



# Full wwPDB X-ray Structure Validation Report ⓘ

May 14, 2020 – 11:48 am BST

PDB ID : 5AYX  
Title : Crystal structure of Human Quinolate Phosphoribosyltransferase  
Authors : Kang, G.B.; Kim, M.-K.; Im, Y.J.; Lee, J.H.; Youn, H.-S.; An, J.Y.; Lee, J.-G.; Fukuoka, S.-I.; Eom, S.H.  
Deposited on : 2015-09-14  
Resolution : 2.80 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](mailto: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.

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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

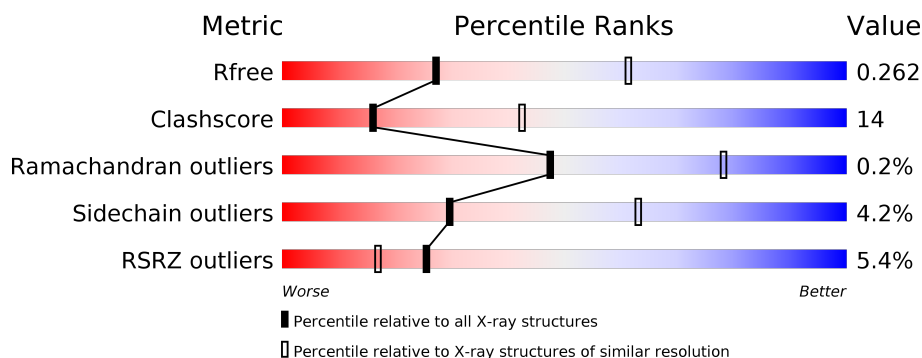
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.80 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	3140 (2.80-2.80)
Clashscore	141614	3569 (2.80-2.80)
Ramachandran outliers	138981	3498 (2.80-2.80)
Sidechain outliers	138945	3500 (2.80-2.80)
RSRZ outliers	127900	3078 (2.80-2.80)

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 on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	305	<div> <div>0%</div> <div> <div>81%</div> <div>13%</div> <div>5%</div> </div> </div>
1	B	305	<div> <div>2%</div> <div> <div>77%</div> <div>17%</div> <div>5%</div> </div> </div>
1	C	305	<div> <div>3%</div> <div> <div>64%</div> <div>28%</div> <div>5%</div> </div> </div>
1	D	305	<div> <div>18%</div> <div> <div>60%</div> <div>29%</div> <div>10%</div> </div> </div>
1	E	305	<div> <div>5%</div> <div> <div>71%</div> <div>19%</div> <div>8%</div> </div> </div>
1	F	305	<div> <div>2%</div> <div> <div>72%</div> <div>20%</div> <div>5%</div> </div> </div>

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 12499 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 Nicotinate-nucleotide pyrophosphorylase [carboxylating].

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	289	Total	C	N	O	S	0	0	0
			2108	1343	365	390	10			
1	B	289	Total	C	N	O	S	0	0	0
			2108	1343	365	390	10			
1	C	289	Total	C	N	O	S	0	0	0
			2108	1343	365	390	10			
1	D	276	Total	C	N	O	S	0	0	0
			2003	1276	346	371	10			
1	E	281	Total	C	N	O	S	0	0	0
			2045	1305	352	378	10			
1	F	289	Total	C	N	O	S	0	0	0
			2108	1343	365	390	10			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	298	LEU	-	expression tag	UNP Q15274
A	299	GLU	-	expression tag	UNP Q15274
A	300	HIS	-	expression tag	UNP Q15274
A	301	HIS	-	expression tag	UNP Q15274
A	302	HIS	-	expression tag	UNP Q15274
A	303	HIS	-	expression tag	UNP Q15274
A	304	HIS	-	expression tag	UNP Q15274
A	305	HIS	-	expression tag	UNP Q15274
B	298	LEU	-	expression tag	UNP Q15274
B	299	GLU	-	expression tag	UNP Q15274
B	300	HIS	-	expression tag	UNP Q15274
B	301	HIS	-	expression tag	UNP Q15274
B	302	HIS	-	expression tag	UNP Q15274
B	303	HIS	-	expression tag	UNP Q15274
B	304	HIS	-	expression tag	UNP Q15274
B	305	HIS	-	expression tag	UNP Q15274
C	298	LEU	-	expression tag	UNP Q15274

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Chain	Residue	Modelled	Actual	Comment	Reference
C	299	GLU	-	expression tag	UNP Q15274
C	300	HIS	-	expression tag	UNP Q15274
C	301	HIS	-	expression tag	UNP Q15274
C	302	HIS	-	expression tag	UNP Q15274
C	303	HIS	-	expression tag	UNP Q15274
C	304	HIS	-	expression tag	UNP Q15274
C	305	HIS	-	expression tag	UNP Q15274
D	298	LEU	-	expression tag	UNP Q15274
D	299	GLU	-	expression tag	UNP Q15274
D	300	HIS	-	expression tag	UNP Q15274
D	301	HIS	-	expression tag	UNP Q15274
D	302	HIS	-	expression tag	UNP Q15274
D	303	HIS	-	expression tag	UNP Q15274
D	304	HIS	-	expression tag	UNP Q15274
D	305	HIS	-	expression tag	UNP Q15274
E	298	LEU	-	expression tag	UNP Q15274
E	299	GLU	-	expression tag	UNP Q15274
E	300	HIS	-	expression tag	UNP Q15274
E	301	HIS	-	expression tag	UNP Q15274
E	302	HIS	-	expression tag	UNP Q15274
E	303	HIS	-	expression tag	UNP Q15274
E	304	HIS	-	expression tag	UNP Q15274
E	305	HIS	-	expression tag	UNP Q15274
F	298	LEU	-	expression tag	UNP Q15274
F	299	GLU	-	expression tag	UNP Q15274
F	300	HIS	-	expression tag	UNP Q15274
F	301	HIS	-	expression tag	UNP Q15274
F	302	HIS	-	expression tag	UNP Q15274
F	303	HIS	-	expression tag	UNP Q15274
F	304	HIS	-	expression tag	UNP Q15274
F	305	HIS	-	expression tag	UNP Q15274

- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	9	Total O 9 9	0	0
2	B	3	Total O 3 3	0	0
2	D	1	Total O 1 1	0	0
2	E	1	Total O 1 1	0	0

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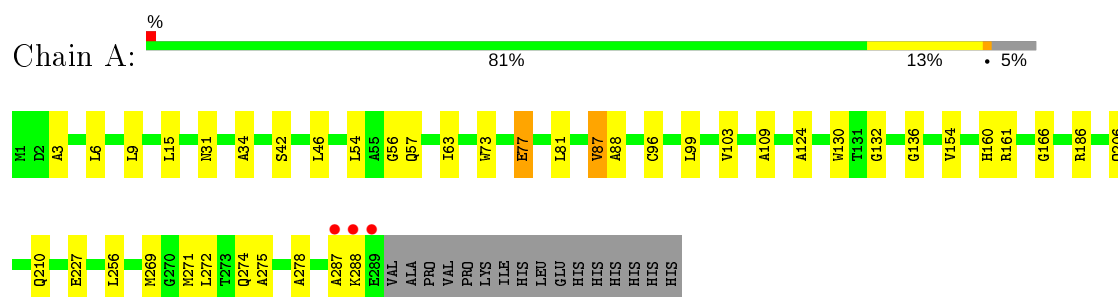
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	F	5	Total	O	0	0
			5	5		

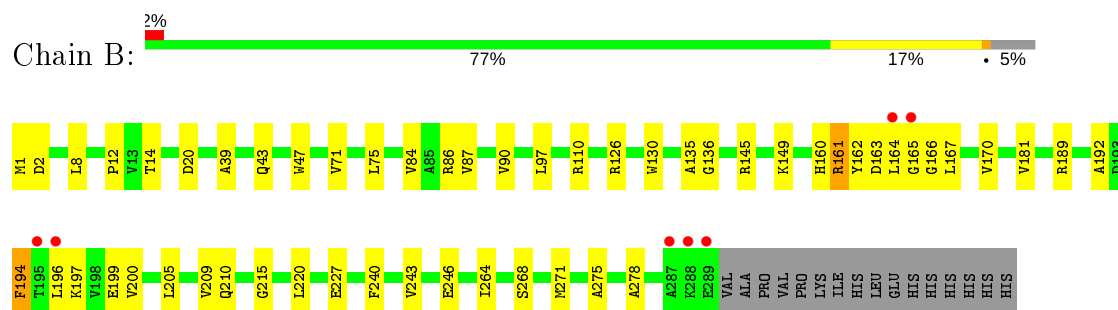
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

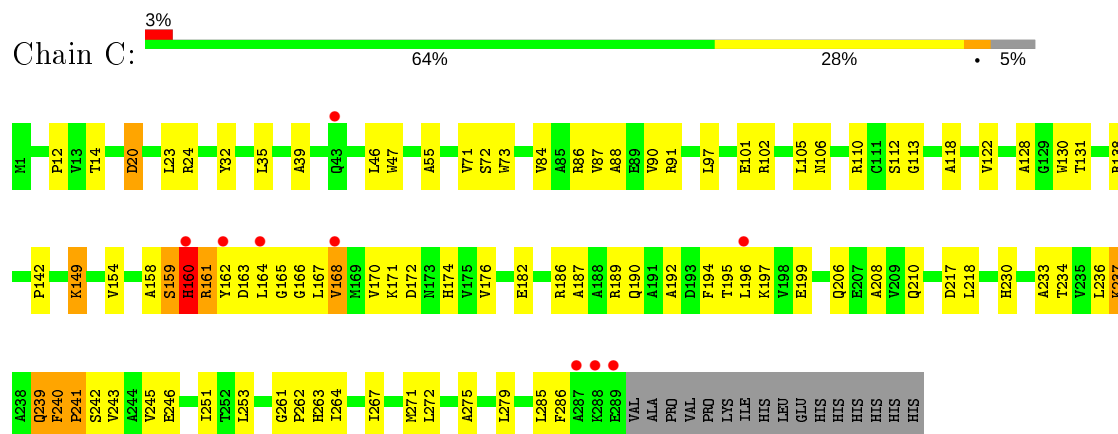
- Molecule 1: Nicotinate-nucleotide pyrophosphorylase [carboxylating]



- Molecule 1: Nicotinate-nucleotide pyrophosphorylase [carboxylating]



- Molecule 1: Nicotinate-nucleotide pyrophosphorylase [carboxylating]





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	76.18 Å 137.12 Å 92.65 Å 90.00° 103.76° 90.00°	Depositor
Resolution (Å)	48.00 – 2.80 48.18 – 2.80	Depositor EDS
% Data completeness (in resolution range)	(Not available) (48.00-2.80) 97.1 (48.18-2.80)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	5.51 (at 2.81 Å)	Xtriage
Refinement program	REFMAC 6.5.0	Depositor
R, $R_{free}$	0.201 , 0.259 0.201 , 0.262	Depositor DCC
$R_{free}$ test set	2227 reflections (5.03%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	61.4	Xtriage
Anisotropy	0.043	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 53.7	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	12499	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	64.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.54% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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 [i](#)

### 5.1 Standard geometry [i](#)

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	0.58	0/2151	0.73	0/2931
1	B	0.57	0/2151	0.72	0/2931
1	C	0.57	0/2151	0.78	2/2931 (0.1%)
1	D	0.55	0/2041	0.77	0/2780
1	E	0.53	0/2085	0.72	0/2841
1	F	0.55	0/2151	0.71	1/2931 (0.0%)
All	All	0.56	0/12730	0.74	3/17345 (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	B	0	1
1	C	0	2
1	D	0	1
All	All	0	4

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	159	SER	CB-CA-C	6.29	122.06	110.10
1	F	237	LYS	CB-CA-C	5.88	122.16	110.40
1	C	158	ALA	CB-CA-C	-5.41	101.99	110.10

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	B	161	ARG	Sidechain

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Mol	Chain	Res	Type	Group
1	C	102	ARG	Sidechain
1	C	237	LYS	Peptide
1	D	138	ARG	Sidechain

## 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	A	2108	0	2128	27	0
1	B	2108	0	2128	55	0
1	C	2108	0	2128	97	0
1	D	2003	0	2030	83	0
1	E	2045	0	2072	59	0
1	F	2108	0	2128	77	0
2	A	9	0	0	2	0
2	B	3	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	5	0	0	0	0
All	All	12499	0	12614	363	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 14.

All (363) 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:F:239:GLN:C	1:F:241:PRO:HD3	1.16	1.51
1:F:239:GLN:C	1:F:241:PRO:CD	2.13	1.16
1:F:240:PHE:N	1:F:241:PRO:HD3	1.43	1.15
1:F:240:PHE:N	1:F:241:PRO:CD	2.12	1.12
1:D:225:LYS:NZ	1:D:228:GLU:OE1	1.80	1.11
1:F:241:PRO:HB2	1:F:243:VAL:HG23	1.34	1.09
1:F:239:GLN:HB3	1:F:241:PRO:CD	1.82	1.09
1:F:218:LEU:HD22	1:F:244:ALA:HB3	1.40	1.04
1:E:192:ALA:C	1:E:193:ASP:OD2	1.97	1.03

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:165:GLY:O	1:C:165:GLY:HA2	1.63	0.99
1:C:163:ASP:O	1:C:163:ASP:OD1	1.83	0.96
1:F:239:GLN:HB3	1:F:241:PRO:HD2	1.53	0.88
1:C:112:SER:HB3	1:C:279:LEU:HD22	1.54	0.86
1:C:160:HIS:NE2	1:C:246:GLU:OE1	2.09	0.85
1:E:42:SER:HB3	1:E:288:LYS:HE2	1.56	0.85
1:F:239:GLN:CA	1:F:241:PRO:HD3	2.07	0.84
1:F:252:THR:HG22	1:F:271:MET:HG3	1.60	0.83
1:E:191:ALA:O	1:E:193:ASP:OD2	1.97	0.82
1:D:67:LEU:HD22	1:D:99:LEU:HD23	1.62	0.82
1:F:239:GLN:O	1:F:241:PRO:HD3	1.80	0.81
1:D:171:LYS:HG2	1:D:201:GLU:OE1	1.81	0.81
1:C:240:PHE:HB3	1:C:243:VAL:HG23	1.62	0.80
1:C:161:ARG:O	1:C:165:GLY:C	2.21	0.79
1:C:164:LEU:O	1:C:164:LEU:HD13	1.83	0.77
1:C:32:TYR:HB2	1:D:168:VAL:HG21	1.67	0.76
1:A:96:CYS:SG	2:A:409:HOH:O	2.42	0.76
1:B:136:GLY:O	1:B:160:HIS:NE2	2.17	0.76
1:B:162:TYR:HD1	1:B:163:ASP:N	1.83	0.76
1:C:240:PHE:CD1	1:C:241:PRO:HD2	2.22	0.75
1:D:6:LEU:HD23	1:D:9:LEU:HD12	1.69	0.75
1:F:239:GLN:CB	1:F:241:PRO:CD	2.62	0.74
1:C:160:HIS:HB3	1:C:162:TYR:CD2	2.24	0.72
1:B:162:TYR:CE1	1:B:163:ASP:HB3	2.24	0.72
1:C:192:ALA:HB3	1:C:196:LEU:HD22	1.71	0.71
1:C:240:PHE:HD1	1:C:241:PRO:HD2	1.55	0.71
1:D:181:VAL:HG13	1:D:210:GLN:HG3	1.72	0.71
1:C:230:HIS:O	1:C:234:THR:HG23	1.91	0.71
1:F:82:VAL:O	1:F:85:ALA:HB2	1.89	0.71
1:D:1:MET:HB2	1:E:190:GLN:HB3	1.74	0.70
1:B:162:TYR:CD1	1:B:163:ASP:HB3	2.27	0.70
1:B:162:TYR:CD1	1:B:163:ASP:N	2.60	0.69
1:C:168:VAL:HG21	1:C:196:LEU:HD21	1.74	0.69
1:D:67:LEU:CD2	1:D:99:LEU:HD23	2.22	0.69
1:B:164:LEU:O	1:C:166:GLY:HA3	1.92	0.69
1:D:224:PHE:HD2	1:D:229:LEU:HD23	1.57	0.69
1:A:227:GLU:N	1:A:227:GLU:OE1	2.24	0.68
1:E:205:LEU:HD11	1:E:232:THR:HG22	1.76	0.68
1:F:84:VAL:HG23	1:F:84:VAL:O	1.94	0.68
1:F:192:ALA:HB3	1:F:196:LEU:HD23	1.76	0.68
1:B:162:TYR:O	1:B:164:LEU:N	2.23	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:218:LEU:CD2	1:F:244:ALA:HB3	2.23	0.67
1:C:149:LYS:HE3	1:C:163:ASP:HB3	1.76	0.67
1:D:272:LEU:HD12	1:D:272:LEU:H	1.59	0.67
1:E:182:GLU:HB3	1:E:186:ARG:NH2	2.10	0.67
1:E:229:LEU:O	1:E:232:THR:OG1	2.13	0.66
1:F:231:PRO:O	1:F:235:VAL:HG23	1.94	0.66
1:C:101:GLU:OE1	1:D:171:LYS:NZ	2.28	0.66
1:E:192:ALA:C	1:E:193:ASP:CG	2.54	0.66
1:F:83:PRO:O	1:F:84:VAL:HG13	1.96	0.66
1:F:83:PRO:C	1:F:84:VAL:HG13	2.16	0.66
1:E:6:LEU:CD1	1:E:154:VAL:HG22	2.25	0.66
1:D:3:ALA:O	1:D:77:GLU:O	2.14	0.65
1:B:271:MET:HG2	1:B:275:ALA:HB3	1.77	0.65
1:F:83:PRO:O	1:F:84:VAL:HG22	1.96	0.65
1:F:241:PRO:HB2	1:F:243:VAL:CG2	2.21	0.65
1:C:167:LEU:HD22	1:C:197:LYS:HB2	1.80	0.64
1:E:6:LEU:HD11	1:E:154:VAL:HG22	1.78	0.64
1:D:185:VAL:HG13	1:D:186:ARG:N	2.12	0.64
1:B:12:PRO:HD2	1:D:99:LEU:HD21	1.79	0.64
1:C:194:PHE:HD2	1:C:195:THR:O	1.81	0.64
1:C:72:SER:OG	1:C:91:ARG:NH1	2.31	0.64
1:D:202:CYS:SG	1:D:221:LEU:HD13	2.38	0.64
1:F:239:GLN:CB	1:F:241:PRO:HD3	2.26	0.63
1:A:6:LEU:HD23	1:A:154:VAL:HG22	1.80	0.63
1:E:181:VAL:HG21	1:E:207:GLU:HG2	1.80	0.63
1:C:159:SER:O	1:C:164:LEU:HG	1.99	0.62
1:C:167:LEU:HD22	1:C:197:LYS:CB	2.28	0.62
1:E:109:ALA:HB1	1:E:278:ALA:HB1	1.81	0.62
1:B:162:TYR:C	1:B:162:TYR:CD1	2.73	0.62
1:E:3:ALA:O	1:E:6:LEU:HD22	1.99	0.62
1:F:240:PHE:CD2	1:F:240:PHE:O	2.52	0.62
1:B:166:GLY:O	1:B:197:LYS:HB2	2.00	0.62
1:D:6:LEU:HD23	1:D:9:LEU:CD1	2.30	0.62
1:E:271:MET:HG3	1:E:275:ALA:HB3	1.81	0.61
1:B:163:ASP:OD2	1:B:164:LEU:N	2.33	0.61
1:D:126:ARG:HH11	1:D:126:ARG:HG3	1.66	0.61
1:F:241:PRO:CB	1:F:243:VAL:HG23	2.21	0.61
1:D:123:GLU:OE1	1:D:126:ARG:NH2	2.34	0.61
1:C:239:GLN:HG3	1:C:240:PHE:N	2.16	0.61
1:B:75:LEU:HD12	1:B:87:VAL:HG22	1.82	0.60
1:F:237:LYS:O	1:F:240:PHE:N	2.34	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:84:VAL:O	1:C:84:VAL:HG12	2.00	0.60
1:A:56:GLY:N	1:A:77:GLU:OE2	2.34	0.60
1:B:110:ARG:HG2	1:B:110:ARG:HH11	1.65	0.60
1:E:199:GLU:HG3	1:E:218:LEU:HB2	1.83	0.60
1:B:167:LEU:HD12	1:B:197:LYS:HB3	1.83	0.60
1:C:237:LYS:HE3	1:C:263:HIS:HD2	1.66	0.60
1:D:212:ALA:HA	1:D:216:ALA:HB3	1.83	0.60
1:E:170:VAL:HG13	1:E:174:HIS:HB2	1.84	0.60
1:E:233:ALA:HA	1:E:236:LEU:HD12	1.84	0.60
1:E:110:ARG:HH12	1:F:274:GLN:HE21	1.48	0.60
1:C:71:VAL:HG22	1:C:90:VAL:HG22	1.84	0.60
1:B:84:VAL:HG12	1:B:84:VAL:O	2.00	0.59
1:C:199:GLU:HG3	1:C:218:LEU:HB2	1.84	0.59
1:E:193:ASP:OD2	1:E:193:ASP:N	2.34	0.59
1:A:287:ALA:HB2	2:A:403:HOH:O	2.03	0.59
1:E:228:GLU:O	1:E:232:THR:HG23	2.03	0.59
1:F:239:GLN:HB3	1:F:241:PRO:CG	2.31	0.59
1:C:163:ASP:OD1	1:C:163:ASP:C	2.42	0.58
1:C:271:MET:HB2	1:C:275:ALA:HB3	1.84	0.58
1:C:113:GLY:HA2	1:C:279:LEU:HD13	1.86	0.58
1:C:187:ALA:HA	1:C:190:GLN:HG3	1.84	0.58
1:C:262:PRO:HG2	1:C:263:HIS:ND1	2.19	0.58
1:C:55:ALA:HB2	1:C:154:VAL:HG11	1.85	0.57
1:F:55:ALA:HB2	1:F:154:VAL:HG11	1.86	0.57
1:A:274:GLN:HB3	1:B:278:ALA:HB3	1.85	0.57
1:C:161:ARG:H	1:C:164:LEU:HB3	1.67	0.57
1:C:39:ALA:HB2	1:E:8:LEU:HD11	1.87	0.57
1:C:90:VAL:HG12	1:C:97:LEU:HD21	1.86	0.57
1:D:185:VAL:CG1	1:D:186:ARG:N	2.68	0.56
1:A:166:GLY:HA3	1:F:164:LEU:HA	1.85	0.56
1:E:181:VAL:HG21	1:E:207:GLU:CG	2.36	0.56
1:C:159:SER:O	1:C:164:LEU:CB	2.53	0.56
1:D:74:PHE:O	1:D:75:LEU:HD23	2.05	0.56
1:E:182:GLU:HB3	1:E:186:ARG:HH22	1.69	0.56
1:F:241:PRO:C	1:F:243:VAL:N	2.59	0.56
1:A:46:LEU:HG	1:A:87:VAL:HG22	1.88	0.56
1:B:160:HIS:HB2	1:B:162:TYR:CD2	2.41	0.56
1:D:198:VAL:N	1:D:218:LEU:HD13	2.21	0.56
1:A:109:ALA:HB1	1:A:278:ALA:HB1	1.87	0.56
1:F:212:ALA:HB1	1:F:239:GLN:HG2	1.87	0.55
1:C:160:HIS:O	1:C:161:ARG:CB	2.53	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:217:ASP:HB2	1:D:218:LEU:HD12	1.87	0.55
1:E:192:ALA:O	1:E:193:ASP:CG	2.44	0.55
1:F:50:SER:C	1:F:83:PRO:HG3	2.27	0.55
1:B:194:PHE:HZ	1:C:164:LEU:HG	1.71	0.55
1:D:221:LEU:HG	1:D:229:LEU:HD21	1.88	0.55
1:C:236:LEU:HA	1:C:239:GLN:HB3	1.88	0.55
1:D:171:LYS:HG2	1:D:172:ASP:H	1.72	0.54
1:E:285:LEU:HB3	1:F:176:VAL:HG11	1.89	0.54
1:A:130:TRP:CZ2	1:A:132:GLY:HA3	2.42	0.54
1:F:149:LYS:HD2	1:F:159:SER:HB2	1.89	0.54
1:B:194:PHE:HZ	1:C:159:SER:O	1.90	0.54
1:E:42:SER:CB	1:E:288:LYS:HE2	2.33	0.54
1:E:193:ASP:O	1:E:194:PHE:HB2	2.08	0.54
1:E:22:TRP:HB3	1:E:103:VAL:HG11	1.89	0.54
1:F:241:PRO:C	1:F:243:VAL:H	2.10	0.54
1:D:9:LEU:HD21	1:F:35:LEU:HG	1.89	0.54
1:B:162:TYR:C	1:B:164:LEU:H	2.11	0.53
1:D:170:VAL:HG13	1:D:174:HIS:HB2	1.90	0.53
1:E:270:GLY:O	1:E:274:GLN:HB2	2.08	0.53
1:B:189:ARG:NH2	1:B:215:GLY:O	2.41	0.53
1:C:142:PRO:HG2	1:D:144:PHE:CE1	2.44	0.53
1:D:14:THR:HG23	1:F:24:ARG:CZ	2.38	0.53
1:F:206:GLN:O	1:F:210:GLN:HG3	2.09	0.53
1:C:161:ARG:HG2	1:C:167:LEU:HG	1.91	0.53
1:C:245:VAL:HG12	1:C:264:ILE:HG23	1.90	0.53
1:A:206:GLN:O	1:A:210:GLN:HG3	2.08	0.53
1:C:90:VAL:CG1	1:C:97:LEU:HD21	2.38	0.53
1:C:131:THR:OG1	1:C:131:THR:O	2.27	0.53
1:D:237:LYS:O	1:D:241:PRO:HG3	2.09	0.53
1:A:136:GLY:O	1:A:160:HIS:HE1	1.90	0.53
1:D:102:ARG:CZ	1:D:102:ARG:HB3	2.36	0.52
1:D:225:LYS:H	1:D:225:LYS:HD2	1.74	0.52
1:C:194:PHE:CD2	1:C:195:THR:O	2.63	0.52
1:C:194:PHE:HD2	1:C:195:THR:C	2.13	0.52
1:C:161:ARG:O	1:C:165:GLY:O	2.27	0.52
1:B:194:PHE:CZ	1:C:164:LEU:HG	2.44	0.52
1:D:118:ALA:HA	1:D:272:LEU:HD23	1.92	0.52
1:C:241:PRO:HG2	1:C:242:SER:N	2.24	0.52
1:A:3:ALA:O	1:A:6:LEU:HB2	2.10	0.51
1:E:226:PRO:HD3	1:E:259:PHE:CZ	2.45	0.51
1:C:106:ASN:O	1:C:110:ARG:HG3	2.10	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:232:THR:O	1:E:236:LEU:HG	2.10	0.51
1:D:224:PHE:CD2	1:D:229:LEU:HD23	2.43	0.51
1:E:192:ALA:CA	1:E:193:ASP:OD2	2.59	0.51
1:C:189:ARG:NH2	1:C:217:ASP:OD2	2.43	0.51
1:C:253:LEU:H	1:C:253:LEU:HD23	1.76	0.51
1:B:8:LEU:HD21	1:D:39:ALA:HB2	1.92	0.51
1:B:205:LEU:O	1:B:209:VAL:HG23	2.11	0.51
1:D:221:LEU:N	1:D:221:LEU:CD2	2.73	0.51
1:D:251:ILE:HD13	1:D:267:ILE:HG23	1.91	0.51
1:D:225:LYS:HD3	1:D:228:GLU:OE1	2.09	0.51
1:B:194:PHE:H	1:B:194:PHE:HD1	1.59	0.51
1:C:285:LEU:HD22	1:D:176:VAL:HG12	1.92	0.51
1:D:90:VAL:HG12	1:D:97:LEU:HD21	1.93	0.51
1:E:205:LEU:CD1	1:E:232:THR:HG22	2.41	0.51
1:B:130:TRP:HZ2	1:B:264:ILE:HG22	1.77	0.50
1:E:42:SER:HB2	1:E:285:LEU:HD21	1.93	0.50
1:D:130:TRP:CD1	1:D:260:CYS:HB3	2.46	0.50
1:D:221:LEU:N	1:D:221:LEU:HD22	2.25	0.50
1:F:31:ASN:ND2	1:F:34:ALA:HB2	2.26	0.50
1:D:2:ASP:HB2	1:D:5:GLY:H	1.75	0.50
1:A:130:TRP:CE2	1:A:132:GLY:HA3	2.47	0.50
1:E:286:PHE:C	1:E:286:PHE:CD1	2.84	0.50
1:E:110:ARG:NH1	1:F:274:GLN:HE21	2.10	0.50
1:A:63:ILE:HD13	1:A:103:VAL:HG12	1.93	0.50
1:C:20:ASP:OD2	1:C:24:ARG:NH1	2.45	0.50
1:D:181:VAL:CG1	1:D:210:GLN:HG3	2.42	0.50
1:B:161:ARG:HA	1:B:164:LEU:HD12	1.94	0.49
1:D:14:THR:HG23	1:F:24:ARG:NH1	2.27	0.49
1:F:84:VAL:O	1:F:84:VAL:CG2	2.60	0.49
1:D:227:GLU:OE1	1:D:227:GLU:N	2.45	0.49
1:E:221:LEU:HB3	1:E:224:PHE:CE1	2.47	0.49
1:D:15:LEU:HD11	1:D:59:PHE:CD2	2.48	0.49
1:F:192:ALA:CB	1:F:196:LEU:HD23	2.42	0.49
1:E:217:ASP:HB2	1:E:218:LEU:HD12	1.94	0.49
1:D:132:GLY:C	1:D:133:HIS:CD2	2.86	0.49
1:D:169:MET:HA	1:D:198:VAL:O	2.13	0.49
1:E:6:LEU:HD12	1:E:154:VAL:HG22	1.95	0.49
1:C:208:ALA:HB1	1:C:236:LEU:HD11	1.94	0.48
1:D:269:MET:HB2	1:D:272:LEU:HD11	1.95	0.48
1:A:42:SER:OG	1:A:288:LYS:HG2	2.12	0.48
1:F:240:PHE:CG	1:F:240:PHE:O	2.66	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:48:ALA:HB3	1:F:85:ALA:HB3	1.96	0.48
1:F:47:TRP:CZ3	1:F:86:ARG:HB2	2.49	0.48
1:C:167:LEU:CD2	1:C:197:LYS:HB2	2.43	0.48
1:D:114:ILE:HD13	1:D:273:THR:HG22	1.95	0.48
1:F:242:SER:OG	1:F:242:SER:O	2.27	0.48
1:F:33:ALA:O	1:F:36:VAL:HG22	2.14	0.48
1:B:240:PHE:O	1:B:243:VAL:HG12	2.14	0.48
1:C:237:LYS:HE3	1:C:263:HIS:CD2	2.49	0.48
1:D:199:GLU:HG2	1:D:218:LEU:HB2	1.95	0.48
1:E:175:VAL:HG22	1:E:181:VAL:HA	1.96	0.48
1:F:241:PRO:O	1:F:243:VAL:N	2.45	0.48
1:F:239:GLN:CG	1:F:241:PRO:HG2	2.44	0.48
1:C:130:TRP:CH2	1:C:267:ILE:HD12	2.49	0.47
1:D:272:LEU:HD12	1:D:272:LEU:N	2.27	0.47
1:B:162:TYR:C	1:B:164:LEU:N	2.64	0.47
1:B:39:ALA:HB2	1:F:8:LEU:HD21	1.94	0.47
1:B:110:ARG:CG	1:B:110:ARG:HH11	2.26	0.47
1:B:160:HIS:HB2	1:B:162:TYR:CE2	2.50	0.47
1:D:232:THR:O	1:D:236:LEU:HD22	2.14	0.47
1:F:135:ALA:O	1:F:268:SER:HA	2.14	0.47
1:C:170:VAL:HG13	1:C:174:HIS:HB2	1.95	0.47
1:A:9:LEU:HB3	1:E:30:LEU:HD22	1.96	0.47
1:C:167:LEU:HD22	1:C:197:LYS:HB3	1.95	0.47
1:D:187:ALA:O	1:D:190:GLN:HG2	2.14	0.47
1:D:225:LYS:HD3	1:D:228:GLU:HG3	1.96	0.47
1:D:230:HIS:N	1:D:231:PRO:HD2	2.30	0.47
1:D:30:LEU:H	1:D:30:LEU:HD12	1.79	0.47
1:C:167:LEU:O	1:C:168:VAL:HG23	2.15	0.47
1:C:47:TRP:CH2	1:C:86:ARG:HG3	2.50	0.47
1:C:35:LEU:HA	1:C:35:LEU:HD23	1.61	0.46
1:C:168:VAL:CG2	1:C:196:LEU:HD21	2.42	0.46
1:C:174:HIS:HE2	1:D:33:ALA:HB1	1.80	0.46
1:E:139:LYS:O	1:F:110:ARG:NH2	2.42	0.46
1:F:139:LYS:HB3	1:F:274:GLN:NE2	2.30	0.46
1:F:237:LYS:O	1:F:238:ALA:C	2.53	0.46
1:F:162:TYR:CE2	1:F:167:LEU:HD23	2.51	0.46
1:F:5:GLY:O	1:F:8:LEU:HD12	2.16	0.46
1:B:71:VAL:HG22	1:B:90:VAL:HG13	1.98	0.46
1:C:159:SER:O	1:C:164:LEU:HB3	2.15	0.46
1:C:206:GLN:O	1:C:210:GLN:HG3	2.16	0.46
1:D:132:GLY:O	1:D:133:HIS:CD2	2.69	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:203:SER:HA	1:D:224:PHE:HE1	1.81	0.46
1:A:54:LEU:HB2	1:A:81:LEU:HD11	1.98	0.45
1:D:125:ALA:HB2	1:D:256:LEU:HD21	1.98	0.45
1:E:205:LEU:HD12	1:E:205:LEU:H	1.82	0.45
1:D:232:THR:O	1:D:235:VAL:HG22	2.15	0.45
1:F:201:GLU:HA	1:F:220:LEU:HB3	1.98	0.45
1:A:31:ASN:OD1	1:A:34:ALA:HB2	2.16	0.45
1:B:165:GLY:C	1:C:165:GLY:HA2	2.36	0.45
1:C:261:GLY:C	1:C:263:HIS:H	2.19	0.45
1:D:230:HIS:O	1:D:234:THR:HG23	2.15	0.45
1:F:218:LEU:HD22	1:F:244:ALA:CB	2.30	0.45
1:F:271:MET:HB3	1:F:275:ALA:HB3	1.99	0.45
1:C:73:TRP:CE3	1:C:88:ALA:HB2	2.52	0.45
1:C:171:LYS:HE2	1:D:101:GLU:OE1	2.17	0.45
1:B:90:VAL:HG12	1:B:97:LEU:HD11	1.98	0.45
1:E:248:SER:HA	1:E:251:ILE:HD12	1.98	0.45
1:E:47:TRP:CZ3	1:E:86:ARG:HB2	2.51	0.45
1:D:230:HIS:HA	1:D:233:ALA:HB3	1.99	0.45
1:B:110:ARG:CG	1:B:110:ARG:NH1	2.80	0.44
1:C:160:HIS:O	1:C:161:ARG:HB3	2.16	0.44
1:D:198:VAL:N	1:D:218:LEU:CD1	2.80	0.44
1:D:64:PHE:HB3	1:D:69:CYS:HB2	1.99	0.44
1:F:239:GLN:O	1:F:241:PRO:CD	2.52	0.44
1:E:20:ASP:O	1:E:24:ARG:HG3	2.18	0.44
1:C:160:HIS:NE2	1:C:246:GLU:CD	2.70	0.44
1:F:83:PRO:C	1:F:84:VAL:CG1	2.86	0.44
1:A:271:MET:HG2	1:A:275:ALA:HB3	1.99	0.44
1:B:181:VAL:HG11	1:B:210:GLN:HB3	2.00	0.44
1:C:128:ALA:O	1:C:130:TRP:N	2.51	0.44
1:E:209:VAL:HG23	1:E:240:PHE:HE2	1.81	0.44
1:B:192:ALA:HB1	1:B:194:PHE:HE1	1.83	0.44
1:F:182:GLU:OE2	1:F:186:ARG:NH2	2.33	0.44
1:C:118:ALA:HA	1:C:272:LEU:HD22	2.00	0.44
1:C:182:GLU:HG3	1:C:186:ARG:HH12	1.83	0.44
1:E:218:LEU:HA	1:E:244:ALA:O	2.18	0.43
1:F:236:LEU:HD23	1:F:236:LEU:HA	1.89	0.43
1:E:139:LYS:HD3	1:F:102:ARG:NH2	2.34	0.43
1:A:161:ARG:NH2	1:F:195:THR:O	2.51	0.43
1:F:23:LEU:HA	1:F:23:LEU:HD23	1.75	0.43
1:D:271:MET:HB2	1:D:275:ALA:HB3	2.00	0.43
1:A:6:LEU:HD23	1:A:154:VAL:CG2	2.47	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:161:ARG:O	1:B:164:LEU:HB2	2.19	0.43
1:B:192:ALA:HB1	1:B:194:PHE:CE1	2.53	0.43
1:B:47:TRP:CZ3	1:B:86:ARG:HB2	2.53	0.43
1:E:186:ARG:O	1:E:190:GLN:HG3	2.18	0.43
1:B:170:VAL:CG1	1:B:200:VAL:HG22	2.49	0.43
1:B:227:GLU:N	1:B:227:GLU:OE2	2.29	0.43
1:E:192:ALA:O	1:E:193:ASP:OD2	2.34	0.43
1:C:241:PRO:CG	1:C:242:SER:N	2.82	0.43
1:A:269:MET:HB2	1:A:272:LEU:HG	2.01	0.43
1:A:57:GLN:HG2	1:A:73:TRP:CZ2	2.53	0.43
1:D:6:LEU:CD2	1:D:9:LEU:CD1	2.95	0.43
1:E:251:ILE:HD13	1:E:267:ILE:HG23	2.00	0.43
1:C:233:ALA:HB1	1:C:263:HIS:O	2.19	0.43
1:B:162:TYR:HE1	1:B:163:ASP:HB3	1.81	0.42
1:D:135:ALA:HB2	1:D:158:ALA:HB3	2.01	0.42
1:D:198:VAL:HG22	1:D:217:ASP:H	1.84	0.42
1:D:57:GLN:HG3	1:D:77:GLU:OE1	2.19	0.42
1:E:197:LYS:HB3	1:E:217:ASP:OD2	2.18	0.42
1:E:206:GLN:O	1:E:210:GLN:HG3	2.19	0.42
1:F:183:LYS:O	1:F:183:LYS:HD2	2.19	0.42
1:C:23:LEU:HA	1:C:23:LEU:HD23	1.79	0.42
1:F:227:GLU:HG3	1:F:227:GLU:H	1.54	0.42
1:F:239:GLN:CB	1:F:241:PRO:CG	2.95	0.42
1:C:194:PHE:CD2	1:C:194:PHE:C	2.92	0.42
1:C:46:LEU:O	1:C:87:VAL:HG22	2.20	0.42
1:C:110:ARG:NH2	1:D:139:LYS:O	2.53	0.42
1:B:1:MET:SD	1:B:2:ASP:N	2.93	0.41
1:F:10:LEU:HA	1:F:10:LEU:HD23	1.85	0.41
1:C:159:SER:O	1:C:164:LEU:CG	2.65	0.41
1:D:225:LYS:H	1:D:225:LYS:CD	2.33	0.41
1:D:135:ALA:O	1:D:268:SER:HA	2.20	0.41
1:D:6:LEU:CD2	1:D:9:LEU:HD11	2.50	0.41
1:E:6:LEU:HD21	1:E:77:GLU:HG2	2.02	0.41
1:A:73:TRP:CE3	1:A:88:ALA:HB2	2.56	0.41
1:B:135:ALA:O	1:B:268:SER:HA	2.21	0.41
1:C:118:ALA:O	1:C:122:VAL:HG13	2.20	0.41
1:C:161:ARG:NH2	1:C:167:LEU:HD21	2.36	0.41
1:D:203:SER:HA	1:D:224:PHE:CE1	2.55	0.41
1:B:149:LYS:HD3	1:B:149:LYS:HA	1.84	0.41
1:C:194:PHE:CE2	1:C:196:LEU:HB2	2.56	0.41
1:C:240:PHE:HB3	1:C:243:VAL:CG2	2.42	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:175:VAL:HG13	1:F:181:VAL:N	2.35	0.41
1:B:164:LEU:HD11	1:C:194:PHE:CZ	2.56	0.41
1:D:42:SER:OG	1:D:288:LYS:HG2	2.20	0.41
1:D:71:VAL:HG22	1:D:90:VAL:HG13	2.02	0.41
1:E:288:LYS:HD2	1:F:177:ALA:HA	2.03	0.41
1:F:205:LEU:CD2	1:F:232:THR:HG23	2.51	0.41
1:B:194:PHE:CZ	1:C:159:SER:O	2.72	0.41
1:C:172:ASP:O	1:C:176:VAL:HG23	2.21	0.41
1:B:189:ARG:HH11	1:B:196:LEU:HD22	1.85	0.40
1:D:1:MET:SD	1:D:1:MET:O	2.79	0.40
1:E:205:LEU:HD12	1:E:205:LEU:N	2.36	0.40
1:C:105:LEU:HA	1:C:105:LEU:HD23	1.92	0.40
1:D:15:LEU:HA	1:D:15:LEU:HD12	1.90	0.40
1:F:220:LEU:HD11	1:F:248:SER:HB2	2.03	0.40
1:B:220:LEU:HD13	1:B:246:GLU:HG2	2.03	0.40
1:A:99:LEU:HD21	1:C:12:PRO:HD2	2.02	0.40
1:D:138:ARG:HH22	1:D:149:LYS:HE2	1.87	0.40
1:E:11:PRO:HG2	1:E:14:THR:HB	2.03	0.40
1:E:202:CYS:HB3	1:E:207:GLU:HB3	2.03	0.40
1:F:237:LYS:N	1:F:237:LYS:HD3	2.36	0.40
1:B:167:LEU:HD11	1:B:199:GLU:HB2	2.03	0.40
1:C:172:ASP:N	1:C:172:ASP:OD1	2.54	0.40
1:B:164:LEU:HD11	1:C:194:PHE:CE1	2.56	0.40
1:C:251:ILE:HD13	1:C:267:ILE:HG23	2.04	0.40
1:F:236:LEU:O	1:F:239:GLN:HB2	2.22	0.40
1:A:124:ALA:HB3	1:A:256:LEU:HD23	2.04	0.40

There are no symmetry-related clashes.

## 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	287/305 (94%)	278 (97%)	9 (3%)	0	100	100
1	B	287/305 (94%)	274 (96%)	13 (4%)	0	100	100
1	C	287/305 (94%)	269 (94%)	17 (6%)	1 (0%)	41	72
1	D	270/305 (88%)	253 (94%)	17 (6%)	0	100	100
1	E	277/305 (91%)	264 (95%)	13 (5%)	0	100	100
1	F	287/305 (94%)	273 (95%)	12 (4%)	2 (1%)	22	53
All	All	1695/1830 (93%)	1611 (95%)	81 (5%)	3 (0%)	47	78

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	240	PHE
1	F	84	VAL
1	C	160	HIS

### 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	212/228 (93%)	208 (98%)	4 (2%)	57	85
1	B	212/228 (93%)	206 (97%)	6 (3%)	43	77
1	C	212/228 (93%)	201 (95%)	11 (5%)	23	55
1	D	202/228 (89%)	192 (95%)	10 (5%)	24	56
1	E	206/228 (90%)	194 (94%)	12 (6%)	20	50
1	F	212/228 (93%)	202 (95%)	10 (5%)	26	59
All	All	1256/1368 (92%)	1203 (96%)	53 (4%)	30	63

All (53) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	15	LEU
1	A	77	GLU

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Mol	Chain	Res	Type
1	A	87	VAL
1	A	186	ARG
1	B	14	THR
1	B	20	ASP
1	B	43	GLN
1	B	126	ARG
1	B	145	ARG
1	B	194	PHE
1	C	14	THR
1	C	20	ASP
1	C	138	ARG
1	C	149	LYS
1	C	160	HIS
1	C	161	ARG
1	C	168	VAL
1	C	239	GLN
1	C	240	PHE
1	C	241	PRO
1	C	286	PHE
1	D	1	MET
1	D	21	SER
1	D	24	ARG
1	D	26	ASP
1	D	83	PRO
1	D	126	ARG
1	D	221	LEU
1	D	229	LEU
1	D	283	LEU
1	D	288	LYS
1	E	1	MET
1	E	15	LEU
1	E	20	ASP
1	E	183	LYS
1	E	193	ASP
1	E	194	PHE
1	E	221	LEU
1	E	240	PHE
1	E	269	MET
1	E	271	MET
1	E	285	LEU
1	E	288	LYS
1	F	24	ARG

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Mol	Chain	Res	Type
1	F	43	GLN
1	F	50	SER
1	F	84	VAL
1	F	203	SER
1	F	218	LEU
1	F	237	LYS
1	F	240	PHE
1	F	242	SER
1	F	253	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	133	HIS
1	A	230	HIS
1	D	133	HIS
1	F	258	GLN
1	F	274	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

There are no ligands in this entry.

## 5.7 Other polymers ⓘ

There are no such residues in this entry.

## 5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

## 6 Fit of model and data ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	289/305 (94%)	-0.20	3 (1%) 82 77	25, 48, 71, 115	0
1	B	289/305 (94%)	-0.16	7 (2%) 59 49	28, 49, 101, 155	0
1	C	289/305 (94%)	0.04	9 (3%) 49 39	38, 71, 111, 156	0
1	D	276/305 (90%)	0.74	54 (19%) 1 0	36, 76, 143, 164	0
1	E	281/305 (92%)	0.12	15 (5%) 26 17	33, 59, 112, 169	0
1	F	289/305 (94%)	-0.14	5 (1%) 70 63	32, 53, 81, 110	0
All	All	1713/1830 (93%)	0.06	93 (5%) 25 17	25, 56, 122, 169	0

All (93) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	1	MET	7.4
1	A	289	GLU	7.1
1	B	289	GLU	7.0
1	D	243	VAL	6.2
1	D	288	LYS	6.1
1	C	288	LYS	6.0
1	D	289	GLU	5.6
1	D	239	GLN	5.3
1	E	194	PHE	5.3
1	F	289	GLU	5.0
1	D	202	CYS	4.8
1	D	203	SER	4.8
1	D	205	LEU	4.7
1	D	213	GLU	4.7
1	D	214	ALA	4.4
1	D	233	ALA	4.4
1	D	231	PRO	4.2
1	D	238	ALA	4.1
1	D	232	THR	4.1

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Mol	Chain	Res	Type	RSRZ
1	D	234	THR	3.9
1	D	204	SER	3.9
1	E	242	SER	3.9
1	D	287	ALA	3.9
1	B	287	ALA	3.9
1	D	242	SER	3.8
1	E	240	PHE	3.8
1	E	263	HIS	3.6
1	D	235	VAL	3.6
1	D	131	THR	3.6
1	B	164	LEU	3.5
1	F	240	PHE	3.4
1	B	165	GLY	3.4
1	D	263	HIS	3.4
1	B	195	THR	3.3
1	E	4	GLU	3.3
1	B	288	LYS	3.3
1	E	241	PRO	3.2
1	D	259	PHE	3.2
1	D	245	VAL	3.2
1	A	288	LYS	3.2
1	D	236	LEU	3.1
1	D	127	GLY	3.1
1	C	287	ALA	3.0
1	E	288	LYS	3.0
1	C	289	GLU	3.0
1	D	177	ALA	3.0
1	D	229	LEU	3.0
1	D	224	PHE	3.0
1	C	160	HIS	3.0
1	D	211	ALA	2.9
1	D	3	ALA	2.9
1	C	164	LEU	2.8
1	D	201	GLU	2.8
1	C	43	GLN	2.8
1	D	228	GLU	2.8
1	E	289	GLU	2.8
1	D	240	PHE	2.8
1	D	264	ILE	2.7
1	D	260	CYS	2.7
1	D	181	VAL	2.7
1	E	2	ASP	2.7

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Mol	Chain	Res	Type	RSRZ
1	D	262	PRO	2.7
1	A	287	ALA	2.6
1	E	3	ALA	2.6
1	E	190	GLN	2.6
1	D	132	GLY	2.6
1	D	241	PRO	2.6
1	E	75	LEU	2.6
1	D	217	ASP	2.5
1	D	182	GLU	2.5
1	E	238	ALA	2.5
1	D	130	TRP	2.5
1	B	196	LEU	2.4
1	D	265	ASP	2.4
1	D	167	LEU	2.4
1	D	186	ARG	2.4
1	D	166	GLY	2.3
1	C	196	LEU	2.3
1	F	288	LYS	2.3
1	D	122	VAL	2.2
1	E	239	GLN	2.2
1	D	1	MET	2.2
1	D	128	ALA	2.2
1	D	199	GLU	2.2
1	D	257	PRO	2.1
1	D	253	LEU	2.1
1	F	287	ALA	2.1
1	D	249	GLY	2.1
1	C	168	VAL	2.0
1	D	266	VAL	2.0
1	C	162	TYR	2.0
1	F	3	ALA	2.0
1	D	4	GLU	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 ⓘ

There are no carbohydrates 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.