



Full wwPDB X-ray Structure Validation Report ⓘ

May 15, 2020 – 03:02 am BST

PDB ID : 5CTR
Title : Crystal structure of human SART3 HAT-C domain-human USP4 DUSP-UBL domain complex
Authors : Park, J.K.; Kim, E.E.
Deposited on : 2015-07-24
Resolution : 3.01 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	:	2.11
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

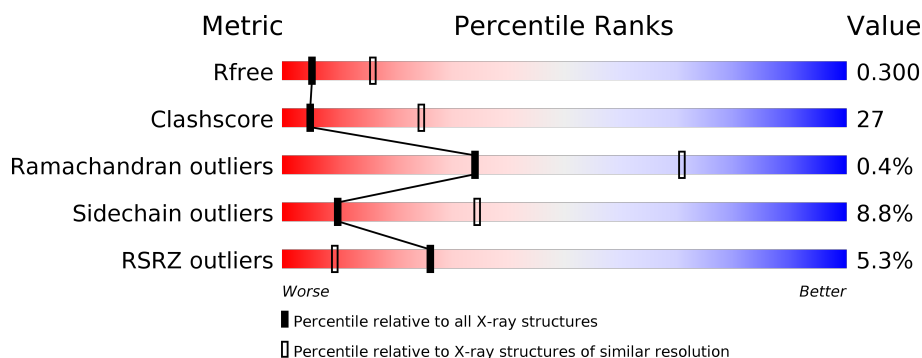
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.01 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	2399 (3.04-3.00)
Clashscore	141614	2734 (3.04-3.00)
Ramachandran outliers	138981	2640 (3.04-3.00)
Sidechain outliers	138945	2643 (3.04-3.00)
RSRZ outliers	127900	2287 (3.04-3.00)

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 $\leq 5\%$. 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	338	<div> <div>9%</div> <div>64%</div> <div>24%</div> <div>••</div> <div>9%</div> </div>
1	B	338	<div> <div>57%</div> <div>29%</div> <div>•</div> <div>10%</div> </div>
2	C	233	<div> <div>14%</div> <div>52%</div> <div>31%</div> <div>5%</div> <div>12%</div> </div>
2	D	233	<div> <div>9%</div> <div>49%</div> <div>35%</div> <div>6%</div> <div>9%</div> </div>

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 8577 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 Squamous cell carcinoma antigen recognized by T-cells 3.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	308	Total	C	N	O	S	0	0	0
			2563	1615	457	476	15			
1	B	305	Total	C	N	O	S	0	0	0
			2536	1599	453	469	15			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	274	GLY	-	expression tag	UNP Q15020
A	275	SER	-	expression tag	UNP Q15020
A	276	HIS	-	expression tag	UNP Q15020
A	277	MET	-	expression tag	UNP Q15020
B	274	GLY	-	expression tag	UNP Q15020
B	275	SER	-	expression tag	UNP Q15020
B	276	HIS	-	expression tag	UNP Q15020
B	277	MET	-	expression tag	UNP Q15020

- Molecule 2 is a protein called Ubiquitin carboxyl-terminal hydrolase 4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	C	206	Total	C	N	O	S	0	0	0
			1694	1085	284	317	8			
2	D	212	Total	C	N	O	S	0	0	0
			1745	1114	294	328	9			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	-2	GLY	-	expression tag	UNP Q13107
C	-1	SER	-	expression tag	UNP Q13107
C	0	HIS	-	expression tag	UNP Q13107
D	-2	GLY	-	expression tag	UNP Q13107

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-1	SER	-	expression tag	UNP Q13107
D	0	HIS	-	expression tag	UNP Q13107

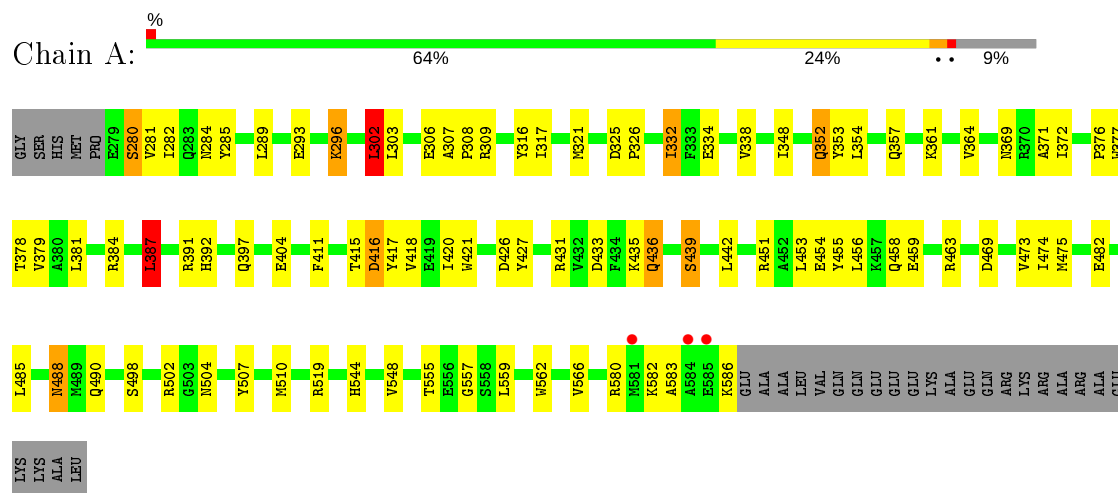
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	7	Total	O	0	0
			7	7		
3	B	21	Total	O	0	0
			21	21		
3	C	4	Total	O	0	0
			4	4		
3	D	7	Total	O	0	0
			7	7		

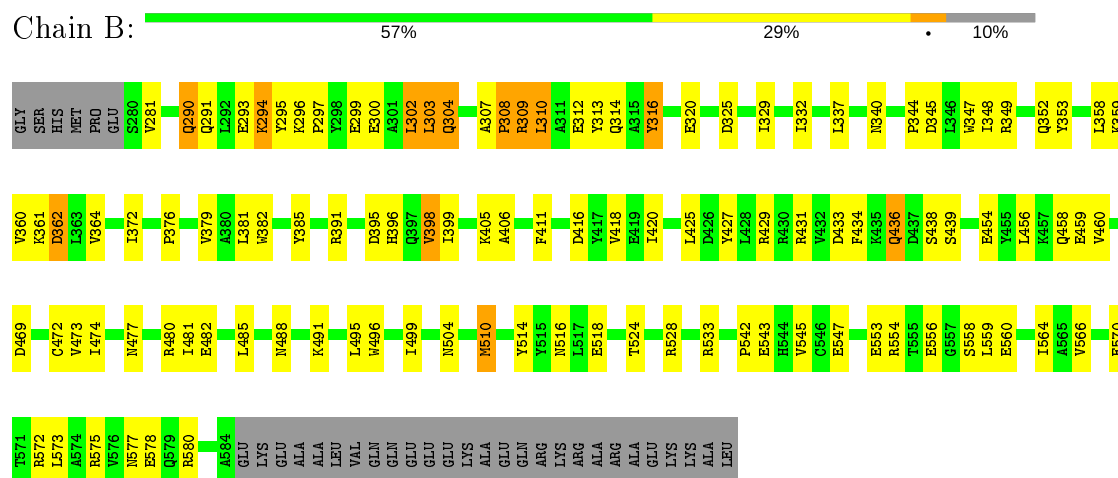
3 Residue-property plots

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: Squamous cell carcinoma antigen recognized by T-cells 3



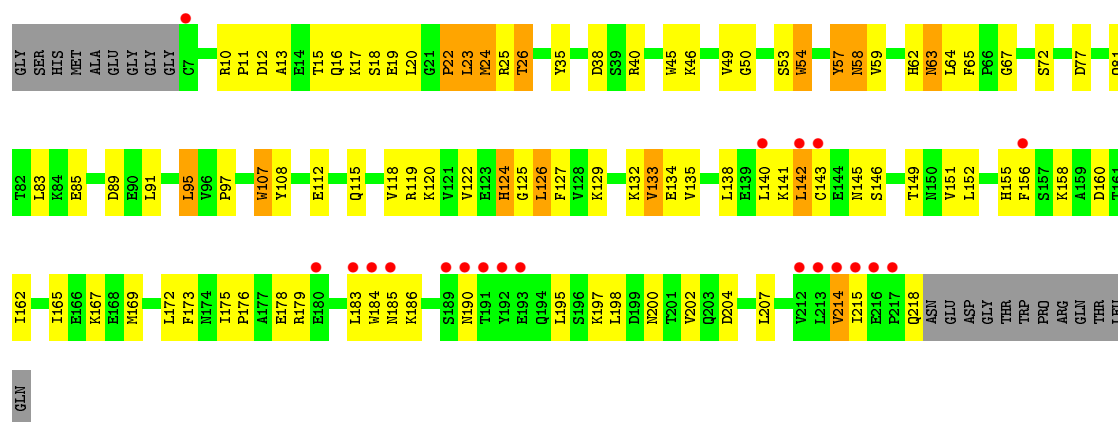
- Molecule 1: Squamous cell carcinoma antigen recognized by T-cells 3



- Molecule 2: Ubiquitin carboxyl-terminal hydrolase 4



- Molecule 2: Ubiquitin carboxyl-terminal hydrolase 4



4 Data and refinement statistics

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α , β , γ	115.20Å 115.20Å 306.14Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 3.01 42.74 – 3.01	Depositor EDS
% Data completeness (in resolution range)	98.1 (50.00-3.01) 98.1 (42.74-3.01)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.11 (at 3.01Å)	Xtriage
Refinement program	PHENIX 1.7.3 _928	Depositor
R, R_{free}	0.309 , 0.334 0.299 , 0.300	Depositor DCC
R_{free} test set	2064 reflections (5.04%)	wwPDB-VP
Wilson B-factor (Å ²)	54.9	Xtriage
Anisotropy	0.131	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.19 , -10.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.35$, $\langle L^2 \rangle = 0.18$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.85	EDS
Total number of atoms	8577	wwPDB-VP
Average B, all atoms (Å ²)	106.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.98% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ 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	0.38	0/2615	0.69	2/3535 (0.1%)
1	B	0.38	0/2588	0.67	0/3500
2	C	0.33	0/1737	0.53	0/2357
2	D	0.31	0/1789	0.49	0/2427
All	All	0.36	0/8729	0.62	2/11819 (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	2

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	302	LEU	CA-CB-CG	8.52	134.89	115.30
1	A	387	LEU	CA-CB-CG	6.67	130.63	115.30

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	416	ASP	Sidechain
1	A	488	ASN	Mainchain

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	2563	0	2514	82	2
1	B	2536	0	2489	168	1
2	C	1694	0	1654	137	1
2	D	1745	0	1702	83	0
3	A	7	0	0	0	0
3	B	21	0	0	0	0
3	C	4	0	0	0	0
3	D	7	0	0	0	0
All	All	8577	0	8359	462	2

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 27.

All (462) 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:B:320:GLU:HG3	1:B:332:ILE:CD1	1.33	1.56
1:A:317:ILE:CD1	1:A:332:ILE:HD12	1.45	1.45
2:C:138:LEU:HG	2:C:209:GLN:CD	1.36	1.44
2:C:137:LEU:HD11	2:C:156:PHE:C	1.38	1.39
2:D:175:ILE:HG23	2:D:179:ARG:NH1	1.33	1.38
2:C:137:LEU:CD1	2:C:156:PHE:O	1.72	1.35
1:B:302:LEU:HD12	1:B:303:LEU:N	1.41	1.32
1:B:310:LEU:HD12	1:B:310:LEU:O	1.34	1.27
2:D:169:MET:HG3	2:D:215:ILE:CD1	1.69	1.22
2:C:137:LEU:HD23	2:C:138:LEU:N	1.53	1.22
1:B:303:LEU:HD12	1:B:303:LEU:O	1.35	1.21
1:B:433:ASP:OD2	1:B:436:GLN:NE2	1.73	1.21
2:D:175:ILE:CG2	2:D:179:ARG:HH11	1.57	1.17
1:B:302:LEU:HB3	1:B:309:ARG:NH2	1.60	1.16
2:D:169:MET:CG	2:D:215:ILE:HD11	1.76	1.14
2:C:169:MET:SD	2:C:215:ILE:CD1	2.35	1.14
2:C:140:LEU:HD21	2:C:207:LEU:HD21	1.24	1.14
2:C:138:LEU:CG	2:C:209:GLN:CD	2.16	1.13
2:C:137:LEU:CD1	2:C:156:PHE:C	2.14	1.13

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:138:LEU:HG	2:C:209:GLN:OE1	1.48	1.13
2:C:162:ILE:HG21	2:C:195:LEU:HD21	1.30	1.13
1:B:320:GLU:CG	1:B:332:ILE:CD1	2.26	1.13
1:B:320:GLU:CG	1:B:332:ILE:HD12	1.80	1.11
1:A:317:ILE:HD11	1:A:332:ILE:HD12	1.33	1.10
1:B:307:ALA:O	1:B:309:ARG:N	1.84	1.10
2:D:169:MET:HB3	2:D:215:ILE:HD12	1.28	1.10
1:A:306:GLU:O	1:A:309:ARG:HG2	1.52	1.10
1:A:456:LEU:HD21	1:A:474:ILE:HD12	1.31	1.09
2:C:138:LEU:CG	2:C:209:GLN:OE1	1.99	1.08
1:A:317:ILE:HD13	1:A:332:ILE:HD12	1.10	1.08
2:D:126:LEU:HD23	2:D:126:LEU:N	1.68	1.08
1:A:281:VAL:HG23	1:A:282:ILE:N	1.68	1.08
1:B:309:ARG:HD2	1:B:313:TYR:CE2	1.89	1.08
1:A:317:ILE:CD1	1:A:332:ILE:CD1	2.32	1.07
1:B:307:ALA:HB1	1:B:308:PRO:HD2	1.37	1.07
2:C:137:LEU:HD11	2:C:156:PHE:O	0.89	1.07
1:B:302:LEU:HB3	1:B:309:ARG:HH22	1.17	1.06
1:B:299:GLU:O	1:B:302:LEU:HG	1.58	1.04
2:D:169:MET:CG	2:D:215:ILE:CD1	2.31	1.04
1:A:332:ILE:HD13	1:A:332:ILE:O	1.55	1.03
2:C:29:GLN:O	2:C:32:ALA:HB2	1.56	1.03
2:C:138:LEU:HG	2:C:209:GLN:CG	1.87	1.03
1:B:320:GLU:HG3	1:B:332:ILE:HD11	1.41	1.02
2:D:169:MET:CB	2:D:215:ILE:HD12	1.89	1.02
1:B:295:TYR:C	1:B:297:PRO:HD2	1.78	1.02
2:C:169:MET:SD	2:C:215:ILE:HG13	2.00	1.00
2:C:183:LEU:HD13	2:C:215:ILE:HG12	1.43	0.99
2:C:169:MET:SD	2:C:215:ILE:HD12	2.00	0.98
2:D:169:MET:CB	2:D:215:ILE:CD1	2.40	0.98
1:B:303:LEU:HD12	1:B:303:LEU:C	1.80	0.97
2:C:138:LEU:CG	2:C:209:GLN:HB2	1.95	0.97
1:A:456:LEU:HD21	1:A:474:ILE:CD1	1.94	0.96
1:A:456:LEU:CD2	1:A:474:ILE:HD12	1.95	0.96
2:C:137:LEU:HD23	2:C:138:LEU:H	1.03	0.96
2:C:169:MET:CE	2:C:215:ILE:HD11	1.94	0.96
2:C:137:LEU:CD2	2:C:138:LEU:N	2.28	0.95
1:B:310:LEU:HD12	1:B:310:LEU:C	1.85	0.95
1:B:433:ASP:CG	1:B:436:GLN:NE2	2.20	0.95
2:C:169:MET:SD	2:C:215:ILE:CG1	2.56	0.94
1:B:296:LYS:N	1:B:297:PRO:CD	2.30	0.94

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:296:LYS:N	1:B:297:PRO:HD2	1.83	0.94
2:C:138:LEU:HG	2:C:209:GLN:HB2	1.51	0.93
1:B:372:ILE:HD11	1:B:385:TYR:CD2	2.04	0.93
2:C:29:GLN:O	2:C:32:ALA:CB	2.18	0.92
1:B:302:LEU:HB2	1:B:309:ARG:NH1	1.85	0.92
2:C:138:LEU:HG	2:C:209:GLN:CB	1.99	0.92
1:B:309:ARG:HD2	1:B:313:TYR:CD2	2.05	0.92
1:B:308:PRO:O	1:B:309:ARG:HG3	1.69	0.91
2:C:183:LEU:HD13	2:C:215:ILE:CG1	1.99	0.91
1:A:281:VAL:CG2	1:A:282:ILE:N	2.33	0.90
1:B:299:GLU:O	1:B:302:LEU:CD1	2.20	0.90
1:B:307:ALA:C	1:B:309:ARG:N	2.20	0.90
2:D:138:LEU:HD21	2:D:140:LEU:HG	1.53	0.90
1:A:317:ILE:HD11	1:A:332:ILE:CD1	1.97	0.89
1:A:582:LYS:HE3	1:A:586:LYS:HE3	1.53	0.89
1:B:299:GLU:O	1:B:302:LEU:CG	2.21	0.88
2:C:140:LEU:HD21	2:C:207:LEU:CD2	2.04	0.88
1:B:308:PRO:HB2	1:B:340:ASN:OD1	1.73	0.88
1:B:309:ARG:CD	1:B:313:TYR:CD2	2.56	0.88
1:B:320:GLU:HG3	1:B:332:ILE:HD12	0.87	0.87
1:B:309:ARG:O	1:B:309:ARG:HD3	1.75	0.87
1:A:306:GLU:O	1:A:309:ARG:CG	2.22	0.86
1:B:433:ASP:CG	1:B:436:GLN:HE21	1.78	0.86
2:C:169:MET:HE3	2:C:215:ILE:HD11	1.57	0.86
1:B:302:LEU:CD1	1:B:303:LEU:N	2.36	0.86
1:B:307:ALA:CB	1:B:308:PRO:HD2	2.02	0.86
2:D:175:ILE:CG2	2:D:179:ARG:NH1	2.23	0.86
2:D:169:MET:HG3	2:D:215:ILE:HD11	0.89	0.85
1:B:302:LEU:CB	1:B:309:ARG:NH2	2.40	0.85
2:C:169:MET:CE	2:C:215:ILE:CD1	2.55	0.85
1:A:332:ILE:C	1:A:332:ILE:HD13	1.96	0.85
1:A:317:ILE:HD13	1:A:332:ILE:CD1	2.03	0.85
1:B:316:TYR:CD1	1:B:332:ILE:HD13	2.12	0.84
1:A:582:LYS:CE	1:A:586:LYS:HE3	2.07	0.84
2:C:138:LEU:CD1	2:C:209:GLN:CD	2.47	0.83
1:B:302:LEU:HD12	1:B:303:LEU:CA	2.10	0.82
1:B:307:ALA:C	1:B:309:ARG:H	1.80	0.82
1:A:281:VAL:CG2	1:A:282:ILE:H	1.91	0.82
2:D:169:MET:HE3	2:D:215:ILE:HD12	1.61	0.81
1:A:281:VAL:O	1:A:284:ASN:N	2.14	0.81
1:B:399:ILE:HD12	1:B:427:TYR:OH	1.78	0.81

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:121:VAL:HG23	2:C:132:LYS:C	2.00	0.81
1:B:308:PRO:O	1:B:309:ARG:CG	2.30	0.80
1:B:372:ILE:HD11	1:B:385:TYR:HD2	1.43	0.80
2:C:138:LEU:CD1	2:C:209:GLN:NE2	2.45	0.80
1:B:302:LEU:HD12	1:B:302:LEU:C	2.02	0.80
1:B:302:LEU:CB	1:B:309:ARG:CZ	2.58	0.80
2:C:138:LEU:HD12	2:C:209:GLN:NE2	1.97	0.80
2:C:162:ILE:CD1	2:C:195:LEU:HD11	2.12	0.79
1:B:304:GLN:CA	1:B:304:GLN:OE1	2.30	0.79
2:D:169:MET:HB3	2:D:215:ILE:CD1	2.05	0.79
2:D:125:GLY:HA3	2:D:129:LYS:HA	1.63	0.79
1:B:309:ARG:CD	1:B:309:ARG:O	2.30	0.79
2:C:169:MET:HE3	2:C:215:ILE:CD1	2.12	0.78
1:B:309:ARG:HD3	1:B:309:ARG:C	2.04	0.78
1:B:307:ALA:O	1:B:308:PRO:C	2.19	0.78
2:C:32:ALA:HB3	2:C:121:VAL:HG12	1.65	0.78
1:B:302:LEU:HB2	1:B:309:ARG:CZ	2.14	0.77
1:A:354:LEU:HB3	1:A:364:VAL:HG12	1.66	0.77
1:B:308:PRO:CB	1:B:340:ASN:OD1	2.32	0.77
1:A:281:VAL:HG23	1:A:282:ILE:H	1.45	0.77
2:C:29:GLN:O	2:C:121:VAL:CG1	2.33	0.76
2:D:126:LEU:HD23	2:D:126:LEU:H	1.48	0.76
2:C:138:LEU:CD1	2:C:209:GLN:OE1	2.33	0.75
1:B:293:GLU:OE1	1:B:296:LYS:NZ	2.14	0.75
2:D:175:ILE:HG23	2:D:179:ARG:HH11	0.87	0.75
1:B:379:VAL:HG23	1:B:420:ILE:HD11	1.68	0.75
2:D:169:MET:CG	2:D:215:ILE:HD12	2.13	0.75
1:B:320:GLU:CG	1:B:332:ILE:HD11	2.07	0.75
1:B:372:ILE:CD1	1:B:385:TYR:CD2	2.70	0.75
1:A:557:GLY:O	1:B:429:ARG:NH2	2.20	0.74
2:C:85:GLU:CG	2:C:136:TYR:HE1	2.01	0.74
2:D:126:LEU:N	2:D:126:LEU:CD2	2.44	0.74
1:B:302:LEU:CB	1:B:309:ARG:NH1	2.51	0.73
2:D:162:ILE:HD12	2:D:197:LYS:O	1.87	0.73
2:C:37:ILE:HA	2:C:71:ASN:HD21	1.54	0.73
1:A:555:THR:HG21	1:B:480:ARG:HH11	1.51	0.73
2:D:175:ILE:HG23	2:D:179:ARG:HH12	1.48	0.73
1:B:304:GLN:HA	1:B:304:GLN:OE1	1.89	0.72
1:B:303:LEU:C	1:B:303:LEU:CD1	2.55	0.72
2:D:202:VAL:HG13	2:D:207:LEU:HD12	1.72	0.72
1:B:302:LEU:HB3	1:B:309:ARG:CZ	2.19	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:140:LEU:CD2	2:C:207:LEU:HD21	2.13	0.72
2:C:88:ILE:O	2:C:93:TYR:CE2	2.43	0.72
1:A:369:ASN:O	1:A:372:ILE:HG12	1.90	0.71
2:C:121:VAL:HG23	2:C:132:LYS:O	1.90	0.71
2:C:138:LEU:CD2	2:C:209:GLN:OE1	2.38	0.71
1:A:379:VAL:HG21	1:A:416:ASP:HB3	1.73	0.71
2:D:124:HIS:CE1	2:D:132:LYS:HB3	2.26	0.71
1:B:295:TYR:HD1	1:B:316:TYR:CE1	2.10	0.69
1:B:309:ARG:HD3	1:B:313:TYR:CD2	2.26	0.69
1:B:300:GLU:O	1:B:303:LEU:HB3	1.92	0.69
2:C:85:GLU:HG2	2:C:136:TYR:HE1	1.58	0.69
2:C:138:LEU:CB	2:C:209:GLN:HB2	2.23	0.68
2:D:57:TYR:HD1	2:D:58:ASN:H	1.41	0.68
2:D:95:LEU:HD22	2:D:133:VAL:HG21	1.73	0.68
2:D:124:HIS:NE2	2:D:132:LYS:HB3	2.09	0.68
1:A:485:LEU:HD21	1:B:556:GLU:HG3	1.77	0.67
1:B:302:LEU:HD12	1:B:303:LEU:H	1.53	0.67
1:A:332:ILE:CD1	1:A:332:ILE:C	2.62	0.67
1:A:498:SER:OG	1:A:502:ARG:NH1	2.28	0.67
1:B:495:LEU:O	1:B:499:ILE:HG13	1.95	0.66
2:C:88:ILE:HG22	2:C:89:ASP:N	2.09	0.66
1:B:308:PRO:O	1:B:309:ARG:CD	2.43	0.66
1:A:307:ALA:HB3	1:A:308:PRO:HD3	1.78	0.66
2:D:184:TRP:HB2	2:D:214:VAL:HG13	1.78	0.66
1:B:310:LEU:CD1	1:B:310:LEU:C	2.60	0.65
1:B:309:ARG:CD	1:B:313:TYR:CE2	2.72	0.65
2:C:162:ILE:HD13	2:C:195:LEU:HD11	1.78	0.65
2:C:140:LEU:CD2	2:C:207:LEU:CD2	2.74	0.65
1:B:300:GLU:O	1:B:303:LEU:N	2.30	0.65
1:A:293:GLU:HG3	1:A:296:LYS:HE2	1.79	0.65
1:B:309:ARG:O	1:B:309:ARG:NE	2.30	0.65
1:A:397:GLN:N	1:A:397:GLN:OE1	2.30	0.65
1:B:304:GLN:OE1	1:B:304:GLN:N	2.30	0.65
1:B:372:ILE:CD1	1:B:385:TYR:HD2	2.09	0.64
2:C:137:LEU:HD11	2:C:156:PHE:CA	2.26	0.64
1:B:473:VAL:O	1:B:477:ASN:ND2	2.31	0.64
1:A:307:ALA:CB	1:A:308:PRO:HD3	2.28	0.64
2:C:138:LEU:HD11	2:C:209:GLN:OE1	1.97	0.64
2:C:85:GLU:HG3	2:C:136:TYR:CE1	2.33	0.64
2:C:183:LEU:CD1	2:C:215:ILE:HG12	2.26	0.64
1:B:307:ALA:HB1	1:B:308:PRO:CD	2.22	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:122:VAL:O	2:D:124:HIS:CE1	2.51	0.63
2:D:169:MET:CE	2:D:215:ILE:HD12	2.28	0.63
2:C:85:GLU:CG	2:C:136:TYR:CE1	2.81	0.63
1:B:309:ARG:HH21	1:B:312:GLU:CG	2.12	0.63
1:B:295:TYR:HD1	1:B:316:TYR:CZ	2.17	0.62
2:C:138:LEU:N	2:C:138:LEU:HD22	2.14	0.62
1:B:295:TYR:CD1	1:B:316:TYR:CE1	2.87	0.62
1:B:456:LEU:CD1	1:B:474:ILE:HD12	2.30	0.62
2:C:12:ASP:O	2:C:15:THR:OG1	2.17	0.62
1:B:358:LEU:O	1:B:359:LYS:HG2	1.97	0.62
2:C:138:LEU:HB2	2:C:209:GLN:HB2	1.81	0.62
2:D:10:ARG:HB2	2:D:107:TRP:CD1	2.34	0.62
1:A:384:ARG:HA	1:A:387:LEU:HG	1.82	0.62
1:A:361:LYS:HE2	1:A:392:HIS:HB3	1.82	0.62
1:A:371:ALA:HB1	1:A:381:LEU:HD22	1.82	0.62
1:B:302:LEU:CD2	1:B:309:ARG:HH12	2.12	0.62
1:A:433:ASP:OD2	1:A:435:LYS:HG3	1.99	0.61
1:B:362:ASP:N	1:B:362:ASP:OD1	2.31	0.61
1:A:482:GLU:HG3	1:A:488:ASN:HB3	1.82	0.61
2:C:118:VAL:C	2:C:119:ARG:HG2	2.21	0.61
1:B:379:VAL:HG23	1:B:420:ILE:CD1	2.30	0.61
1:B:379:VAL:HG23	1:B:420:ILE:CG1	2.30	0.61
2:C:137:LEU:C	2:C:137:LEU:CD2	2.68	0.61
2:C:124:HIS:HA	2:C:203:GLN:HG2	1.83	0.61
2:D:63:ASN:N	2:D:63:ASN:OD1	2.32	0.61
2:C:29:GLN:O	2:C:121:VAL:HG12	2.01	0.61
2:C:32:ALA:O	2:C:120:LYS:CB	2.49	0.61
1:B:458:GLN:HG3	1:B:459:GLU:OE1	2.02	0.60
2:D:65:PHE:HD2	2:D:67:GLY:H	1.49	0.60
1:A:404:GLU:OE2	1:A:451:ARG:NH2	2.34	0.60
2:D:169:MET:HE2	2:D:215:ILE:HG13	1.84	0.60
1:B:303:LEU:O	1:B:303:LEU:CD1	2.30	0.59
2:C:135:VAL:HG12	2:C:136:TYR:N	2.17	0.59
2:C:32:ALA:O	2:C:120:LYS:HB2	2.03	0.59
2:D:185:ASN:HB2	2:D:195:LEU:HD21	1.84	0.59
2:C:138:LEU:HD21	2:C:209:GLN:OE1	2.03	0.59
1:B:477:ASN:O	1:B:481:ILE:HG13	2.02	0.59
2:C:162:ILE:HD13	2:C:195:LEU:CD1	2.33	0.59
2:C:128:VAL:O	2:C:130:HIS:HD2	1.85	0.59
2:C:138:LEU:CD2	2:C:209:GLN:HB2	2.32	0.58
2:D:107:TRP:HB3	2:D:108:TYR:HD1	1.68	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:490:GLN:HE22	2:C:28:LEU:HD13	1.69	0.58
2:D:118:VAL:O	2:D:119:ARG:NH1	2.33	0.58
2:C:143:CYS:HB3	2:C:214:VAL:HB	1.85	0.58
1:B:302:LEU:C	1:B:302:LEU:CD1	2.68	0.58
1:A:582:LYS:HE2	1:A:586:LYS:HE3	1.84	0.58
2:C:75:PHE:HE1	2:C:117:ILE:HD11	1.69	0.58
2:D:89:ASP:HB2	2:D:95:LEU:HD11	1.85	0.58
1:B:308:PRO:C	1:B:309:ARG:HG3	2.23	0.57
1:B:406:ALA:HB1	1:B:420:ILE:HD13	1.85	0.57
2:C:137:LEU:CG	2:C:156:PHE:O	2.51	0.57
1:B:379:VAL:CG2	1:B:420:ILE:HG13	2.34	0.57
1:B:488:ASN:OD1	1:B:491:LYS:HB2	2.03	0.57
2:D:176:PRO:HD2	2:D:179:ARG:HH12	1.68	0.57
1:B:316:TYR:CD1	1:B:332:ILE:CD1	2.87	0.56
1:B:329:ILE:HD12	1:B:353:TYR:OH	2.05	0.56
2:C:143:CYS:SG	2:C:144:GLU:N	2.77	0.56
2:C:175:ILE:HG12	2:C:179:ARG:HH21	1.71	0.56
1:B:302:LEU:HD22	1:B:309:ARG:HH12	1.70	0.56
1:B:472:CYS:HB2	1:B:499:ILE:HG23	1.88	0.56
1:A:459:GLU:O	1:A:463:ARG:HG2	2.05	0.56
1:B:309:ARG:HD2	1:B:313:TYR:CZ	2.39	0.55
1:B:320:GLU:OE2	1:B:332:ILE:HD11	2.06	0.55
1:B:309:ARG:HH21	1:B:312:GLU:HG3	1.71	0.55
2:C:16:GLN:OE1	2:C:108:TYR:OH	2.20	0.55
1:B:307:ALA:CB	1:B:308:PRO:CD	2.81	0.55
2:C:166:GLU:O	2:C:170:ARG:HG3	2.07	0.55
2:D:169:MET:CE	2:D:215:ILE:CD1	2.85	0.55
2:D:124:HIS:CD2	2:D:158:LYS:NZ	2.75	0.54
1:B:560:GLU:O	1:B:564:ILE:HG13	2.07	0.54
1:A:302:LEU:O	1:A:309:ARG:HD3	2.08	0.54
1:B:308:PRO:O	1:B:309:ARG:HD3	2.06	0.54
1:B:514:TYR:OH	1:B:518:GLU:OE1	2.19	0.54
1:B:299:GLU:O	1:B:302:LEU:HD11	2.08	0.54
1:B:499:ILE:O	1:B:504:ASN:HB2	2.08	0.54
2:C:122:VAL:HG13	2:C:134:GLU:HB2	1.90	0.54
2:C:197:LYS:HG3	2:C:199:ASP:H	1.73	0.53
1:B:454:GLU:O	1:B:458:GLN:HG2	2.09	0.53
1:B:456:LEU:HD11	1:B:474:ILE:CD1	2.38	0.53
1:B:295:TYR:CA	1:B:297:PRO:HD2	2.38	0.53
2:C:140:LEU:HD12	2:C:211:GLN:H	1.74	0.53
2:D:119:ARG:HG3	2:D:135:VAL:HG22	1.89	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:18:SER:O	2:D:22:PRO:HD2	2.09	0.53
1:A:582:LYS:HE3	1:A:586:LYS:CE	2.34	0.53
2:D:179:ARG:HD3	2:D:218:GLN:H	1.73	0.53
2:C:12:ASP:OD1	2:C:13:ALA:N	2.41	0.53
1:B:372:ILE:HG23	1:B:382:TRP:CZ2	2.44	0.53
2:C:42:PHE:CE2	2:C:46:LYS:HE3	2.44	0.52
2:D:183:LEU:HB3	2:D:195:LEU:HD23	1.91	0.52
1:B:379:VAL:CG2	1:B:420:ILE:CG1	2.87	0.52
2:C:185:ASN:N	2:C:185:ASN:OD1	2.42	0.52
2:D:122:VAL:O	2:D:124:HIS:ND1	2.43	0.52
2:D:81:GLN:HE22	2:D:115:GLN:HB2	1.74	0.52
2:C:88:ILE:CG2	2:C:89:ASP:N	2.72	0.52
1:A:307:ALA:HB3	1:A:308:PRO:CD	2.39	0.52
1:B:543:GLU:O	1:B:547:GLU:HG2	2.10	0.51
2:C:124:HIS:CE1	2:C:132:LYS:HB3	2.44	0.51
1:A:387:LEU:HD13	1:A:391:ARG:HH22	1.75	0.51
1:A:458:GLN:HG2	1:A:459:GLU:OE1	2.11	0.51
2:C:101:TRP:O	2:C:105:LEU:N	2.39	0.51
2:C:162:ILE:HD13	2:C:195:LEU:HD21	1.93	0.51
2:D:183:LEU:HG	2:D:215:ILE:HG12	1.91	0.51
2:D:186:LYS:HE3	2:D:190:ASN:HA	1.93	0.51
1:B:308:PRO:HB2	1:B:340:ASN:CG	2.30	0.51
1:B:310:LEU:CD1	1:B:310:LEU:O	2.30	0.51
2:C:29:GLN:O	2:C:32:ALA:HB3	2.06	0.51
2:C:88:ILE:O	2:C:93:TYR:CD2	2.64	0.51
1:B:469:ASP:OD2	1:B:473:VAL:N	2.44	0.50
2:C:35:TYR:HB2	2:C:96:VAL:HG13	1.93	0.50
2:C:86:HIS:H	2:C:136:TYR:HE1	1.48	0.50
2:C:169:MET:CE	2:C:215:ILE:HD12	2.37	0.49
1:A:583:ALA:O	1:A:586:LYS:O	2.30	0.49
1:B:482:GLU:HG2	1:B:491:LYS:HB3	1.94	0.49
2:D:124:HIS:CD2	2:D:158:LYS:HZ3	2.31	0.49
1:B:433:ASP:CB	1:B:436:GLN:HE21	2.24	0.49
2:C:135:VAL:HG12	2:C:136:TYR:H	1.77	0.49
2:C:162:ILE:HD12	2:C:195:LEU:HD11	1.93	0.49
1:A:544:HIS:O	1:A:548:VAL:HG23	2.12	0.49
1:B:427:TYR:CZ	1:B:431:ARG:HD2	2.47	0.49
1:B:291:GLN:HA	1:B:294:LYS:HE3	1.94	0.49
2:D:15:THR:O	2:D:19:GLU:HG2	2.12	0.49
2:D:17:LYS:HB2	2:D:49:VAL:HG12	1.95	0.49
1:A:562:TRP:O	1:A:566:VAL:HG23	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:299:GLU:C	1:B:302:LEU:HG	2.28	0.48
2:C:183:LEU:CD1	2:C:215:ILE:CG1	2.83	0.48
2:C:117:ILE:O	2:C:117:ILE:HG22	2.12	0.48
2:C:32:ALA:O	2:C:120:LYS:HA	2.14	0.48
2:D:145:ASN:OD1	2:D:146:SER:N	2.46	0.48
2:D:12:ASP:O	2:D:16:GLN:HG3	2.14	0.48
2:C:138:LEU:HD23	2:C:209:GLN:HB2	1.94	0.48
1:A:285:TYR:O	1:A:289:LEU:HD13	2.14	0.48
1:A:302:LEU:HD12	1:A:303:LEU:N	2.29	0.48
1:B:411:PHE:CE1	1:B:420:ILE:CD1	2.97	0.48
2:C:145:ASN:OD1	2:C:182:ARG:NH2	2.47	0.48
1:A:453:LEU:HD21	1:A:475:MET:HG2	1.96	0.47
1:B:399:ILE:HD12	1:B:427:TYR:CZ	2.48	0.47
2:C:138:LEU:CD1	2:C:209:GLN:HE22	2.25	0.47
2:D:120:LYS:O	2:D:134:GLU:HG2	2.14	0.47
1:B:316:TYR:CE1	1:B:332:ILE:HD11	2.49	0.47
1:B:295:TYR:CD1	1:B:316:TYR:OH	2.62	0.47
1:B:575:ARG:O	1:B:578:GLU:HB3	2.14	0.47
1:A:456:LEU:CD2	1:A:474:ILE:CD1	2.70	0.47
1:A:555:THR:HG21	1:B:480:ARG:HD2	1.96	0.47
1:A:379:VAL:CG2	1:A:416:ASP:HB3	2.42	0.47
2:C:121:VAL:HA	2:C:133:VAL:HA	1.97	0.47
2:C:75:PHE:HA	2:C:83:LEU:HA	1.97	0.47
1:A:417:TYR:OH	1:A:463:ARG:NH1	2.47	0.47
2:C:162:ILE:HG21	2:C:195:LEU:CD2	2.22	0.47
1:B:325:ASP:O	1:B:329:ILE:HG13	2.15	0.46
2:D:126:LEU:HB2	2:D:127:PHE:CD2	2.50	0.46
1:B:302:LEU:CB	1:B:309:ARG:HH12	2.24	0.46
1:B:316:TYR:CE1	1:B:332:ILE:CD1	2.98	0.46
2:D:11:PRO:HD2	2:D:107:TRP:CE2	2.50	0.46
2:D:169:MET:HE3	2:D:215:ILE:CD1	2.38	0.46
2:D:143:CYS:HB3	2:D:151:VAL:HG12	1.98	0.46
1:A:415:THR:O	1:A:418:VAL:HG22	2.15	0.46
2:D:16:GLN:HG2	2:D:107:TRP:CE2	2.50	0.46
1:A:348:ILE:O	1:A:352:GLN:HB3	2.15	0.46
1:A:454:GLU:HG3	1:A:455:TYR:N	2.30	0.46
1:B:290:GLN:HG2	1:B:291:GLN:N	2.31	0.46
2:C:175:ILE:HG23	2:C:179:ARG:NE	2.29	0.46
2:C:88:ILE:HG22	2:C:89:ASP:H	1.78	0.46
1:A:507:TYR:HB2	1:A:510:MET:HB2	1.97	0.46
2:D:152:LEU:HD22	2:D:172:LEU:HD21	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:504:ASN:HB3	1:A:510:MET:HG2	1.97	0.46
1:B:295:TYR:CD1	1:B:316:TYR:HE1	2.34	0.46
2:D:138:LEU:O	2:D:155:HIS:HA	2.16	0.45
2:D:57:TYR:CD1	2:D:58:ASN:N	2.84	0.45
1:B:496:TRP:HZ3	1:B:510:MET:HG3	1.81	0.45
2:D:198:LEU:HD23	2:D:198:LEU:H	1.80	0.45
1:B:295:TYR:CE1	1:B:316:TYR:HE1	2.35	0.45
1:B:481:ILE:HG23	1:B:485:LEU:HD12	1.97	0.45
1:B:300:GLU:HA	1:B:303:LEU:HB3	1.98	0.45
1:B:566:VAL:O	1:B:570:GLU:HG2	2.16	0.45
2:D:179:ARG:HB2	2:D:218:GLN:HB3	1.97	0.45
1:B:456:LEU:HD13	1:B:474:ILE:HD12	1.99	0.45
1:A:281:VAL:HG22	1:A:282:ILE:H	1.77	0.45
1:A:307:ALA:CB	1:A:308:PRO:CD	2.94	0.45
1:A:334:GLU:O	1:A:338:VAL:HG23	2.17	0.45
2:D:197:LYS:HE3	2:D:200:ASN:HB3	1.99	0.45
1:B:418:VAL:HG23	1:B:474:ILE:HD11	1.99	0.45
1:B:434:PHE:CD1	1:B:485:LEU:HB3	2.52	0.45
1:A:308:PRO:O	1:A:309:ARG:C	2.54	0.44
1:B:344:PRO:O	1:B:348:ILE:HG13	2.17	0.44
2:C:162:ILE:HD13	2:C:195:LEU:CD2	2.47	0.44
2:D:38:ASP:OD1	2:D:40:ARG:HG3	2.17	0.44
1:A:469:ASP:OD1	1:A:473:VAL:HG22	2.17	0.44
1:A:519:ARG:NH2	1:B:516:ASN:HB3	2.32	0.44
2:D:13:ALA:HB1	2:D:49:VAL:HA	1.98	0.44
2:D:173:PHE:HD1	2:D:173:PHE:HA	1.64	0.44
2:D:25:ARG:HG3	2:D:26:THR:N	2.31	0.44
1:B:528:ARG:HG2	1:B:553:GLU:OE2	2.16	0.44
2:C:69:ILE:HD11	2:C:104:LEU:HG	1.99	0.44
2:D:22:PRO:O	2:D:25:ARG:HG2	2.18	0.44
2:C:100:ALA:O	2:C:104:LEU:HB3	2.18	0.44
2:C:144:GLU:HB2	2:C:173:PHE:CE2	2.53	0.44
2:C:12:ASP:HB3	2:C:15:THR:HG23	1.99	0.44
2:C:88:ILE:CG2	2:C:89:ASP:H	2.31	0.44
2:C:138:LEU:N	2:C:138:LEU:CD2	2.79	0.44
1:B:308:PRO:HB2	1:B:340:ASN:ND2	2.33	0.43
2:C:124:HIS:NE2	2:C:132:LYS:HB3	2.33	0.43
2:C:139:GLU:OE1	2:C:155:HIS:HB3	2.17	0.43
2:C:29:GLN:O	2:C:121:VAL:HG11	2.11	0.43
2:C:35:TYR:CG	2:C:101:TRP:CD1	3.06	0.43
1:B:295:TYR:C	1:B:297:PRO:CD	2.62	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:300:GLU:O	1:B:303:LEU:CB	2.64	0.43
1:B:395:ASP:HB3	1:B:398:VAL:HG12	2.01	0.43
2:C:173:PHE:O	2:C:175:ILE:HG13	2.17	0.43
1:B:295:TYR:HD1	1:B:316:TYR:OH	1.99	0.43
1:B:337:LEU:HD22	1:B:347:TRP:CE2	2.53	0.43
1:B:376:PRO:O	1:B:382:TRP:CH2	2.71	0.43
1:B:456:LEU:CD1	1:B:474:ILE:CD1	2.95	0.43
1:A:317:ILE:HG12	1:A:332:ILE:HD11	1.99	0.43
1:A:317:ILE:CG1	1:A:332:ILE:CD1	2.95	0.43
1:B:482:GLU:HG3	1:B:488:ASN:HB3	2.00	0.43
2:C:137:LEU:CD1	2:C:156:PHE:N	2.81	0.43
2:D:138:LEU:HD22	2:D:156:PHE:HD2	1.84	0.43
1:A:353:TYR:CE1	1:A:357:GLN:HG3	2.54	0.42
2:C:183:LEU:HD13	2:C:215:ILE:CD1	2.49	0.42
2:C:183:LEU:HB3	2:C:195:LEU:HD23	2.00	0.42
2:C:85:GLU:HA	2:C:136:TYR:CE1	2.39	0.42
2:C:162:ILE:O	2:C:166:GLU:N	2.47	0.42
2:C:50:GLY:HA3	2:C:56:MET:HG2	2.00	0.42
1:A:387:LEU:HD13	1:A:391:ARG:NH2	2.34	0.42
1:A:427:TYR:CZ	1:A:431:ARG:HD2	2.55	0.42
1:B:314:GLN:OE1	1:B:349:ARG:NH2	2.52	0.42
2:C:121:VAL:HG22	2:C:122:VAL:N	2.34	0.42
1:A:317:ILE:O	1:A:321:MET:HG3	2.18	0.42
2:C:169:MET:HB3	2:C:215:ILE:HD12	2.02	0.42
2:C:75:PHE:CE1	2:C:117:ILE:HD11	2.53	0.42
2:D:160:ASP:O	2:D:202:VAL:HG23	2.19	0.42
1:B:299:GLU:O	1:B:302:LEU:HD12	2.10	0.42
2:C:138:LEU:HD12	2:C:209:GLN:HE22	1.79	0.42
2:C:89:ASP:HA	2:C:93:TYR:CZ	2.55	0.42
2:D:119:ARG:HA	2:D:119:ARG:HD3	1.81	0.42
2:D:142:LEU:H	2:D:142:LEU:HG	1.52	0.42
1:A:376:PRO:HD2	1:A:377:TRP:CE3	2.55	0.42
1:B:294:LYS:O	1:B:297:PRO:CD	2.68	0.42
1:A:559:LEU:HD11	1:B:391:ARG:HG2	2.02	0.42
2:C:101:TRP:HZ3	2:C:105:LEU:HG	1.85	0.42
1:B:300:GLU:C	1:B:303:LEU:H	2.23	0.42
1:B:320:GLU:CD	1:B:332:ILE:HD11	2.40	0.42
1:B:348:ILE:O	1:B:352:GLN:HB2	2.20	0.41
2:C:45:TRP:NE1	2:C:108:TYR:OH	2.51	0.41
1:A:411:PHE:HB2	1:A:417:TYR:CE1	2.56	0.41
2:D:23:LEU:HD13	2:D:97:PRO:HD2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:65:PHE:CD1	2:C:66:PRO:HD2	2.55	0.41
2:D:169:MET:O	2:D:173:PHE:HB2	2.21	0.41
1:A:306:GLU:O	1:A:309:ARG:HG3	2.17	0.41
1:A:420:ILE:HG23	1:A:421:TRP:N	2.35	0.41
1:B:360:VAL:O	1:B:364:VAL:HG13	2.21	0.41
2:C:33:GLN:O	2:C:98:THR:HG23	2.20	0.41
2:D:46:LYS:O	2:D:50:GLY:N	2.52	0.41
1:A:325:ASP:HA	1:A:326:PRO:HD2	1.80	0.41
1:B:572:ARG:HH11	1:B:575:ARG:HH21	1.69	0.41
1:A:439:SER:O	1:A:442:LEU:HB3	2.20	0.41
1:A:580:ARG:HA	1:A:580:ARG:HD3	1.81	0.41
1:A:426:ASP:OD1	1:B:554:ARG:NH1	2.54	0.41
1:B:395:ASP:OD1	1:B:396:HIS:N	2.54	0.41
2:C:134:GLU:C	2:C:135:VAL:HG23	2.41	0.41
2:C:32:ALA:O	2:C:120:LYS:CA	2.68	0.41
2:D:54:TRP:N	2:D:54:TRP:CE3	2.89	0.41
1:B:379:VAL:HG21	1:B:416:ASP:O	2.21	0.41
1:B:456:LEU:HA	1:B:460:VAL:HG22	2.03	0.41
2:D:35:TYR:CE1	2:D:118:VAL:HG22	2.56	0.41
2:D:126:LEU:HB2	2:D:127:PHE:HD2	1.86	0.41
2:D:45:TRP:O	2:D:49:VAL:HG23	2.21	0.41
2:C:175:ILE:HG23	2:C:179:ARG:CZ	2.52	0.40
2:D:165:ILE:O	2:D:169:MET:HG2	2.20	0.40
1:B:577:ASN:HA	1:B:580:ARG:HG2	2.03	0.40
2:D:24:MET:HG2	2:D:25:ARG:N	2.36	0.40
1:B:307:ALA:O	1:B:309:ARG:CB	2.70	0.40
1:B:399:ILE:CD1	1:B:427:TYR:CZ	3.04	0.40
1:B:533:ARG:HB3	1:B:533:ARG:HE	1.63	0.40
2:C:138:LEU:CG	2:C:209:GLN:CB	2.71	0.40
1:B:542:PRO:O	1:B:545:VAL:HG22	2.21	0.40
1:B:554:ARG:CZ	1:B:554:ARG:HB3	2.51	0.40
2:C:162:ILE:CG2	2:C:195:LEU:HD21	2.22	0.40
2:C:162:ILE:CD1	2:C:195:LEU:CD1	2.87	0.40

All (2) 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)
1:A:436:GLN:OE1	1:B:361:LYS:CE[5_544]	1.73	0.47
1:A:280:SER:OG	2:C:18:SER:OG[5_544]	2.08	0.12

5.3 Torsion angles

5.3.1 Protein backbone

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	306/338 (90%)	295 (96%)	11 (4%)	0	100	100
1	B	303/338 (90%)	295 (97%)	7 (2%)	1 (0%)	41	75
2	C	204/233 (88%)	184 (90%)	18 (9%)	2 (1%)	15	50
2	D	210/233 (90%)	199 (95%)	10 (5%)	1 (0%)	29	66
All	All	1023/1142 (90%)	973 (95%)	46 (4%)	4 (0%)	34	71

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	308	PRO
2	C	59	VAL
2	C	26	THR
2	D	22	PRO

5.3.2 Protein sidechains

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	271/294 (92%)	261 (96%)	10 (4%)	34	69
1	B	268/294 (91%)	245 (91%)	23 (9%)	10	36
2	C	188/209 (90%)	170 (90%)	18 (10%)	8	30
2	D	194/209 (93%)	164 (84%)	30 (16%)	2	12
All	All	921/1006 (92%)	840 (91%)	81 (9%)	10	34

All (81) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	280	SER
1	A	296	LYS
1	A	302	LEU
1	A	316	TYR
1	A	332	ILE
1	A	352	GLN
1	A	378	THR
1	A	387	LEU
1	A	436	GLN
1	A	439	SER
1	B	281	VAL
1	B	290	GLN
1	B	294	LYS
1	B	302	LEU
1	B	303	LEU
1	B	304	GLN
1	B	309	ARG
1	B	310	LEU
1	B	316	TYR
1	B	345	ASP
1	B	362	ASP
1	B	381	LEU
1	B	398	VAL
1	B	405	LYS
1	B	425	LEU
1	B	436	GLN
1	B	438	SER
1	B	439	SER
1	B	510	MET
1	B	524	THR
1	B	558	SER
1	B	559	LEU
1	B	573	LEU
2	C	14	GLU
2	C	33	GLN
2	C	44	GLN
2	C	58	ASN
2	C	83	LEU
2	C	94	VAL
2	C	101	TRP
2	C	104	LEU
2	C	122	VAL

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Mol	Chain	Res	Type
2	C	134	GLU
2	C	137	LEU
2	C	145	ASN
2	C	164	THR
2	C	181	THR
2	C	182	ARG
2	C	197	LYS
2	C	209	GLN
2	C	214	VAL
2	D	20	LEU
2	D	23	LEU
2	D	24	MET
2	D	26	THR
2	D	53	SER
2	D	54	TRP
2	D	57	TYR
2	D	58	ASN
2	D	59	VAL
2	D	62	HIS
2	D	63	ASN
2	D	64	LEU
2	D	72	SER
2	D	77	ASP
2	D	83	LEU
2	D	85	GLU
2	D	91	LEU
2	D	95	LEU
2	D	107	TRP
2	D	112	GLU
2	D	124	HIS
2	D	126	LEU
2	D	133	VAL
2	D	141	LYS
2	D	142	LEU
2	D	149	THR
2	D	167	LYS
2	D	178	GLU
2	D	204	ASP
2	D	214	VAL

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
2	C	44	GLN
2	C	130	HIS
2	D	124	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 carbohydrates in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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, 95th 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	308/338 (91%)	-0.07	3 (0%) 82 58	24, 74, 127, 201	0
1	B	305/338 (90%)	0.05	0 100 100	24, 89, 149, 191	0
2	C	206/233 (88%)	0.63	32 (15%) 2 0	24, 147, 215, 238	0
2	D	212/233 (90%)	0.40	20 (9%) 8 3	24, 111, 203, 227	0
All	All	1031/1142 (90%)	0.20	55 (5%) 26 9	24, 96, 196, 238	0

All (55) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	D	217	PRO	7.8
2	D	213	LEU	6.8
2	C	151	VAL	6.2
2	C	213	LEU	6.1
2	D	184	TRP	6.0
2	C	185	ASN	6.0
2	D	190	ASN	5.5
2	D	185	ASN	5.5
2	D	192	TYR	5.3
2	D	191	THR	5.2
2	C	189	SER	4.7
2	D	214	VAL	4.5
2	C	183	LEU	4.4
2	D	212	VAL	4.3
2	D	140	LEU	4.2
2	C	144	GLU	4.1
2	C	187	TYR	4.0
2	C	182	ARG	3.9
2	C	14	GLU	3.8
2	D	142	LEU	3.8
2	C	180	GLU	3.6

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Mol	Chain	Res	Type	RSRZ
2	C	145	ASN	3.6
2	C	174	ASN	3.4
2	D	193	GLU	3.4
2	D	216	GLU	3.3
2	C	188	MET	3.2
2	C	191	THR	3.1
2	C	149	THR	3.0
2	C	207	LEU	3.0
2	C	150	ASN	3.0
2	C	215	ILE	2.9
2	C	37	ILE	2.8
2	D	215	ILE	2.7
2	D	189	SER	2.7
2	D	143	CYS	2.7
2	C	69	ILE	2.7
2	C	181	THR	2.6
2	C	66	PRO	2.6
2	D	156	PHE	2.5
1	A	584	ALA	2.5
2	C	64	LEU	2.4
2	C	71	ASN	2.4
2	C	143	CYS	2.4
1	A	581	MET	2.3
2	C	87	LEU	2.3
2	C	142	LEU	2.3
2	C	68	PRO	2.3
2	C	115	GLN	2.3
2	D	180	GLU	2.2
2	C	169	MET	2.2
2	C	147	ASP	2.1
2	D	7	CYS	2.1
2	C	184	TRP	2.1
1	A	585	GLU	2.1
2	D	183	LEU	2.0

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 [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.