



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 19, 2016 – 07:23 PM GMT

PDB ID : 4RS4  
Title : Crystal structure and mutational analysis of the endoribonuclease from human coronavirus 229E  
Authors : Huo, T.; Liu, X.; Yang, C.; Rao, Z.  
Deposited on : 2014-11-06  
Resolution : 2.96 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  
<http://wwpdb.org/validation/2016/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  
Mogul : unknown  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026982  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : rb-20026982

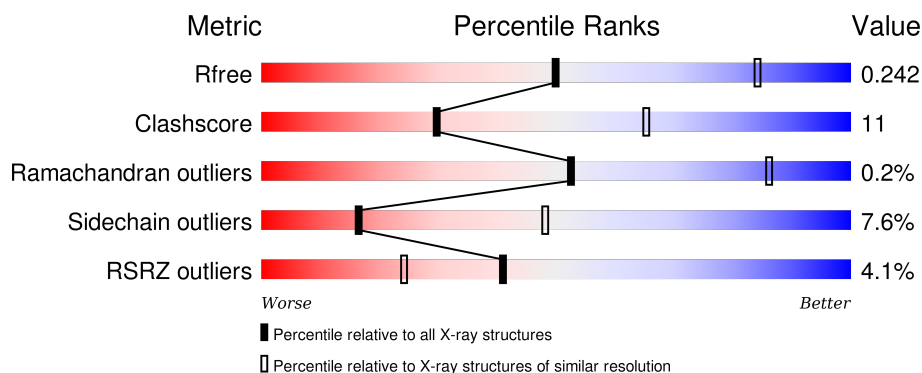
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.96 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))
$R_{free}$	91344	2184 (3.00-2.92)
Clashscore	102246	2552 (3.00-2.92)
Ramachandran outliers	100387	2468 (3.00-2.92)
Sidechain outliers	100360	2471 (3.00-2.92)
RSRZ outliers	91569	2201 (3.00-2.92)

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. 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	349	<div> <div>4%</div> <div>73%</div> <div>23%</div> <div>• •</div> </div>
1	B	349	<div> <div>%</div> <div>75%</div> <div>20%</div> <div>• •</div> </div>
1	C	349	<div> <div>9%</div> <div>62%</div> <div>31%</div> <div>• 5%</div> </div>
1	D	349	<div> <div>9%</div> <div>62%</div> <div>31%</div> <div>• •</div> </div>
1	E	349	<div> <div>%</div> <div>68%</div> <div>28%</div> <div>• •</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	349	<div><div><div>%</div><div><div></div></div><div>73%</div><div>23%</div><div>..</div></div></div>

## 2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 15989 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 Uridylate-specific endoribonuclease.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	341	Total	C	N	O	S	0	0	0
			2674	1724	432	504	14			
1	B	345	Total	C	N	O	S	0	0	0
			2695	1735	437	509	14			
1	C	332	Total	C	N	O	S	0	0	0
			2601	1679	418	490	14			
1	D	337	Total	C	N	O	S	0	0	0
			2636	1703	424	495	14			
1	E	341	Total	C	N	O	S	0	0	0
			2669	1721	430	504	14			
1	F	346	Total	C	N	O	S	0	0	0
			2714	1746	439	515	14			

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	0	SER	-	EXPRESSION TAG	UNP P0C6X1
A	17	SER	GLY	ENGINEERED MUTATION	UNP P0C6X1
A	142	ALA	THR	ENGINEERED MUTATION	UNP P0C6X1
A	219	MET	ILE	ENGINEERED MUTATION	UNP P0C6X1
A	252	SER	LEU	ENGINEERED MUTATION	UNP P0C6X1
B	0	SER	-	EXPRESSION TAG	UNP P0C6X1
B	17	SER	GLY	ENGINEERED MUTATION	UNP P0C6X1
B	142	ALA	THR	ENGINEERED MUTATION	UNP P0C6X1
B	219	MET	ILE	ENGINEERED MUTATION	UNP P0C6X1
B	252	SER	LEU	ENGINEERED MUTATION	UNP P0C6X1
C	0	SER	-	EXPRESSION TAG	UNP P0C6X1
C	17	SER	GLY	ENGINEERED MUTATION	UNP P0C6X1
C	142	ALA	THR	ENGINEERED MUTATION	UNP P0C6X1
C	219	MET	ILE	ENGINEERED MUTATION	UNP P0C6X1
C	252	SER	LEU	ENGINEERED MUTATION	UNP P0C6X1
D	0	SER	-	EXPRESSION TAG	UNP P0C6X1
D	17	SER	GLY	ENGINEERED MUTATION	UNP P0C6X1

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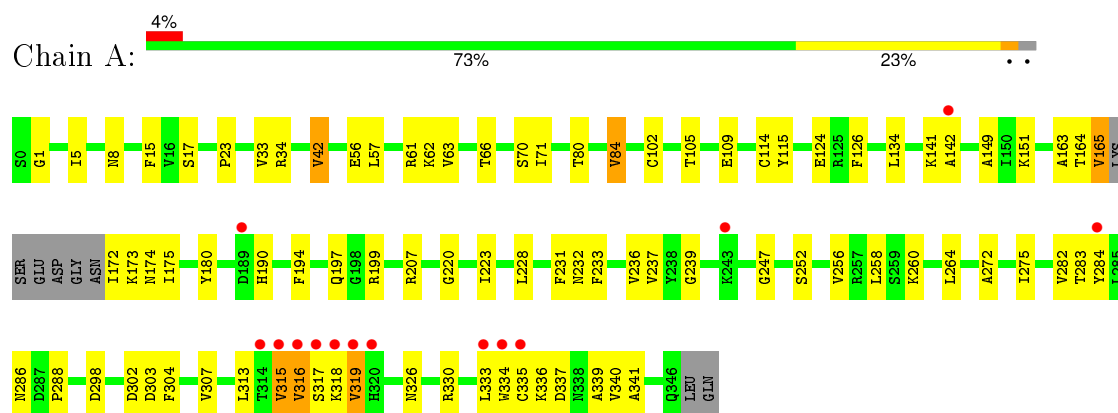
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Chain	Residue	Modelled	Actual	Comment	Reference
D	142	ALA	THR	ENGINEERED MUTATION	UNP P0C6X1
D	219	MET	ILE	ENGINEERED MUTATION	UNP P0C6X1
D	252	SER	LEU	ENGINEERED MUTATION	UNP P0C6X1
E	0	SER	-	EXPRESSION TAG	UNP P0C6X1
E	17	SER	GLY	ENGINEERED MUTATION	UNP P0C6X1
E	142	ALA	THR	ENGINEERED MUTATION	UNP P0C6X1
E	219	MET	ILE	ENGINEERED MUTATION	UNP P0C6X1
E	252	SER	LEU	ENGINEERED MUTATION	UNP P0C6X1
F	0	SER	-	EXPRESSION TAG	UNP P0C6X1
F	17	SER	GLY	ENGINEERED MUTATION	UNP P0C6X1
F	142	ALA	THR	ENGINEERED MUTATION	UNP P0C6X1
F	219	MET	ILE	ENGINEERED MUTATION	UNP P0C6X1
F	252	SER	LEU	ENGINEERED MUTATION	UNP P0C6X1

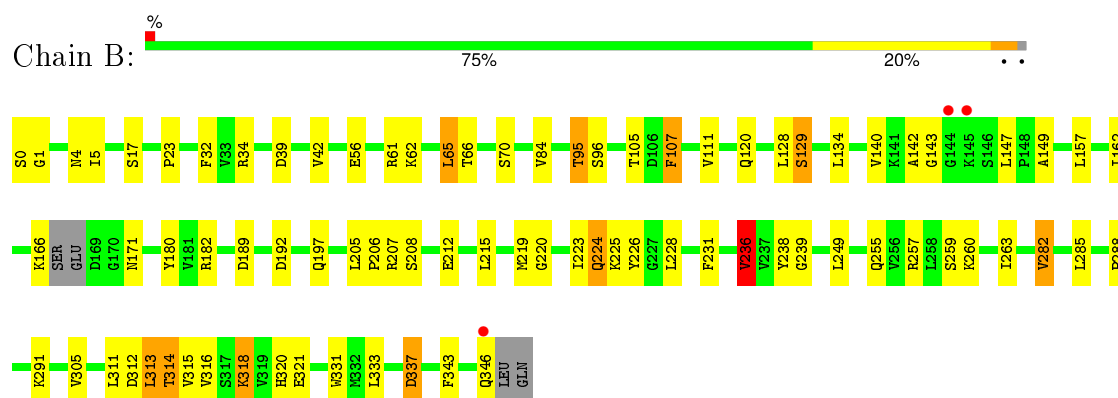
### 3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

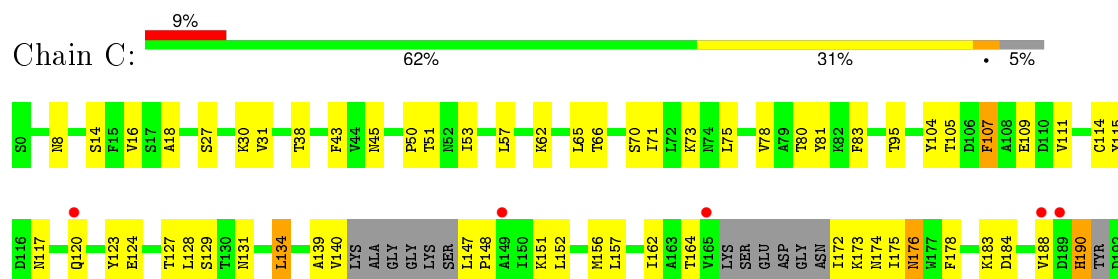
- Molecule 1: Uridylate-specific endoribonuclease

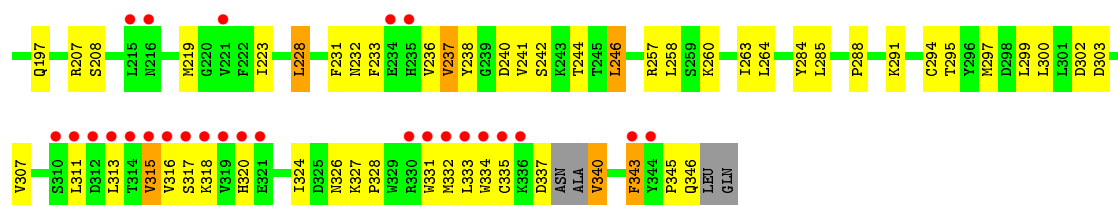


- Molecule 1: Uridylate-specific endoribonuclease

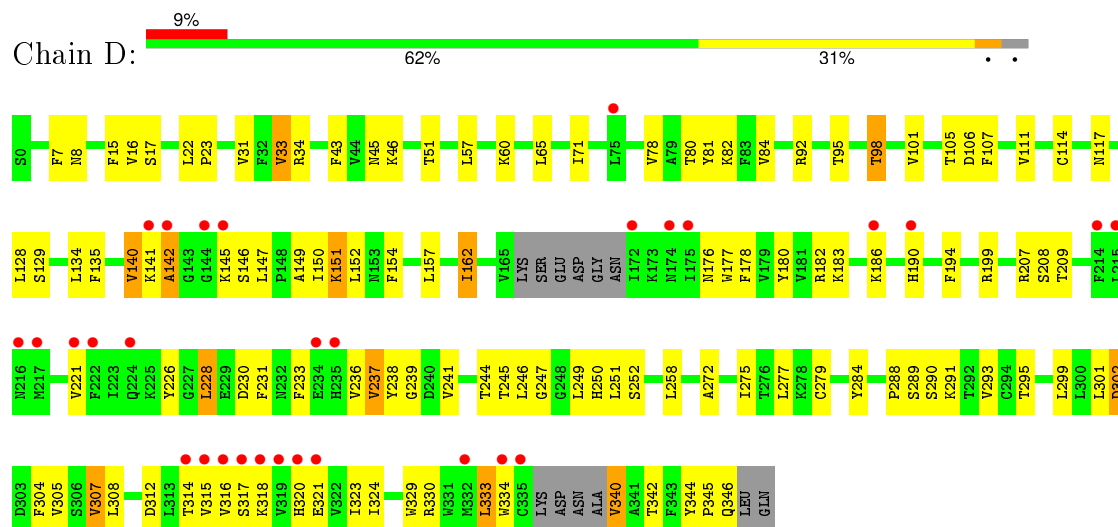


- Molecule 1: Uridylate-specific endoribonuclease

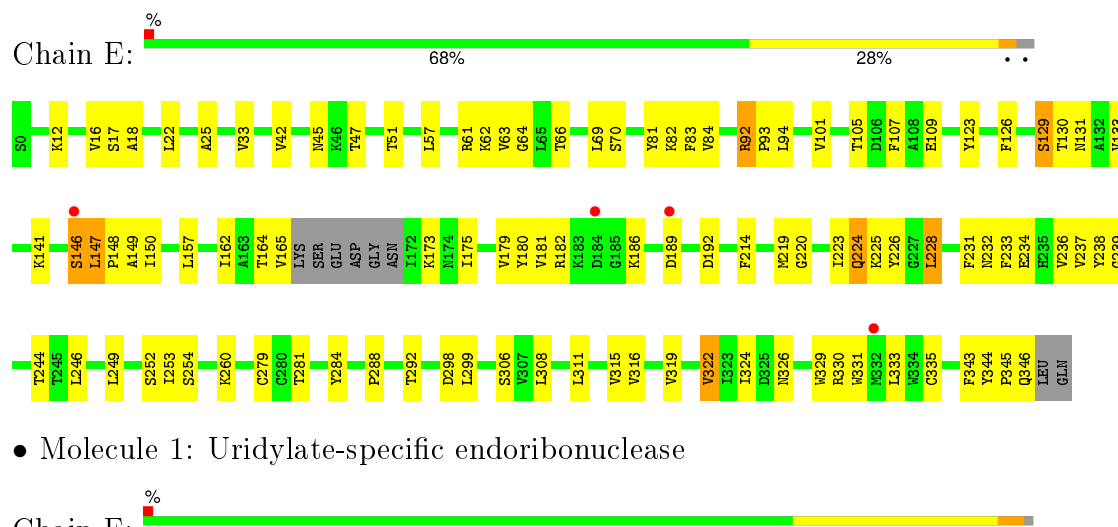




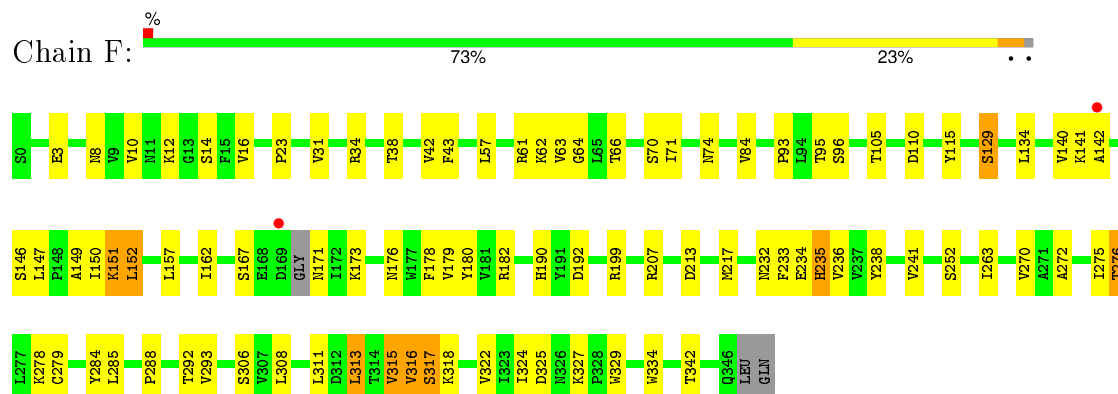
• Molecule 1: Uridylate-specific endoribonuclease



• Molecule 1: Uridylate-specific endoribonuclease



• Molecule 1: Uridylate-specific endoribonuclease



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	127.93Å 143.17Å 174.66Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.96 38.25 – 2.96	Depositor EDS
% Data completeness (in resolution range)	90.4 (30.00-2.96) 89.3 (38.25-2.96)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.59 (at 2.95Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7_650)	Depositor
R, $R_{free}$	0.208 , 0.255 0.193 , 0.242	Depositor DCC
$R_{free}$ test set	3101 reflections (5.06%)	DCC
Wilson B-factor (Å <sup>2</sup> )	56.9	Xtriage
Anisotropy	0.595	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 45.5	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	1 of 66863 reflections (0.001%)	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	15989	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	71.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.46% 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, 0.375 respectively for untwinned datasets, and 0.333, 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	0.31	0/2732	0.49	1/3708 (0.0%)
1	B	0.30	0/2753	0.49	0/3737
1	C	0.28	0/2655	0.46	0/3604
1	D	0.28	0/2692	0.47	0/3653
1	E	0.30	0/2726	0.47	0/3700
1	F	0.29	0/2772	0.47	0/3761
All	All	0.29	0/16330	0.47	1/22163 (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	D	0	1
1	F	0	1
All	All	0	2

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	109	GLU	N-CA-C	-6.04	94.69	111.00

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	142	ALA	Peptide
1	F	142	ALA	Peptide

## 5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2674	0	2657	58	0
1	B	2695	0	2668	58	0
1	C	2601	0	2568	68	0
1	D	2636	0	2621	74	0
1	E	2669	0	2652	65	0
1	F	2714	0	2691	49	0
All	All	15989	0	15857	358	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 11.

All (358) 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:315:VAL:HG11	1:B:318:LYS:HE2	1.42	1.01
1:F:157:LEU:HB2	1:F:162:ILE:HD13	1.58	0.86
1:A:288:PRO:HG3	1:D:162:ILE:HD11	1.57	0.85
1:D:334:TRP:HZ3	1:D:344:TYR:HE2	1.24	0.84
1:A:164:THR:HG23	1:A:174:ASN:HA	1.61	0.82
1:B:236:VAL:HG21	1:B:343:PHE:H	1.45	0.80
1:A:335:CYS:HB2	1:A:339:ALA:O	1.82	0.80
1:D:145:LYS:HG3	1:D:146:SER:H	1.50	0.76
1:E:315:VAL:HG12	1:E:316:VAL:H	1.51	0.76
1:B:263:ILE:HG21	1:B:285:LEU:HD22	1.68	0.75
1:D:334:TRP:CZ3	1:D:344:TYR:HE2	2.05	0.74
1:B:0:SER:HB2	1:B:4:ASN:HB2	1.69	0.74
1:D:233:PHE:HB3	1:D:238:TYR:HD2	1.53	0.73
1:C:62:LYS:HG2	1:C:66:THR:HG22	1.70	0.73
1:D:236:VAL:HG22	1:D:237:VAL:HG23	1.70	0.73
1:A:335:CYS:HA	1:A:341:ALA:H	1.53	0.72
1:A:232:ASN:O	1:A:236:VAL:HB	1.90	0.72
1:A:236:VAL:HG12	1:A:237:VAL:HG23	1.72	0.71
1:B:111:VAL:HG12	1:C:109:GLU:HG2	1.73	0.71
1:E:149:ALA:HB2	1:E:180:TYR:CE1	2.25	0.70
1:C:151:LYS:HE2	1:C:178:PHE:CZ	2.25	0.70

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:315:VAL:HG11	1:B:318:LYS:CE	2.21	0.70
1:D:117:ASN:HB2	1:D:134:LEU:HD11	1.74	0.69
1:B:220:GLY:H	1:B:223:ILE:HG13	1.58	0.69
1:D:45:ASN:HB2	1:D:51:THR:HG23	1.75	0.69
1:C:327:LYS:HG3	1:C:328:PRO:HD2	1.74	0.68
1:D:334:TRP:HZ3	1:D:344:TYR:CE2	2.11	0.68
1:E:284:TYR:O	1:E:288:PRO:HA	1.94	0.68
1:A:220:GLY:H	1:A:223:ILE:HG13	1.57	0.67
1:B:226:TYR:HB2	1:B:228:LEU:CD2	2.24	0.67
1:C:313:LEU:HD11	1:C:337:ASP:O	1.93	0.67
1:D:299:LEU:HD21	1:D:324:ILE:HD13	1.76	0.67
1:A:71:ILE:HD12	1:A:71:ILE:H	1.58	0.67
1:A:61:ARG:HA	1:A:84:VAL:HG22	1.78	0.66
1:D:71:ILE:HD12	1:D:71:ILE:H	1.61	0.65
1:A:57:LEU:HD11	1:A:105:THR:HG21	1.78	0.65
1:E:12:LYS:HG2	1:E:16:VAL:HG21	1.78	0.65
1:B:149:ALA:HB2	1:B:180:TYR:CE1	2.32	0.65
1:A:239:GLY:HA2	1:A:247:GLY:O	1.97	0.64
1:D:249:LEU:HD11	1:D:258:LEU:HD23	1.78	0.64
1:E:62:LYS:HG2	1:E:66:THR:HG22	1.79	0.64
1:E:315:VAL:HG12	1:E:316:VAL:N	2.13	0.63
1:D:152:LEU:HD12	1:D:154:PHE:CE2	2.33	0.63
1:B:197:GLN:HB3	1:B:207:ARG:NH2	2.12	0.63
1:D:145:LYS:HG3	1:D:146:SER:N	2.14	0.62
1:F:62:LYS:HG2	1:F:66:THR:HG22	1.81	0.62
1:B:61:ARG:HA	1:B:84:VAL:HG22	1.80	0.62
1:D:318:LYS:HD3	1:D:320:HIS:CE1	2.33	0.62
1:C:295:THR:OG1	1:C:345:PRO:HG2	1.99	0.62
1:B:206:PRO:HG3	1:B:215:LEU:HD12	1.81	0.62
1:E:22:LEU:HD13	1:E:33:VAL:HG11	1.81	0.62
1:E:299:LEU:HD21	1:E:324:ILE:HD13	1.82	0.61
1:F:23:PRO:HG2	1:F:34:ARG:HB3	1.82	0.61
1:B:23:PRO:HG2	1:B:34:ARG:HB3	1.83	0.61
1:D:231:PHE:HA	1:D:340:VAL:HG11	1.81	0.60
1:E:224:GLN:HG3	1:E:225:LYS:N	2.14	0.60
1:F:276:THR:HB	1:F:325:ASP:OD2	2.01	0.60
1:B:42:VAL:HG12	1:F:270:VAL:HG22	1.83	0.60
1:A:33:VAL:HG13	1:A:42:VAL:HG21	1.84	0.60
1:D:302:ASP:O	1:D:305:VAL:HG22	2.02	0.59
1:D:272:ALA:HB3	1:D:275:ILE:HG13	1.84	0.59
1:F:241:VAL:HG11	1:F:284:TYR:CD1	2.37	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:142:ALA:H	1:D:147:LEU:CD1	2.15	0.59
1:B:315:VAL:CG1	1:B:318:LYS:HE2	2.26	0.59
1:B:311:LEU:HD22	1:B:333:LEU:HD22	1.83	0.59
1:A:23:PRO:HG2	1:A:34:ARG:HB3	1.84	0.59
1:E:150:ILE:HB	1:E:179:VAL:HB	1.83	0.59
1:A:173:LYS:HE3	1:C:242:SER:O	2.02	0.58
1:E:232:ASN:HB3	1:E:236:VAL:HG23	1.85	0.58
1:A:258:LEU:HD23	1:A:264:LEU:HD22	1.85	0.58
1:F:149:ALA:HB2	1:F:180:TYR:CE1	2.38	0.58
1:D:317:SER:O	1:D:318:LYS:HB3	2.03	0.58
1:D:65:LEU:HG	1:D:157:LEU:HD13	1.85	0.58
1:C:236:VAL:HG12	1:C:237:VAL:HG12	1.86	0.58
1:B:224:GLN:HG3	1:B:225:LYS:N	2.19	0.57
1:F:334:TRP:HD1	1:F:342:THR:HG1	1.52	0.57
1:E:45:ASN:ND2	1:E:51:THR:HA	2.20	0.57
1:E:331:TRP:HB3	1:E:343:PHE:CE2	2.40	0.57
1:C:164:THR:HG23	1:C:174:ASN:HA	1.85	0.57
1:F:129:SER:O	1:F:182:ARG:NH1	2.37	0.57
1:E:63:VAL:HG12	1:E:64:GLY:H	1.68	0.57
1:E:164:THR:O	1:E:165:VAL:HG23	2.05	0.57
1:C:291:LYS:HG2	1:C:294:CYS:HB2	1.86	0.56
1:E:220:GLY:HA2	1:E:223:ILE:HB	1.87	0.56
1:D:315:VAL:HG11	1:D:318:LYS:HD2	1.88	0.56
1:C:313:LEU:HD13	1:C:337:ASP:HA	1.88	0.56
1:B:220:GLY:O	1:B:224:GLN:HB3	2.05	0.56
1:B:129:SER:O	1:B:182:ARG:NH1	2.39	0.56
1:C:197:GLN:HB3	1:C:207:ARG:NH2	2.21	0.55
1:C:315:VAL:HG21	1:C:318:LYS:HB2	1.86	0.55
1:A:197:GLN:HB2	1:A:298:ASP:OD2	2.06	0.55
1:C:57:LEU:HD11	1:C:105:THR:HG21	1.89	0.55
1:E:231:PHE:CE1	1:E:308:LEU:HB3	2.41	0.55
1:C:315:VAL:HG11	1:C:318:LYS:HD2	1.88	0.55
1:A:272:ALA:HB3	1:A:275:ILE:HG13	1.87	0.55
1:E:226:TYR:CB	1:E:228:LEU:HD21	2.36	0.55
1:F:141:LYS:HG3	1:F:146:SER:HA	1.88	0.55
1:D:151:LYS:HD2	1:D:151:LYS:O	2.05	0.55
1:E:47:THR:HG22	1:E:92:ARG:HB3	1.89	0.55
1:C:71:ILE:HD12	1:C:71:ILE:H	1.71	0.55
1:D:246:LEU:HD13	1:D:289:SER:OG	2.07	0.55
1:D:152:LEU:O	1:D:176:ASN:HA	2.07	0.54
1:C:147:LEU:HD22	1:C:148:PRO:HD2	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:277:LEU:HD11	1:D:295:THR:HG22	1.89	0.54
1:F:316:VAL:HG23	1:F:317:SER:H	1.72	0.54
1:C:147:LEU:HD22	1:C:148:PRO:CD	2.37	0.54
1:B:257:ARG:O	1:B:260:LYS:HG2	2.08	0.54
1:B:337:ASP:N	1:B:337:ASP:OD1	2.39	0.54
1:D:151:LYS:C	1:D:152:LEU:HD22	2.27	0.53
1:A:141:LYS:O	1:A:142:ALA:HB2	2.08	0.53
1:D:78:VAL:HG11	1:D:111:VAL:HG21	1.88	0.53
1:E:226:TYR:HB2	1:E:228:LEU:HD21	1.89	0.53
1:E:239:GLY:HA3	1:E:249:LEU:HD13	1.91	0.53
1:C:297:MET:HB3	1:C:299:LEU:HD13	1.91	0.53
1:E:133:VAL:HG22	1:E:181:VAL:HG13	1.91	0.53
1:C:233:PHE:HB3	1:C:238:TYR:HD1	1.74	0.53
1:D:312:ASP:CG	1:D:314:THR:HG22	2.30	0.52
1:D:152:LEU:HB2	1:D:177:TRP:HB2	1.91	0.52
1:F:233:PHE:HB3	1:F:238:TYR:CD1	2.44	0.52
1:B:311:LEU:HD23	1:B:320:HIS:CE1	2.44	0.52
1:A:252:SER:O	1:A:256:VAL:HG23	2.10	0.52
1:E:329:TRP:O	1:E:331:TRP:HD1	1.91	0.52
1:E:126:PHE:CZ	1:E:182:ARG:HG3	2.45	0.52
1:D:16:VAL:O	1:D:17:SER:HB2	2.10	0.52
1:D:284:TYR:O	1:D:288:PRO:HA	2.10	0.52
1:A:71:ILE:HD12	1:A:71:ILE:N	2.23	0.51
1:E:219:MET:HB2	1:E:238:TYR:CZ	2.45	0.51
1:C:313:LEU:CD1	1:C:337:ASP:HA	2.40	0.51
1:A:199:ARG:NH1	1:A:207:ARG:HG2	2.26	0.51
1:E:288:PRO:O	1:F:173:LYS:HE2	2.11	0.51
1:E:252:SER:OG	1:E:298:ASP:HB2	2.10	0.51
1:C:172:ILE:HD12	1:C:172:ILE:N	2.26	0.51
1:C:78:VAL:O	1:C:95:THR:HB	2.11	0.51
1:D:304:PHE:O	1:D:307:VAL:HG12	2.10	0.51
1:F:31:VAL:HB	1:F:43:PHE:HB3	1.93	0.51
1:F:233:PHE:HB3	1:F:238:TYR:HD1	1.76	0.51
1:F:308:LEU:O	1:F:311:LEU:HB2	2.11	0.51
1:F:167:SER:OG	1:F:171:ASN:HB2	2.11	0.51
1:C:208:SER:OG	1:C:300:LEU:HD11	2.10	0.51
1:D:231:PHE:HA	1:D:340:VAL:CG1	2.42	0.50
1:B:220:GLY:HA2	1:B:223:ILE:HB	1.92	0.50
1:B:157:LEU:HB2	1:B:162:ILE:HD13	1.92	0.50
1:F:279:CYS:SG	1:F:293:VAL:HG13	2.51	0.50
1:D:22:LEU:HD13	1:D:33:VAL:HG21	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:107:PHE:HZ	1:C:107:PHE:CZ	2.29	0.50
1:C:117:ASN:HB2	1:C:134:LEU:HD21	1.93	0.50
1:C:223:ILE:HG23	1:C:228:LEU:HB2	1.92	0.50
1:A:115:TYR:HB2	1:A:134:LEU:HD12	1.93	0.50
1:B:288:PRO:O	1:E:173:LYS:HE2	2.11	0.50
1:E:311:LEU:HD13	1:E:333:LEU:HD22	1.94	0.50
1:F:284:TYR:O	1:F:288:PRO:HA	2.11	0.50
1:F:317:SER:HB2	1:F:334:TRP:CZ3	2.47	0.50
1:A:149:ALA:HB2	1:A:180:TYR:CE1	2.47	0.50
1:E:344:TYR:HB2	1:E:345:PRO:HD2	1.94	0.50
1:F:61:ARG:HA	1:F:84:VAL:HG22	1.93	0.50
1:F:315:VAL:HG11	1:F:318:LYS:HB2	1.93	0.49
1:C:263:ILE:HB	1:C:285:LEU:HB2	1.94	0.49
1:F:140:VAL:HG12	1:F:147:LEU:HD22	1.94	0.49
1:B:282:VAL:HG23	1:B:291:LYS:HB3	1.94	0.49
1:B:140:VAL:HG12	1:B:147:LEU:HD13	1.93	0.49
1:A:335:CYS:HB2	1:A:340:VAL:HA	1.93	0.49
1:D:241:VAL:HG11	1:D:284:TYR:CD1	2.47	0.49
1:E:281:THR:HG23	1:E:292:THR:HA	1.94	0.49
1:E:33:VAL:HG23	1:E:42:VAL:HG21	1.94	0.49
1:F:74:ASN:OD1	1:F:276:THR:HG21	2.12	0.49
1:A:264:LEU:HD11	1:A:282:VAL:HG12	1.94	0.49
1:C:75:LEU:CD2	1:C:326:ASN:HD22	2.26	0.49
1:F:272:ALA:HB3	1:F:275:ILE:HG13	1.95	0.49
1:D:334:TRP:CZ3	1:D:344:TYR:CE2	2.94	0.49
1:D:149:ALA:HB2	1:D:180:TYR:CE1	2.48	0.49
1:C:335:CYS:HB3	1:C:340:VAL:HG23	1.95	0.48
1:E:330:ARG:NH1	1:E:346:GLN:O	2.46	0.48
1:C:303:ASP:O	1:C:307:VAL:HG23	2.14	0.48
1:A:284:TYR:CE1	1:A:286:ASN:HB2	2.49	0.48
1:A:284:TYR:O	1:A:288:PRO:HA	2.12	0.48
1:D:333:LEU:HG	1:D:334:TRP:N	2.28	0.48
1:A:172:ILE:O	1:A:172:ILE:HG13	2.14	0.48
1:A:319:VAL:CG1	1:A:330:ARG:HH11	2.26	0.48
1:B:312:ASP:H	1:B:318:LYS:HZ1	1.61	0.48
1:D:81:TYR:CE2	1:D:82:LYS:HG3	2.48	0.48
1:A:313:LEU:HA	1:A:335:CYS:SG	2.54	0.48
1:C:152:LEU:O	1:C:176:ASN:HA	2.14	0.48
1:B:312:ASP:H	1:B:318:LYS:NZ	2.12	0.47
1:A:164:THR:O	1:A:173:LYS:O	2.32	0.47
1:C:31:VAL:HB	1:C:43:PHE:HB3	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:165:VAL:O	1:A:165:VAL:HG13	2.14	0.47
1:D:150:ILE:HG22	1:D:152:LEU:HD21	1.95	0.47
1:E:81:TYR:O	1:E:83:PHE:HD2	1.97	0.47
1:D:31:VAL:HB	1:D:43:PHE:HB3	1.95	0.47
1:F:57:LEU:HD11	1:F:105:THR:HG21	1.95	0.47
1:B:95:THR:HG23	1:B:96:SER:H	1.79	0.47
1:A:173:LYS:HE2	1:C:288:PRO:O	2.15	0.47
1:A:223:ILE:HG23	1:A:228:LEU:HB2	1.95	0.47
1:D:23:PRO:HG2	1:D:34:ARG:HB3	1.96	0.47
1:E:322:VAL:HG13	1:E:331:TRP:CD1	2.48	0.47
1:A:62:LYS:HG2	1:A:66:THR:HG22	1.96	0.47
1:D:134:LEU:HD12	1:D:135:PHE:N	2.29	0.47
1:D:150:ILE:HG22	1:D:152:LEU:CD2	2.44	0.47
1:B:32:PHE:HB3	1:B:39:ASP:HB3	1.96	0.47
1:F:151:LYS:HD3	1:F:178:PHE:CE1	2.49	0.47
1:B:239:GLY:HA3	1:B:249:LEU:HD13	1.97	0.47
1:F:308:LEU:HA	1:F:311:LEU:HD22	1.97	0.47
1:C:65:LEU:HD22	1:C:157:LEU:HD13	1.96	0.47
1:C:313:LEU:HD22	1:C:340:VAL:HG22	1.96	0.47
1:B:96:SER:O	1:B:105:THR:HG23	2.15	0.47
1:D:317:SER:HA	1:D:333:LEU:O	2.14	0.46
1:C:157:LEU:HD21	1:D:290:SER:HB3	1.97	0.46
1:C:50:PRO:HB2	1:C:53:ILE:HG12	1.97	0.46
1:B:206:PRO:HG3	1:B:215:LEU:CD1	2.46	0.46
1:E:162:ILE:HD12	1:E:175:ILE:HG12	1.98	0.46
1:B:263:ILE:CG2	1:B:285:LEU:HD22	2.41	0.46
1:A:126:PHE:CD1	1:A:134:LEU:HB2	2.50	0.46
1:C:139:ALA:HB2	1:C:178:PHE:CE1	2.51	0.46
1:B:228:LEU:HD12	1:B:231:PHE:CD2	2.50	0.46
1:D:182:ARG:C	1:D:183:LYS:HD2	2.35	0.46
1:D:231:PHE:HB2	1:D:233:PHE:HE1	1.80	0.46
1:E:141:LYS:HG3	1:E:146:SER:HA	1.97	0.46
1:C:188:VAL:HG21	1:C:190:HIS:CD2	2.50	0.46
1:C:257:ARG:O	1:C:260:LYS:HB2	2.16	0.45
1:E:94:LEU:O	1:F:38:THR:HG21	2.16	0.45
1:C:284:TYR:O	1:C:288:PRO:HA	2.16	0.45
1:C:162:ILE:HG12	1:D:288:PRO:HB3	1.98	0.45
1:D:330:ARG:NH1	1:D:346:GLN:OE1	2.49	0.45
1:B:1:GLY:O	1:B:5:ILE:HG13	2.15	0.45
1:D:321:GLU:HG3	1:D:321:GLU:O	2.15	0.45
1:A:264:LEU:HD11	1:A:282:VAL:CG1	2.47	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:38:THR:HB	1:D:92:ARG:HE	1.81	0.45
1:C:45:ASN:HB2	1:C:51:THR:HG23	1.98	0.45
1:F:152:LEU:O	1:F:176:ASN:HA	2.16	0.45
1:F:12:LYS:HG3	1:F:16:VAL:HG21	1.97	0.45
1:A:102:CYS:HB3	1:A:105:THR:OG1	2.17	0.45
1:C:164:THR:HG23	1:C:173:LYS:O	2.16	0.45
1:E:239:GLY:HA3	1:E:249:LEU:CD1	2.47	0.45
1:E:81:TYR:CE2	1:E:82:LYS:HG3	2.52	0.45
1:A:194:PHE:CD2	1:A:303:ASP:HB3	2.52	0.45
1:C:316:VAL:HG23	1:C:317:SER:N	2.32	0.45
1:C:140:VAL:O	1:C:147:LEU:HB2	2.16	0.45
1:E:147:LEU:HG	1:E:148:PRO:HD2	1.98	0.45
1:F:93:PRO:HB2	1:F:95:THR:O	2.17	0.45
1:A:304:PHE:O	1:A:307:VAL:HB	2.16	0.45
1:D:226:TYR:HB2	1:D:228:LEU:HD22	1.99	0.44
1:D:150:ILE:O	1:D:178:PHE:HA	2.16	0.44
1:F:235:HIS:ND1	1:F:235:HIS:C	2.70	0.44
1:D:134:LEU:HD12	1:D:135:PHE:H	1.82	0.44
1:E:92:ARG:HD2	1:E:93:PRO:O	2.17	0.44
1:D:78:VAL:O	1:D:95:THR:HB	2.17	0.44
1:E:232:ASN:HB3	1:E:236:VAL:CG2	2.48	0.44
1:F:10:VAL:HG22	1:F:42:VAL:HG11	1.98	0.44
1:C:124:GLU:O	1:C:128:LEU:HD23	2.18	0.44
1:C:241:VAL:HG11	1:C:284:TYR:CD1	2.52	0.44
1:D:324:ILE:HB	1:D:329:TRP:CD1	2.53	0.44
1:E:123:TYR:O	1:E:126:PHE:HB3	2.18	0.44
1:E:219:MET:HB2	1:E:238:TYR:CE2	2.53	0.44
1:F:115:TYR:HB2	1:F:134:LEU:HD12	1.98	0.44
1:A:80:THR:HG22	1:A:114:CYS:HB3	1.99	0.44
1:F:3:GLU:OE1	1:F:3:GLU:N	2.48	0.44
1:E:69:LEU:HD22	1:E:94:LEU:HD22	1.99	0.43
1:B:62:LYS:HG2	1:B:66:THR:HG22	2.00	0.43
1:E:233:PHE:CE1	1:E:237:VAL:HG21	2.53	0.43
1:A:260:LYS:HE3	1:A:260:LYS:HB3	1.84	0.43
1:B:142:ALA:HA	1:B:143:GLY:HA2	1.48	0.43
1:B:312:ASP:HB3	1:B:318:LYS:NZ	2.34	0.43
1:E:45:ASN:HD22	1:E:51:THR:HA	1.83	0.43
1:A:163:ALA:HB2	1:A:207:ARG:NH2	2.33	0.43
1:B:239:GLY:HA3	1:B:249:LEU:CD1	2.48	0.43
1:A:1:GLY:O	1:A:5:ILE:HG13	2.18	0.43
1:B:331:TRP:HB3	1:B:343:PHE:CE2	2.53	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:80:THR:HG22	1:D:114:CYS:HB3	1.99	0.43
1:D:279:CYS:SG	1:D:293:VAL:HG13	2.58	0.43
1:F:334:TRP:HD1	1:F:342:THR:OG1	2.00	0.43
1:E:226:TYR:HB2	1:E:228:LEU:CD2	2.49	0.43
1:F:192:ASP:OD1	1:F:192:ASP:N	2.49	0.43
1:D:194:PHE:HB2	1:D:323:ILE:O	2.18	0.43
1:C:16:VAL:HG23	1:C:18:ALA:H	1.84	0.43
1:F:150:ILE:HB	1:F:179:VAL:HB	2.00	0.43
1:A:335:CYS:CB	1:A:340:VAL:HA	2.49	0.43
1:C:311:LEU:HD22	1:C:320:HIS:CD2	2.54	0.43
1:E:84:VAL:HG12	1:E:101:VAL:HG11	2.01	0.43
1:D:141:LYS:HD3	1:D:141:LYS:HA	1.72	0.43
1:E:315:VAL:O	1:E:335:CYS:HB2	2.19	0.42
1:B:288:PRO:HD2	1:E:173:LYS:HG3	2.01	0.42
1:E:157:LEU:HB2	1:E:162:ILE:HD13	2.01	0.42
1:F:199:ARG:NH1	1:F:207:ARG:HG3	2.34	0.42
1:F:324:ILE:HB	1:F:329:TRP:CD1	2.54	0.42
1:E:57:LEU:HD11	1:E:105:THR:HG21	2.02	0.42
1:B:312:ASP:OD1	1:B:314:THR:HG23	2.19	0.42
1:E:246:LEU:HD13	1:E:249:LEU:HD22	2.01	0.42
1:D:239:GLY:HA2	1:D:247:GLY:O	2.19	0.42
1:E:16:VAL:HG23	1:E:18:ALA:H	1.85	0.42
1:C:30:LYS:HE3	1:C:30:LYS:HB2	1.92	0.42
1:D:301:LEU:O	1:D:305:VAL:HG13	2.20	0.42
1:E:233:PHE:CZ	1:E:237:VAL:HG21	2.54	0.42
1:F:232:ASN:O	1:F:236:VAL:HG23	2.20	0.42
1:B:313:LEU:HD12	1:B:313:LEU:HA	1.83	0.42
1:A:315:VAL:HG11	1:A:318:LYS:HB2	2.01	0.42
1:C:80:THR:HG22	1:C:114:CYS:HB3	2.02	0.42
1:A:317:SER:HB2	1:A:334:TRP:CZ3	2.55	0.42
1:A:336:LYS:HG2	1:A:337:ASP:OD1	2.19	0.42
1:C:345:PRO:O	1:C:346:GLN:C	2.57	0.42
1:C:258:LEU:HB3	1:C:264:LEU:HD22	2.00	0.42
1:A:8:ASN:HB3	1:A:15:PHE:HA	2.02	0.42
1:B:226:TYR:HB2	1:B:228:LEU:HD21	1.98	0.42
1:A:175:ILE:HD13	1:A:175:ILE:HA	1.84	0.42
1:D:140:VAL:HG12	1:D:147:LEU:HD13	2.02	0.42
1:A:316:VAL:HG23	1:A:317:SER:H	1.85	0.42
1:D:250:HIS:O	1:D:251:LEU:HD23	2.20	0.42
1:B:236:VAL:CG2	1:B:343:PHE:H	2.23	0.41
1:C:291:LYS:CG	1:C:294:CYS:HB2	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:65:LEU:HD23	1:B:162:ILE:HD11	2.01	0.41
1:F:8:ASN:HB3	1:F:14:SER:O	2.20	0.41
1:D:60:LYS:HD2	1:D:101:VAL:HG12	2.02	0.41
1:C:333:LEU:HD12	1:C:334:TRP:N	2.35	0.41
1:B:65:LEU:HG	1:B:157:LEU:HD13	2.01	0.41
1:E:61:ARG:HA	1:E:84:VAL:HG22	2.02	0.41
1:F:263:ILE:HG21	1:F:285:LEU:HD22	2.03	0.41
1:C:183:LYS:HG2	1:C:184:ASP:OD2	2.19	0.41
1:B:255:GLN:O	1:B:259:SER:HB2	2.20	0.41
1:F:63:VAL:HG12	1:F:64:GLY:N	2.35	0.41
1:A:57:LEU:HD22	1:A:84:VAL:HG11	2.02	0.41
1:E:129:SER:O	1:E:182:ARG:NH2	2.52	0.41
1:C:8:ASN:HB3	1:C:14:SER:O	2.19	0.41
1:F:213:ASP:HB3	1:F:217:MET:SD	2.60	0.41
1:D:199:ARG:NH1	1:D:207:ARG:HG3	2.35	0.41
1:E:131:ASN:HA	1:E:182:ARG:O	2.20	0.41
1:D:7:PHE:HA	1:D:22:LEU:HD12	2.02	0.41
1:A:319:VAL:HG11	1:A:330:ARG:HH11	1.84	0.41
1:F:115:TYR:CB	1:F:134:LEU:HD12	2.51	0.41
1:A:336:LYS:HG2	1:A:337:ASP:N	2.35	0.41
1:C:197:GLN:HB3	1:C:207:ARG:HH21	1.85	0.41
1:B:5:ILE:HD13	1:B:56:GLU:HG3	2.03	0.41
1:E:214:PHE:CD2	1:E:253:ILE:HG12	2.55	0.41
1:C:75:LEU:HD23	1:C:326:ASN:HD22	1.86	0.41
1:A:5:ILE:HD13	1:A:56:GLU:HG3	2.03	0.41
1:B:166:LYS:HA	1:B:171:ASN:O	2.20	0.41
1:C:162:ILE:HA	1:C:162:ILE:HD12	1.75	0.41
1:E:186:LYS:HB2	1:E:186:LYS:HE2	1.89	0.41
1:F:313:LEU:HD12	1:F:313:LEU:HA	1.88	0.41
1:C:104:TYR:CE1	1:E:25:ALA:HB2	2.56	0.41
1:A:239:GLY:HA2	1:A:247:GLY:C	2.42	0.40
1:A:163:ALA:HB3	1:A:207:ARG:HD2	2.02	0.40
1:C:331:TRP:HB3	1:C:343:PHE:CE2	2.56	0.40
1:E:324:ILE:HB	1:E:329:TRP:CD1	2.57	0.40
1:F:74:ASN:HB3	1:F:327:LYS:HG3	2.03	0.40
1:D:344:TYR:HB2	1:D:345:PRO:HD2	2.04	0.40
1:D:142:ALA:H	1:D:147:LEU:HD11	1.85	0.40
1:B:208:SER:O	1:B:212:GLU:HG3	2.21	0.40
1:B:219:MET:HG2	1:B:219:MET:H	1.71	0.40
1:D:57:LEU:HD11	1:D:105:THR:HG21	2.02	0.40
1:C:123:TYR:O	1:C:127:THR:HG23	2.22	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:81:TYR:O	1:C:83:PHE:HD2	2.04	0.40
1:B:157:LEU:HB2	1:B:162:ILE:CD1	2.51	0.40
1:C:115:TYR:HB2	1:C:134:LEU:HD12	2.03	0.40
1:E:82:LYS:O	1:E:83:PHE:HB3	2.21	0.40
1:B:219:MET:HB3	1:B:238:TYR:CZ	2.56	0.40
1:A:333:LEU:HD11	1:A:335:CYS:HB3	2.03	0.40
1:B:205:LEU:HA	1:B:206:PRO:HD3	1.96	0.40
1:D:98:THR:HG22	1:D:106:ASP:HA	2.03	0.40
1:D:8:ASN:HB3	1:D:15:PHE:HA	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	337/349 (97%)	325 (96%)	12 (4%)	0	100	100
1	B	341/349 (98%)	328 (96%)	12 (4%)	1 (0%)	46	81
1	C	322/349 (92%)	307 (95%)	14 (4%)	1 (0%)	46	81
1	D	331/349 (95%)	311 (94%)	18 (5%)	2 (1%)	30	70
1	E	337/349 (97%)	321 (95%)	16 (5%)	0	100	100
1	F	342/349 (98%)	332 (97%)	10 (3%)	0	100	100
All	All	2010/2094 (96%)	1924 (96%)	82 (4%)	4 (0%)	52	86

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	236	VAL
1	D	237	VAL
1	D	190	HIS
1	C	246	LEU

### 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	298/306 (97%)	281 (94%)	17 (6%)	25	62
1	B	299/306 (98%)	277 (93%)	22 (7%)	17	49
1	C	290/306 (95%)	263 (91%)	27 (9%)	11	37
1	D	293/306 (96%)	266 (91%)	27 (9%)	11	37
1	E	297/306 (97%)	275 (93%)	22 (7%)	17	49
1	F	303/306 (99%)	283 (93%)	20 (7%)	21	55
All	All	1780/1836 (97%)	1645 (92%)	135 (8%)	16	48

All (135) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	17	SER
1	A	42	VAL
1	A	63	VAL
1	A	70	SER
1	A	84	VAL
1	A	124	GLU
1	A	151	LYS
1	A	165	VAL
1	A	190	HIS
1	A	231	PHE
1	A	233	PHE
1	A	283	THR
1	A	302	ASP
1	A	315	VAL
1	A	316	VAL
1	A	319	VAL
1	A	326	ASN
1	B	17	SER
1	B	65	LEU
1	B	70	SER
1	B	95	THR
1	B	107	PHE

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Mol	Chain	Res	Type
1	B	120	GLN
1	B	128	LEU
1	B	129	SER
1	B	134	LEU
1	B	189	ASP
1	B	192	ASP
1	B	224	GLN
1	B	236	VAL
1	B	282	VAL
1	B	305	VAL
1	B	313	LEU
1	B	314	THR
1	B	316	VAL
1	B	318	LYS
1	B	321	GLU
1	B	337	ASP
1	B	346	GLN
1	C	27	SER
1	C	70	SER
1	C	73	LYS
1	C	107	PHE
1	C	111	VAL
1	C	120	GLN
1	C	129	SER
1	C	131	ASN
1	C	134	LEU
1	C	156	MET
1	C	175	ILE
1	C	176	ASN
1	C	190	HIS
1	C	219	MET
1	C	228	LEU
1	C	231	PHE
1	C	232	ASN
1	C	237	VAL
1	C	240	ASP
1	C	244	THR
1	C	246	LEU
1	C	302	ASP
1	C	315	VAL
1	C	324	ILE
1	C	332	MET

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Mol	Chain	Res	Type
1	C	340	VAL
1	C	343	PHE
1	D	33	VAL
1	D	46	LYS
1	D	84	VAL
1	D	98	THR
1	D	107	PHE
1	D	128	LEU
1	D	129	SER
1	D	140	VAL
1	D	151	LYS
1	D	162	ILE
1	D	186	LYS
1	D	208	SER
1	D	209	THR
1	D	221	VAL
1	D	228	LEU
1	D	230	ASP
1	D	244	THR
1	D	245	THR
1	D	252	SER
1	D	291	LYS
1	D	302	ASP
1	D	307	VAL
1	D	308	LEU
1	D	316	VAL
1	D	333	LEU
1	D	340	VAL
1	D	342	THR
1	E	17	SER
1	E	70	SER
1	E	92	ARG
1	E	107	PHE
1	E	109	GLU
1	E	129	SER
1	E	130	THR
1	E	146	SER
1	E	147	LEU
1	E	189	ASP
1	E	192	ASP
1	E	224	GLN
1	E	228	LEU

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Mol	Chain	Res	Type
1	E	234	GLU
1	E	244	THR
1	E	254	SER
1	E	260	LYS
1	E	279	CYS
1	E	306	SER
1	E	319	VAL
1	E	322	VAL
1	E	326	ASN
1	F	70	SER
1	F	71	ILE
1	F	96	SER
1	F	110	ASP
1	F	129	SER
1	F	151	LYS
1	F	152	LEU
1	F	190	HIS
1	F	234	GLU
1	F	235	HIS
1	F	252	SER
1	F	276	THR
1	F	278	LYS
1	F	292	THR
1	F	306	SER
1	F	313	LEU
1	F	315	VAL
1	F	316	VAL
1	F	317	SER
1	F	322	VAL

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

Mol	Chain	Res	Type
1	A	176	ASN
1	A	320	HIS
1	C	174	ASN
1	C	176	ASN
1	C	232	ASN
1	C	326	ASN
1	D	117	ASN
1	D	320	HIS
1	E	232	ASN

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Mol	Chain	Res	Type
1	F	171	ASN
1	F	174	ASN
1	F	176	ASN

### 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, 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	341/349 (97%)	0.11	14 (4%) 41 24	32, 68, 115, 153	0
1	B	345/349 (98%)	-0.04	3 (0%) 85 70	33, 56, 100, 137	0
1	C	332/349 (95%)	0.44	31 (9%) 11 6	45, 80, 125, 144	0
1	D	337/349 (96%)	0.49	30 (8%) 12 6	37, 85, 145, 171	0
1	E	341/349 (97%)	0.02	4 (1%) 81 63	39, 62, 99, 136	0
1	F	346/349 (99%)	-0.02	2 (0%) 90 78	35, 52, 93, 143	0
All	All	2042/2094 (97%)	0.17	84 (4%) 41 24	32, 67, 118, 171	0

All (84) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	144	GLY	6.9
1	D	316	VAL	6.8
1	D	317	SER	6.7
1	D	314	THR	5.4
1	D	319	VAL	4.8
1	D	217	MET	4.7
1	D	145	LYS	4.6
1	C	319	VAL	4.6
1	C	316	VAL	4.6
1	C	335	CYS	4.6
1	C	318	LYS	4.5
1	A	334	TRP	4.2
1	C	320	HIS	4.2
1	C	330	ARG	4.1
1	C	189	ASP	3.9
1	D	215	LEU	3.9
1	A	317	SER	3.8
1	A	189	ASP	3.7
1	B	144	GLY	3.7

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Mol	Chain	Res	Type	RSRZ
1	D	332	MET	3.7
1	E	189	ASP	3.7
1	D	221	VAL	3.7
1	A	316	VAL	3.6
1	C	188	VAL	3.5
1	D	320	HIS	3.4
1	E	184	ASP	3.4
1	C	221	VAL	3.3
1	D	142	ALA	3.3
1	C	334	TRP	3.3
1	C	315	VAL	3.2
1	A	142	ALA	3.2
1	D	222	PHE	3.1
1	A	320	HIS	3.1
1	A	284	TYR	3.0
1	D	141	LYS	3.0
1	C	321	GLU	3.0
1	C	311	LEU	3.0
1	D	190	HIS	3.0
1	F	142	ALA	2.9
1	D	315	VAL	2.9
1	C	317	SER	2.9
1	D	235	HIS	2.8
1	D	334	TRP	2.8
1	C	165	VAL	2.8
1	B	346	GLN	2.7
1	D	318	LYS	2.7
1	F	169	ASP	2.7
1	A	333	LEU	2.7
1	C	149	ALA	2.7
1	D	172	ILE	2.7
1	C	314	THR	2.6
1	C	333	LEU	2.6
1	A	315	VAL	2.5
1	A	314	THR	2.5
1	C	331	TRP	2.5
1	D	234	GLU	2.4
1	A	319	VAL	2.4
1	C	215	LEU	2.4
1	A	243	LYS	2.4
1	C	216	ASN	2.4
1	C	343	PHE	2.3

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Mol	Chain	Res	Type	RSRZ
1	D	224	GLN	2.3
1	D	75	LEU	2.3
1	D	321	GLU	2.3
1	C	313	LEU	2.3
1	C	344	TYR	2.3
1	C	312	ASP	2.3
1	E	146	SER	2.3
1	A	335	CYS	2.2
1	D	216	ASN	2.2
1	C	310	SER	2.2
1	D	214	PHE	2.2
1	D	175	ILE	2.2
1	C	336	LYS	2.2
1	C	234	GLU	2.1
1	C	332	MET	2.1
1	E	332	MET	2.1
1	D	186	LYS	2.1
1	C	120	GLN	2.1
1	D	335	CYS	2.1
1	C	235	HIS	2.1
1	D	174	ASN	2.1
1	B	145	LYS	2.0
1	A	318	LYS	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 6.4 Ligands [i](#)

There are no ligands in this entry.

## 6.5 Other polymers [i](#)

There are no such residues in this entry.