE:HG13	2.19	0.42
1:C:243:LEU:HD23	1:C:243:LEU:HA	1.83	0.42
3:D:211:PHE:O	3:D:212:GLU:HG3	2.19	0.42
1:A:169:THR:OG1	1:A:222:LEU:HD23	2.19	0.42
2:B:182:LYS:HD3	2:B:215:ASP:OD1	2.19	0.42
1:A:8:THR:HG22	1:A:9:LEU:N	2.35	0.42
1:A:93:LEU:HB3	1:A:250:ASN:HB3	2.01	0.42
1:A:307:THR:HG21	1:A:331:ILE:HG13	1.99	0.42
2:B:210:GLU:HG2	2:B:211:ASN:H	1.83	0.42
1:C:11:PRO:HD3	1:C:39:ARG:O	2.20	0.42
1:C:213:VAL:HG11	3:D:250:LEU:HD23	2.01	0.42
3:D:77:ILE:CG2	3:D:291:MET:HE1	2.49	0.42
1:A:55:SER:HA	1:A:58:LYS:HB3	2.00	0.42
2:B:128:ARG:NH2	2:B:130:ASN:ND2	2.68	0.42
1:C:7:VAL:HG11	1:C:287:MET:SD	2.60	0.42
3:D:15:PHE:HD1	3:D:15:PHE:H	1.68	0.42
3:D:19:MET:CE	3:D:46:PHE:CD2	3.03	0.42
3:D:266:TYR:N	3:D:266:TYR:CD1	2.85	0.42
2:B:183:ALA:O	2:B:187:LYS:HA	2.20	0.42
1:C:197:ASP:OD1	1:C:197:ASP:N	2.46	0.42
1:C:317:ASP:O	1:C:318:LEU:HD23	2.20	0.42
3:D:151:CYS:C	3:D:152:LEU:HD23	2.38	0.42
3:D:282:GLY:O	3:D:285:ILE:HG12	2.20	0.42
2:B:72:ARG:O	2:B:73:VAL:HG23	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:142:LYS:HZ3	3:D:153:LYS:HZ3	1.65	0.42
1:A:214:GLN:O	2:B:118:ARG:NH2	2.52	0.41
1:C:116:VAL:N	1:C:220:ASP:O	2.46	0.41
3:D:29:LEU:HD23	3:D:291:MET:HG2	2.02	0.41
3:D:343:CYS:O	3:D:346:VAL:HG22	2.19	0.41
1:A:41:VAL:HA	1:A:54:PRO:CG	2.49	0.41
1:A:154:GLU:HA	1:A:191:VAL:HG11	2.02	0.41
2:B:183:ALA:HA	2:B:190:ASP:CB	2.50	0.41
1:C:110:TYR:CE2	1:C:239:LEU:HD23	2.56	0.41
3:D:19:MET:O	3:D:48:GLU:HA	2.20	0.41
2:B:135:TYR:N	2:B:135:TYR:CD1	2.89	0.41
3:D:208:LYS:H	3:D:208:LYS:HG2	1.43	0.41
1:A:220:ASP:HB3	1:A:221:VAL:H	1.56	0.41
2:B:148:GLU:OE1	3:D:150:GLU:OE2	2.38	0.41
1:C:76:ILE:O	1:C:76:ILE:CG1	2.69	0.41
3:D:169:ASP:OD1	3:D:206:TYR:OH	2.16	0.41
1:A:139:GLN:HB2	2:B:152:ILE:HD13	2.01	0.41
2:B:124:ILE:HG22	2:B:125:LEU:N	2.35	0.41
1:C:138:VAL:HG11	3:D:191:GLY:CA	2.51	0.41
1:A:7:VAL:HG12	1:A:8:THR:O	2.21	0.41
1:A:93:LEU:O	1:A:121:ASN:HB3	2.21	0.41
1:A:94:TYR:CD2	1:A:151:ARG:NH1	2.89	0.41
1:C:24:MET:HG2	1:C:36:TRP:CD1	2.56	0.41
1:C:170:ALA:HA	1:C:223:VAL:HG22	2.02	0.41
1:C:288:LEU:HB2	1:C:297:ALA:HB2	2.03	0.41
3:D:30:MET:CE	3:D:77:ILE:HG22	2.51	0.41
3:D:216:ILE:HG21	3:D:239:TYR:CD2	2.56	0.41
1:A:146:GLU:HB2	2:B:145:GLY:HA2	2.03	0.41
2:B:26:ILE:O	2:B:26:ILE:HG13	2.21	0.41
1:C:184:PHE:CZ	1:C:225:PRO:HD3	2.56	0.41
3:D:306:TYR:N	3:D:306:TYR:CD1	2.89	0.41
2:B:11:LYS:HA	2:B:15:ARG:O	2.20	0.40
2:B:259:ASN:ND2	2:B:268:GLU:OE1	2.54	0.40
1:A:120:GLU:OE2	1:A:148:ALA:HB1	2.21	0.40
2:B:20:MET:HE3	2:B:20:MET:HB2	1.87	0.40
2:B:126:ILE:HD13	2:B:126:ILE:HG21	1.78	0.40
3:D:156:THR:OG1	3:D:159:LYS:HG3	2.21	0.40
3:D:223:LEU:O	3:D:227:PRO:HB3	2.21	0.40
1:A:93:LEU:HD22	1:A:250:ASN:O	2.22	0.40
1:A:244:GLY:O	1:A:279:ALA:HB2	2.22	0.40
2:B:93:ASN:C	2:B:93:ASN:HD22	2.24	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:142:SER:HB2	1:C:143:LEU:HD13	2.03	0.40
1:C:98:ARG:HA	1:C:99:PRO:HD3	1.93	0.40
3:D:265:GLU:HG3	3:D:266:TYR:CD1	2.55	0.40
1:A:23:VAL:O	1:A:27:PHE:HB2	2.21	0.40
1:A:27:PHE:CZ	1:A:288:LEU:HD21	2.56	0.40
2:B:182:LYS:N	2:B:190:ASP:OD2	2.46	0.40
1:A:61:MET:HE1	1:A:91:PHE:CE2	2.56	0.40
1:A:287:MET:HB3	1:A:287:MET:HE3	1.81	0.40
1:C:98:ARG:NH1	1:C:233:SER:OG	2.54	0.40
1:C:150:LYS:HB3	1:C:150:LYS:HE3	1.75	0.40
3:D:18:THR:HG22	3:D:75:VAL:O	2.21	0.40
3:D:178:LYS:O	3:D:231:ASP:HB3	2.21	0.40

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:12:TYR:OH	3:D:169:ASP:OD2[5_454]	2.00	0.20

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	320/366 (87%)	260 (81%)	60 (19%)	0	100	100
1	C	333/366 (91%)	281 (84%)	52 (16%)	0	100	100
2	B	341/357 (96%)	306 (90%)	35 (10%)	0	100	100
3	D	326/359 (91%)	284 (87%)	42 (13%)	0	100	100
All	All	1320/1448 (91%)	1131 (86%)	189 (14%)	0	100	100

There are no Ramachandran outliers to report.

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	231/298 (78%)	220 (95%)	11 (5%)	25 58
1	C	228/298 (76%)	216 (95%)	12 (5%)	22 54
2	B	282/301 (94%)	267 (95%)	15 (5%)	22 54
3	D	262/302 (87%)	243 (93%)	19 (7%)	14 44
All	All	1003/1199 (84%)	946 (94%)	57 (6%)	20 52

All (57) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	27	PHE
1	A	65	LYS
1	A	94	TYR
1	A	96	ASN
1	A	106	TYR
1	A	119	ARG
1	A	143	LEU
1	A	151	ARG
1	A	218	GLN
1	A	226	ASN
1	A	310	ASP
2	B	12	TYR
2	B	53	SER
2	B	60	ASP
2	B	93	ASN
2	B	110	LYS
2	B	111	SER
2	B	137	SER
2	B	187	LYS
2	B	215	ASP
2	B	229	ASP
2	B	272	ARG
2	B	276	LYS
2	B	303	HIS

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Mol	Chain	Res	Type
2	B	316	SER
2	B	322	MET
1	C	28	ASP
1	C	62	ASP
1	C	66	MET
1	C	88	ARG
1	C	98	ARG
1	C	106	TYR
1	C	121	ASN
1	C	155	PHE
1	C	175	ASN
1	C	243	LEU
1	C	248	SER
1	C	317	ASP
3	D	10	ARG
3	D	59	SER
3	D	100	ARG
3	D	117	TYR
3	D	151	CYS
3	D	162	ARG
3	D	165	LYS
3	D	183	HIS
3	D	188	MET
3	D	229	GLN
3	D	237	ASN
3	D	239	TYR
3	D	241	ASN
3	D	277	PHE
3	D	296	SER
3	D	307	HIS
3	D	309	SER
3	D	327	SER
3	D	345	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (6) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	GLN
2	B	71	ASN
2	B	181	HIS
3	D	47	GLN
3	D	183	HIS

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Mol	Chain	Res	Type
3	D	307	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 monosaccharides 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	326/366 (89%)	0.39	25 (7%)	13	15	22, 72, 133, 151	0
1	C	335/366 (91%)	0.27	20 (5%)	21	21	17, 80, 129, 158	0
2	B	345/357 (96%)	-0.18	5 (1%)	75	71	8, 32, 67, 100	0
3	D	332/359 (92%)	-0.24	3 (0%)	84	80	14, 37, 82, 114	0
All	All	1338/1448 (92%)	0.06	53 (3%)	38	35	8, 47, 122, 158	0

All (53) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	49	GLY	5.4
1	A	275	ALA	5.1
1	C	313	SER	4.2
1	A	317	ASP	4.2
2	B	56	ALA	3.9
1	A	320	GLY	3.9
1	A	327	PHE	3.7
1	A	4	VAL	3.6
1	C	43	ALA	3.5
1	A	322	ALA	3.5
1	A	321	ASN	3.4
1	C	311	GLY	3.3
1	A	313	SER	3.3
1	C	319	GLY	3.1
1	C	4	VAL	3.1
1	C	337	ASP	3.0
1	A	253	ALA	3.0
1	A	27	PHE	3.0
2	B	207	ILE	3.0
1	C	321	ASN	3.0
3	D	281	VAL	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	6	THR	2.7
1	A	44	ILE	2.7
1	A	310	ASP	2.7
1	A	26	ILE	2.6
3	D	278	ALA	2.6
1	A	304	CYS	2.5
3	D	282	GLY	2.5
1	C	42	THR	2.5
1	A	319	GLY	2.5
2	B	85	LEU	2.5
1	A	270	ALA	2.4
1	A	271	GLY	2.4
1	C	55	SER	2.4
1	C	46	GLY	2.3
1	C	254	ASN	2.3
1	C	50	LYS	2.3
1	C	78	ALA	2.3
1	A	323	LYS	2.2
2	B	206	GLN	2.2
1	C	45	GLN	2.2
1	C	310	ASP	2.2
1	C	253	ALA	2.2
1	A	335	VAL	2.2
2	B	57	ASP	2.2
1	A	307	THR	2.2
1	C	40	ASN	2.2
1	A	303	ALA	2.2
1	A	30	ALA	2.1
1	C	6	THR	2.1
1	C	53	ILE	2.1
1	A	311	GLY	2.0
1	A	53	ILE	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands

There are no ligands in this entry.

6.5 Other polymers

There are no such residues in this entry.