



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2018 – 11:42 am GMT

PDB ID : 3FMP  
Title : Crystal structure of the nucleoporin Nup214 in complex with the DEAD-box helicase Ddx19  
Authors : Napetschnig, J.; Debler, E.W.; Blobel, G.; Hoelz, A.  
Deposited on : 2008-12-22  
Resolution : 3.19 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  
Mogul : 1.7.3 (157068), CSD as539be (2018)  
Xtriage (Phenix) : 1.13  
EDS : trunk30967  
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)  
Refmac : 5.8.0158  
CCP4 : 7.0 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk30967

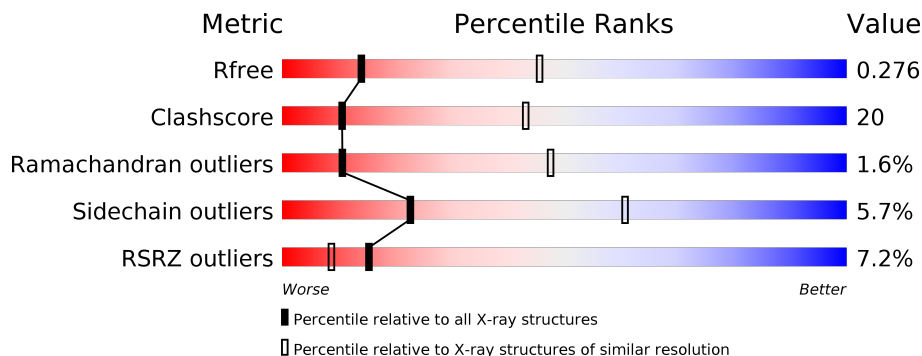
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.19 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))
$R_{free}$	111664	1121 (3.22-3.18)
Clashscore	122126	1091 (3.20-3.20)
Ramachandran outliers	120053	1074 (3.20-3.20)
Sidechain outliers	120020	1073 (3.20-3.20)
RSRZ outliers	108989	1083 (3.22-3.18)

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	450	
1	C	450	
2	B	479	
2	D	479	

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 10216 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.

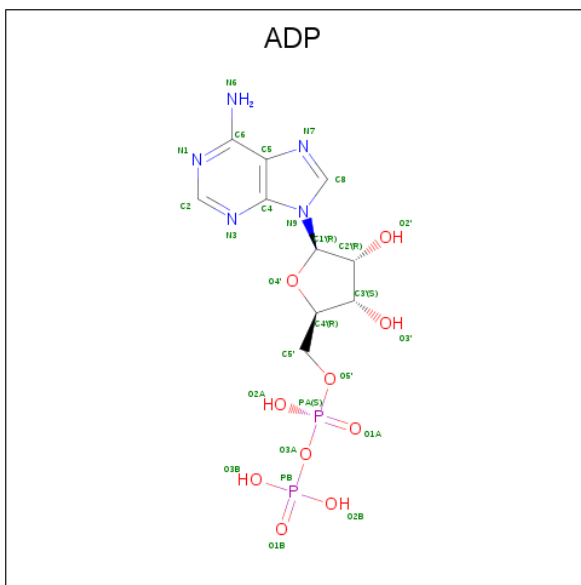
- Molecule 1 is a protein called Nuclear pore complex protein Nup214.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	420	Total 3274	C 2101	N 534	O 618	S 21	0	0	0
1	C	420	Total 3274	C 2101	N 534	O 618	S 21	0	0	0

- Molecule 2 is a protein called ATP-dependent RNA helicase DDX19B.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	229	Total 1807	C 1159	N 306	O 331	S 11	0	0	0
2	D	229	Total 1807	C 1159	N 306	O 331	S 11	0	0	0

- Molecule 3 is ADENOSINE-5'-DIPHOSPHATE (three-letter code: ADP) (formula:  $C_{10}H_{15}N_5O_{10}P_2$ ).

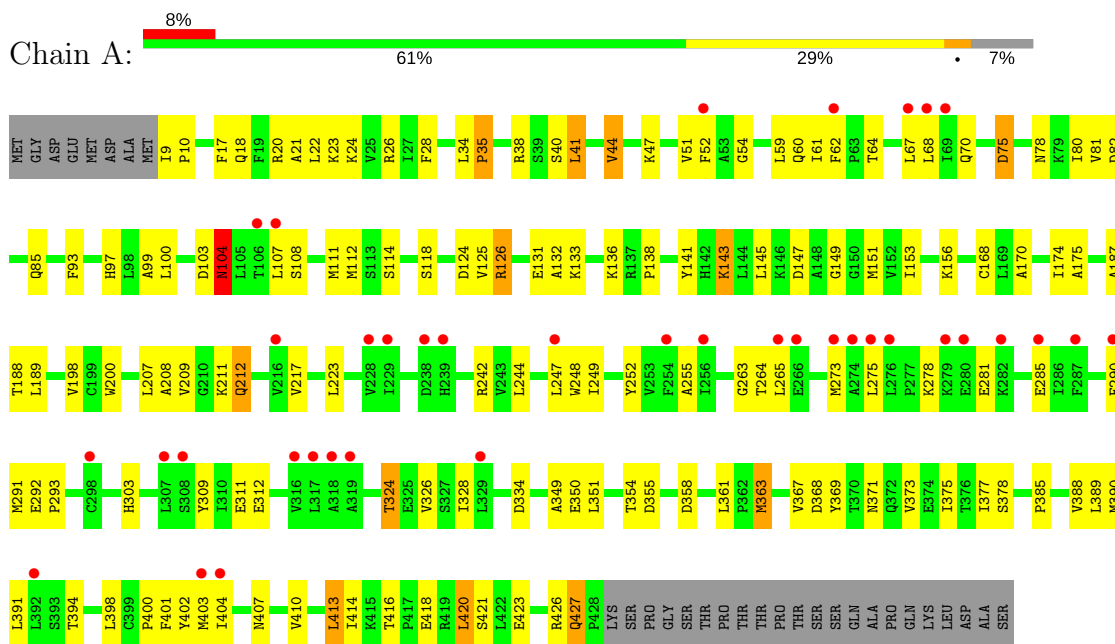


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	C	N	O	P		
3	B	1	27	10	5	10	2	0	0
3	D	1	27	10	5	10	2	0	0

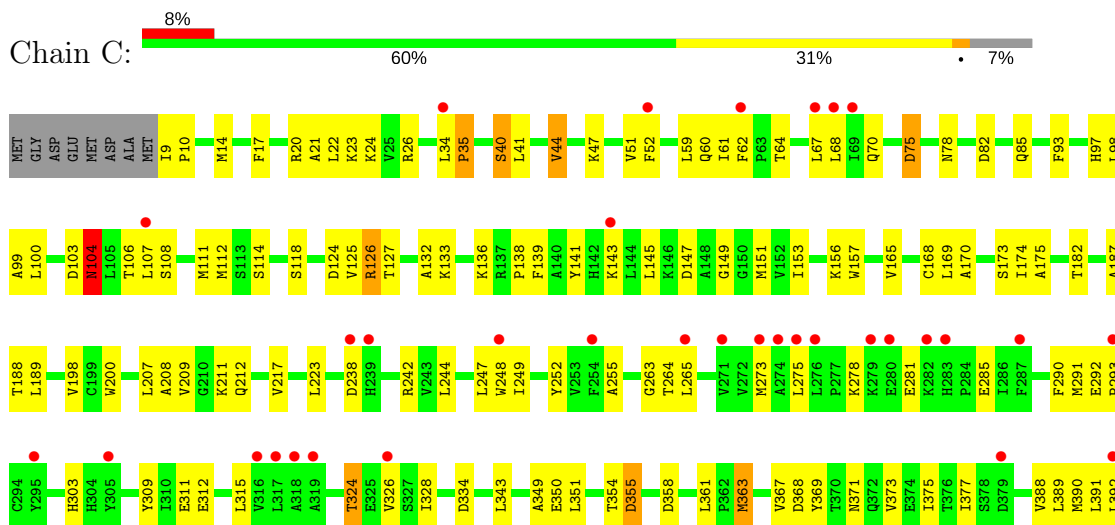
### 3 Residue-property plots i

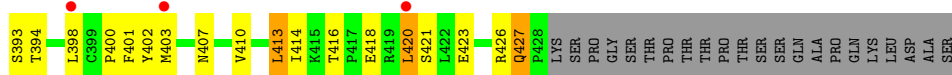
These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are 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: Nuclear pore complex protein Nup214

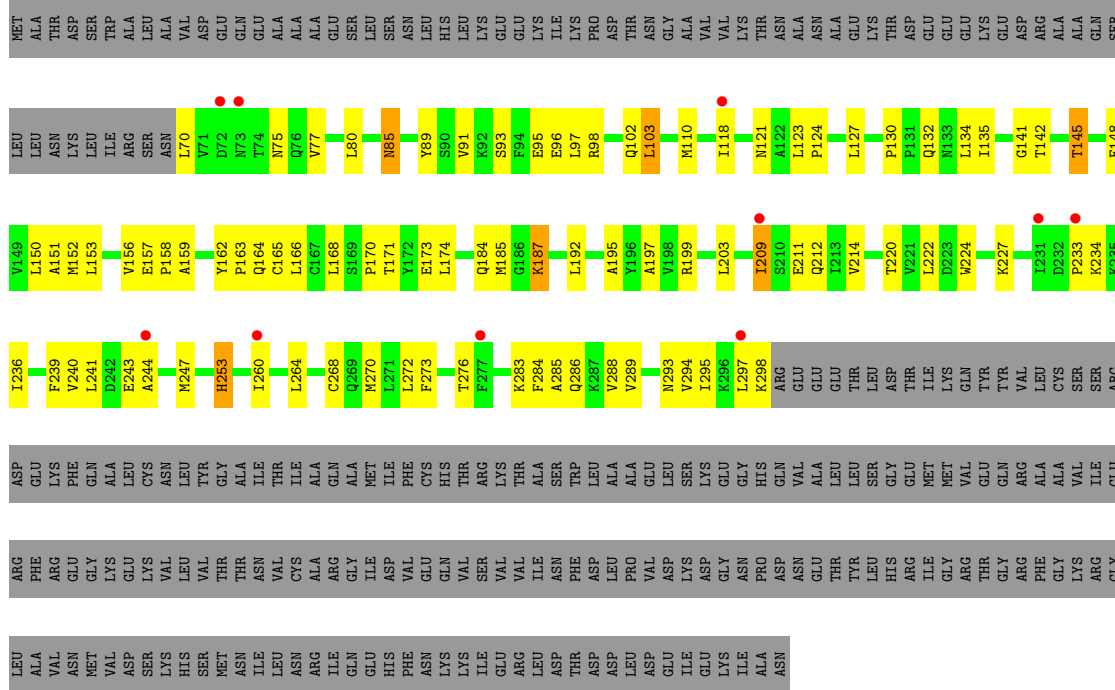
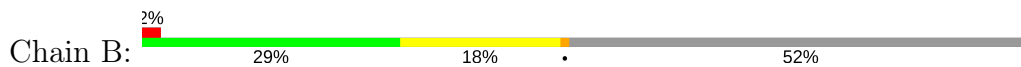


- Molecule 1: Nuclear pore complex protein Nup214

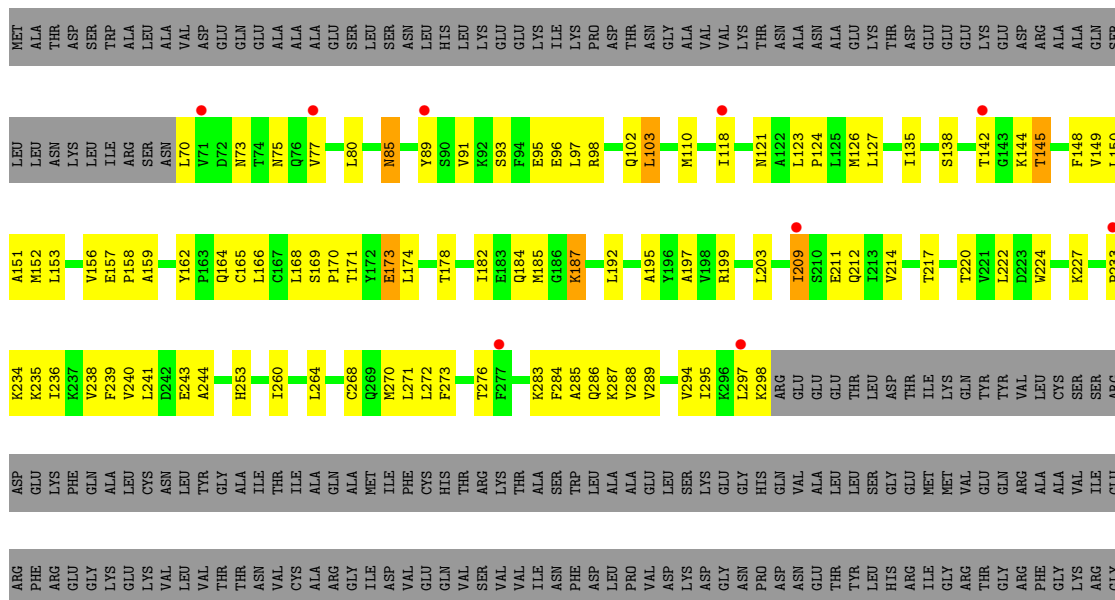
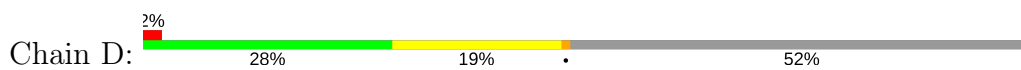




● Molecule 2: ATP-dependent RNA helicase DDX19B



● Molecule 2: ATP-dependent RNA helicase DDX19B



LEU  
ALA  
VAL  
ASN  
MET  
VAL  
ASP  
SER  
LYS  
HIS  
SER  
MET  
ASN  
ILE  
LEU  
ASN  
ARG  
ILE  
GLN  
GLU  
HIS  
PHE  
ASN  
LYS  
LYS  
ILE  
GLU  
ARG  
LEU  
ASP  
THR  
ASP  
ASP  
LEU  
ASP  
GLU  
ILE  
GLU  
LYS  
ILE  
ALA  
ASN

## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	61.37Å 112.92Å 142.57Å 90.00° 89.86° 90.00°	Depositor
Resolution (Å)	50.00 – 3.19 47.52 – 3.19	Depositor EDS
% Data completeness (in resolution range)	90.7 (50.00-3.19) 90.7 (47.52-3.19)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.11	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.52 (at 3.19Å)	Xtrriage
Refinement program	REFMAC 5.2.0019	Depositor
R, $R_{free}$	0.249 , 0.283 0.250 , 0.276	Depositor DCC
$R_{free}$ test set	1504 reflections (5.08%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	92.2	Xtrriage
Anisotropy	0.210	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 84.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	0.429 for h,-k,-l	Xtrriage
$F_o, F_c$ correlation	0.91	EDS
Total number of atoms	10216	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	86.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.74% 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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: ADP

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	0.65	0/3351	0.74	0/4562
1	C	0.65	0/3351	0.75	0/4562
2	B	0.54	0/1842	0.68	0/2493
2	D	0.55	0/1842	0.69	0/2493
All	All	0.62	0/10386	0.72	0/14110

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3274	0	3301	120	0
1	C	3274	0	3301	122	0
2	B	1807	0	1868	81	0
2	D	1807	0	1868	86	0
3	B	27	0	12	4	0
3	D	27	0	12	3	0
All	All	10216	0	10362	405	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 20.

All (405) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:369:TYR:CE1	1:A:413:LEU:HD22	1.99	0.98
1:C:369:TYR:CE1	1:C:413:LEU:HD22	2.04	0.92
2:B:239:PHE:CE2	2:B:241:LEU:HD11	2.07	0.90
1:A:52:PHE:CD1	1:A:107:LEU:HD13	2.07	0.89
1:A:44:VAL:HG23	1:A:51:VAL:HG22	1.56	0.87
2:D:239:PHE:CE2	2:D:241:LEU:HD11	2.09	0.87
2:B:98:ARG:HH22	1:C:145:LEU:HD13	1.42	0.84
1:C:52:PHE:CD1	1:C:107:LEU:HD13	2.11	0.84
1:C:44:VAL:HG23	1:C:51:VAL:HG22	1.58	0.83
1:C:112:MET:HE3	1:C:151:MET:HG2	1.60	0.83
1:C:99:ALA:HB3	1:C:108:SER:OG	1.79	0.82
1:C:407:ASN:O	1:C:410:VAL:HG22	1.83	0.79
1:A:407:ASN:O	1:A:410:VAL:HG22	1.82	0.79
1:C:390:MET:HE2	1:C:398:LEU:HD21	1.67	0.75
1:A:369:TYR:CD1	1:A:413:LEU:HD22	2.22	0.73
1:C:34:LEU:HD12	1:C:35:PRO:HD2	1.71	0.73
1:A:112:MET:HE3	1:A:151:MET:HG2	1.71	0.73
2:B:98:ARG:NH2	1:C:145:LEU:HD13	2.04	0.73
2:B:268:CYS:SG	2:B:270:MET:CE	2.77	0.73
1:A:34:LEU:HD12	1:A:35:PRO:HD2	1.71	0.72
1:A:255:ALA:HA	1:A:273:MET:HE2	1.69	0.72
1:C:255:ALA:HA	1:C:273:MET:HE2	1.72	0.71
1:A:390:MET:HE2	1:A:398:LEU:HD21	1.72	0.71
1:C:369:TYR:CD1	1:C:413:LEU:HD22	2.27	0.70
1:C:21:ALA:HB2	1:C:401:PHE:CD2	2.27	0.69
1:A:99:ALA:HB3	1:A:108:SER:OG	1.93	0.69
1:C:125:VAL:HG12	1:C:420:LEU:HD21	1.75	0.68
1:A:125:VAL:HG12	1:A:420:LEU:HD21	1.75	0.68
1:A:212:GLN:HE21	1:A:242:ARG:HD2	1.58	0.68
1:A:125:VAL:HG12	1:A:420:LEU:CD2	2.25	0.67
1:A:40:SER:O	1:A:41:LEU:HD23	1.94	0.67
1:C:153:ILE:HG21	1:C:170:ALA:HA	1.77	0.67
1:C:112:MET:CE	1:C:151:MET:HG2	2.25	0.66
2:D:268:CYS:SG	2:D:270:MET:CE	2.83	0.66
1:C:153:ILE:HG23	1:C:170:ALA:N	2.10	0.66
2:D:91:VAL:HG23	2:D:124:PRO:HG3	1.78	0.65
1:A:100:LEU:HD23	1:A:104:ASN:ND2	2.12	0.65
2:B:239:PHE:CZ	2:B:241:LEU:HD11	2.31	0.64
1:A:149:GLY:O	1:A:170:ALA:HB3	1.97	0.64
2:B:91:VAL:HG23	2:B:124:PRO:HG3	1.80	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:112:MET:CE	1:A:151:MET:HG2	2.27	0.64
2:D:145:THR:HA	2:D:148:PHE:CE2	2.33	0.64
1:C:125:VAL:HG12	1:C:420:LEU:CD2	2.28	0.64
2:B:145:THR:HA	2:B:148:PHE:CE2	2.32	0.63
2:D:239:PHE:CZ	2:D:241:LEU:HD11	2.32	0.63
1:C:22:LEU:HD22	1:C:400:PRO:HB2	1.80	0.63
2:B:141:GLY:HA2	3:B:480:ADP:H5'1	1.80	0.63
1:A:20:ARG:NH1	1:A:377:ILE:HD12	2.14	0.63
2:B:168:LEU:HD11	2:B:260:ILE:HD12	1.80	0.63
1:A:153:ILE:HG21	1:A:170:ALA:HA	1.80	0.62
1:A:60:GLN:C	1:A:61:ILE:HD12	2.19	0.62
1:A:93:PHE:O	1:A:111:MET:HE3	1.99	0.62
1:C:211:LYS:NZ	1:C:217:VAL:HG21	2.15	0.62
2:D:233:PRO:HA	2:D:236:ILE:HD13	1.81	0.62
2:B:233:PRO:HA	2:B:236:ILE:HD13	1.82	0.61
2:B:91:VAL:HG13	2:B:96:GLU:OE1	2.00	0.61
2:B:135:ILE:HD13	2:B:285:ALA:HB1	1.83	0.61
2:B:103:LEU:HD21	2:B:150:LEU:HD23	1.83	0.61
1:C:93:PHE:O	1:C:111:MET:HE3	2.01	0.61
1:C:60:GLN:C	1:C:61:ILE:HD12	2.21	0.60
2:B:244:ALA:CB	2:B:272:LEU:HD21	2.31	0.60
2:D:135:ILE:HD13	2:D:285:ALA:HB1	1.82	0.60
2:D:91:VAL:HG13	2:D:96:GLU:OE1	2.02	0.60
2:B:158:PRO:HA	2:B:212:GLN:HE21	1.67	0.60
2:B:103:LEU:O	2:B:103:LEU:HD12	2.01	0.59
1:A:21:ALA:HB2	1:A:401:PHE:CD2	2.38	0.59
2:D:171:THR:OG1	2:D:174:LEU:HD13	2.02	0.59
2:B:195:ALA:HB3	2:B:214:VAL:HG22	1.84	0.59
1:A:20:ARG:NH1	1:A:377:ILE:CD1	2.66	0.59
2:D:158:PRO:HA	2:D:212:GLN:HE21	1.68	0.59
1:A:22:LEU:N	1:A:22:LEU:HD12	2.18	0.58
2:D:184:GLN:O	2:D:187:LYS:HB2	2.03	0.58
1:C:156:LYS:HD2	1:C:198:VAL:HG12	1.85	0.58
1:A:24:LYS:HZ1	1:A:78:ASN:HA	1.68	0.58
1:C:68:LEU:HD21	1:C:388:VAL:HG11	1.85	0.58
1:C:9:ILE:N	1:C:10:PRO:CD	2.67	0.58
1:A:23:LYS:HZ1	1:A:75:ASP:HB3	1.69	0.58
1:A:391:LEU:O	1:A:398:LEU:HA	2.04	0.58
2:D:168:LEU:HD11	2:D:260:ILE:HD12	1.86	0.58
2:D:103:LEU:O	2:D:103:LEU:HD12	2.04	0.57
2:D:209:ILE:HG23	2:D:211:GLU:OE1	2.02	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:239:PHE:CE2	2:B:241:LEU:CD1	2.85	0.57
2:D:103:LEU:HD21	2:D:150:LEU:HD23	1.84	0.57
1:A:153:ILE:HG23	1:A:170:ALA:N	2.19	0.57
1:C:21:ALA:HB2	1:C:401:PHE:CE2	2.39	0.57
2:B:171:THR:OG1	2:B:174:LEU:HD13	2.04	0.57
2:D:192:LEU:HA	2:D:212:GLN:HE22	1.68	0.57
2:B:152:MET:O	2:B:156:VAL:HG23	2.05	0.57
1:A:112:MET:HE2	1:A:118:SER:HB3	1.87	0.57
2:B:97:LEU:C	2:B:98:ARG:HG3	2.26	0.56
1:C:64:THR:HG21	1:C:368:ASP:OD1	2.05	0.56
1:C:61:ILE:N	1:C:61:ILE:HD12	2.20	0.56
2:D:244:ALA:CB	2:D:272:LEU:HD21	2.35	0.56
2:D:272:LEU:HD23	2:D:273:PHE:N	2.21	0.56
2:D:152:MET:HE2	2:D:165:CYS:HB3	1.86	0.56
1:A:9:ILE:N	1:A:10:PRO:CD	2.69	0.56
2:D:244:ALA:HB2	2:D:272:LEU:HD21	1.88	0.56
2:B:244:ALA:HB2	2:B:272:LEU:HD21	1.88	0.55
2:D:95:GLU:OE1	2:D:95:GLU:N	2.32	0.55
2:D:152:MET:O	2:D:156:VAL:HG23	2.05	0.55
1:A:427:GLN:N	1:A:427:GLN:HE21	2.04	0.55
1:A:64:THR:HG21	1:A:368:ASP:OD1	2.05	0.55
2:B:268:CYS:SG	2:B:270:MET:HE1	2.46	0.55
1:C:138:PRO:HG2	1:C:141:TYR:CZ	2.42	0.55
1:A:61:ILE:N	1:A:61:ILE:HD12	2.20	0.55
2:B:118:ILE:HB	2:B:142:THR:HG22	1.89	0.55
2:B:184:GLN:O	2:B:187:LYS:HB2	2.06	0.55
2:D:152:MET:CE	2:D:165:CYS:HB3	2.37	0.55
1:A:390:MET:CE	1:A:398:LEU:HD21	2.38	0.54
1:C:103:ASP:OD1	1:C:104:ASN:N	2.40	0.54
1:A:112:MET:CE	1:A:118:SER:HB3	2.37	0.54
1:C:208:ALA:HB2	1:C:248:TRP:CE3	2.43	0.54
1:A:212:GLN:NE2	1:A:242:ARG:HD2	2.22	0.54
1:A:249:ILE:HG23	1:A:309:TYR:CD2	2.43	0.54
2:B:95:GLU:OE1	2:B:95:GLU:N	2.37	0.54
2:D:70:LEU:HD11	3:D:480:ADP:C5	2.42	0.54
1:A:10:PRO:HD2	1:A:290:PHE:CE2	2.43	0.54
2:B:91:VAL:HG21	2:B:97:LEU:HD21	1.90	0.54
2:D:97:LEU:C	2:D:98:ARG:HG3	2.28	0.54
1:A:200:TRP:CD2	1:A:207:LEU:HD13	2.43	0.53
1:C:200:TRP:CD2	1:C:207:LEU:HD13	2.43	0.53
1:A:131:GLU:O	1:A:133:LYS:N	2.42	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:249:ILE:HG23	1:C:309:TYR:CD2	2.43	0.53
1:C:174:ILE:CG2	1:C:189:LEU:HB2	2.39	0.53
1:A:208:ALA:HB2	1:A:248:TRP:CE3	2.44	0.53
1:A:103:ASP:OD1	1:A:104:ASN:N	2.42	0.52
2:D:270:MET:HB2	2:D:289:VAL:HG13	1.91	0.52
1:C:391:LEU:O	1:C:398:LEU:HA	2.10	0.52
2:D:239:PHE:CE2	2:D:241:LEU:CD1	2.90	0.52
2:D:118:ILE:HB	2:D:142:THR:HG22	1.91	0.52
2:D:195:ALA:HB3	2:D:214:VAL:HG22	1.91	0.52
1:C:153:ILE:CG2	1:C:170:ALA:HA	2.40	0.52
2:B:130:PRO:HD3	1:C:187:ALA:HB2	1.92	0.52
2:B:192:LEU:HA	2:B:212:GLN:HE22	1.73	0.52
1:A:52:PHE:CG	1:A:107:LEU:HD13	2.45	0.51
1:A:133:LYS:O	1:A:136:LYS:HD3	2.09	0.51
1:C:212:GLN:HE21	1:C:242:ARG:HD2	1.76	0.51
2:B:239:PHE:HB3	2:B:270:MET:HE2	1.91	0.51
1:C:22:LEU:HD12	1:C:22:LEU:N	2.25	0.51
2:D:197:ALA:HA	2:D:224:TRP:CZ2	2.45	0.51
2:D:240:VAL:O	2:D:241:LEU:HD12	2.10	0.51
2:B:80:LEU:HB2	2:B:294:VAL:HB	1.93	0.51
1:C:208:ALA:HB2	1:C:248:TRP:CZ3	2.46	0.51
1:C:187:ALA:HB1	1:C:223:LEU:HD12	1.93	0.51
1:C:124:ASP:OD2	1:C:126:ARG:NH1	2.43	0.51
1:C:124:ASP:OD1	1:C:126:ARG:N	2.44	0.51
1:C:9:ILE:N	1:C:10:PRO:HD2	2.25	0.51
1:A:138:PRO:HG2	1:A:141:TYR:CZ	2.46	0.51
1:C:10:PRO:HD2	1:C:290:PHE:CE2	2.46	0.51
1:A:187:ALA:HB1	1:A:223:LEU:HD12	1.92	0.50
2:B:156:VAL:HG22	2:B:165:CYS:SG	2.51	0.50
1:C:363:MET:HA	1:C:363:MET:HE3	1.93	0.50
2:D:268:CYS:SG	2:D:270:MET:HE1	2.51	0.50
1:A:108:SER:O	1:A:108:SER:OG	2.12	0.50
1:A:208:ALA:HB2	1:A:248:TRP:CZ3	2.46	0.50
2:B:197:ALA:HA	2:B:224:TRP:CZ2	2.47	0.50
2:B:75:ASN:HB2	2:B:298:LYS:O	2.11	0.50
2:D:91:VAL:HG21	2:D:97:LEU:HD21	1.92	0.50
1:C:291:MET:O	1:C:292:GLU:C	2.49	0.50
1:A:40:SER:O	1:A:97:HIS:HA	2.11	0.50
1:C:326:VAL:HB	1:C:349:ALA:HB3	1.92	0.50
2:D:80:LEU:HB2	2:D:294:VAL:HB	1.93	0.50
1:A:100:LEU:CD2	1:A:104:ASN:ND2	2.74	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:363:MET:SD	1:C:394:THR:HG22	2.52	0.50
2:D:91:VAL:CG1	2:D:96:GLU:OE1	2.60	0.50
1:C:263:GLY:O	1:C:265:LEU:N	2.44	0.50
2:B:123:LEU:HB3	2:B:127:LEU:HD12	1.93	0.50
1:A:124:ASP:OD1	1:A:126:ARG:N	2.42	0.49
1:A:47:LYS:HG3	1:A:418:GLU:OE2	2.12	0.49
1:C:98:LEU:HD22	1:C:107:LEU:HD11	1.94	0.49
2:B:134:LEU:HD12	2:B:293:ASN:O	2.12	0.49
1:C:100:LEU:HD23	1:C:104:ASN:ND2	2.27	0.49
1:A:211:LYS:NZ	1:A:217:VAL:HG21	2.27	0.49
1:C:351:LEU:HD13	1:C:361:LEU:HA	1.93	0.49
1:C:61:ILE:N	1:C:61:ILE:CD1	2.76	0.49
2:D:284:PHE:CE1	2:D:288:VAL:HG21	2.48	0.49
1:C:23:LYS:HZ1	1:C:75:ASP:HB3	1.77	0.49
2:D:156:VAL:HG22	2:D:165:CYS:SG	2.52	0.49
2:B:91:VAL:CG1	2:B:96:GLU:OE1	2.61	0.49
1:A:59:LEU:HD12	1:A:60:GLN:H	1.77	0.49
2:B:152:MET:CE	2:B:165:CYS:HB3	2.42	0.49
2:D:173:GLU:O	2:D:174:LEU:HD12	2.13	0.49
1:A:9:ILE:N	1:A:10:PRO:HD2	2.27	0.48
2:B:70:LEU:HD11	3:B:480:ADP:C5	2.48	0.48
2:B:297:LEU:HD12	2:B:298:LYS:N	2.29	0.48
2:B:209:ILE:HG23	2:B:211:GLU:OE1	2.13	0.48
2:B:241:LEU:HD21	2:B:288:VAL:HG11	1.95	0.48
1:C:17:PHE:CE1	1:C:328:ILE:HD11	2.49	0.48
1:A:59:LEU:HD21	1:A:107:LEU:CD2	2.43	0.48
1:A:174:ILE:CG2	1:A:189:LEU:HB2	2.43	0.48
2:D:268:CYS:O	2:D:270:MET:HE3	2.13	0.48
1:A:326:VAL:HB	1:A:349:ALA:HB3	1.95	0.48
1:A:61:ILE:CD1	1:A:61:ILE:N	2.76	0.48
2:B:152:MET:HE2	2:B:165:CYS:HB3	1.95	0.48
1:C:133:LYS:O	1:C:136:LYS:HD3	2.13	0.48
2:B:272:LEU:HD23	2:B:273:PHE:N	2.28	0.48
1:C:20:ARG:NH1	1:C:377:ILE:HD12	2.28	0.48
1:C:309:TYR:CE2	1:C:311:GLU:HA	2.49	0.48
1:A:263:GLY:O	1:A:265:LEU:N	2.47	0.48
1:A:363:MET:HA	1:A:363:MET:HE3	1.95	0.48
1:C:21:ALA:HA	1:C:401:PHE:HA	1.95	0.48
2:D:75:ASN:HB2	2:D:298:LYS:O	2.14	0.48
1:C:209:VAL:O	1:C:209:VAL:CG2	2.62	0.47
1:C:24:LYS:HZ1	1:C:78:ASN:HA	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:239:PHE:HB3	2:D:270:MET:HE2	1.95	0.47
2:B:283:LYS:HA	2:B:286:GLN:HE21	1.79	0.47
2:B:272:LEU:HB2	2:B:289:VAL:HG21	1.97	0.47
2:D:123:LEU:HB3	2:D:127:LEU:HD12	1.94	0.47
2:D:241:LEU:HD21	2:D:288:VAL:HG11	1.96	0.47
1:C:24:LYS:NZ	1:C:78:ASN:HD22	2.12	0.47
1:A:351:LEU:HD13	1:A:361:LEU:HA	1.95	0.47
1:A:52:PHE:CD1	1:A:107:LEU:CD1	2.91	0.47
1:C:174:ILE:HG23	1:C:189:LEU:HB2	1.97	0.47
1:C:209:VAL:O	1:C:209:VAL:HG23	2.14	0.47
1:C:52:PHE:O	1:C:98:LEU:HD13	2.14	0.47
2:B:239:PHE:CG	2:B:264:LEU:HD11	2.49	0.47
1:C:108:SER:OG	1:C:108:SER:O	2.25	0.47
1:A:363:MET:SD	1:A:394:THR:HG22	2.54	0.47
2:D:283:LYS:HA	2:D:286:GLN:HE21	1.80	0.47
2:D:241:LEU:CD2	2:D:288:VAL:HG11	2.45	0.47
1:A:354:THR:N	1:A:358:ASP:O	2.39	0.47
1:C:52:PHE:CG	1:C:107:LEU:HD13	2.47	0.47
2:D:192:LEU:HA	2:D:212:GLN:NE2	2.29	0.47
2:B:70:LEU:HD21	3:B:480:ADP:C8	2.50	0.47
1:C:59:LEU:HD12	1:C:60:GLN:H	1.79	0.47
1:A:375:ILE:HG12	1:A:402:TYR:CD2	2.50	0.47
2:B:157:GLU:OE2	2:B:159:ALA:HB3	2.15	0.47
2:B:284:PHE:CE1	2:B:288:VAL:HG21	2.50	0.47
1:C:211:LYS:HZ1	1:C:217:VAL:HG21	1.78	0.47
2:D:138:SER:OG	2:D:144:LYS:HD2	2.14	0.47
1:A:17:PHE:CE1	1:A:328:ILE:HD11	2.50	0.46
2:B:135:ILE:CD1	2:B:285:ALA:HB1	2.45	0.46
1:C:59:LEU:HD21	1:C:107:LEU:CD2	2.45	0.46
2:D:297:LEU:HD12	2:D:298:LYS:N	2.30	0.46
1:C:175:ALA:CB	1:C:188:THR:HG22	2.46	0.46
2:D:85:ASN:N	2:D:85:ASN:ND2	2.63	0.46
1:A:124:ASP:OD2	1:A:126:ARG:NH1	2.48	0.46
1:A:200:TRP:CH2	1:A:207:LEU:HD22	2.50	0.46
1:A:209:VAL:HG23	1:A:209:VAL:O	2.14	0.46
1:C:24:LYS:CE	1:C:78:ASN:HA	2.46	0.46
2:D:148:PHE:O	2:D:151:ALA:HB3	2.16	0.46
2:D:222:LEU:HD12	2:D:222:LEU:O	2.16	0.46
1:A:156:LYS:HD2	1:A:198:VAL:HG12	1.98	0.46
1:C:200:TRP:CH2	1:C:207:LEU:HD22	2.50	0.46
1:C:244:LEU:HD21	1:C:303:HIS:HB2	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:367:VAL:HG22	1:C:403:MET:HE2	1.98	0.46
1:A:24:LYS:CE	1:A:78:ASN:HA	2.46	0.46
1:A:24:LYS:NZ	1:A:78:ASN:HD22	2.14	0.46
1:A:67:LEU:C	1:A:68:LEU:HD12	2.36	0.46
2:B:91:VAL:HG12	2:B:93:SER:O	2.16	0.46
1:C:51:VAL:HG23	1:C:64:THR:OG1	2.16	0.46
1:C:62:PHE:HB2	1:C:67:LEU:HD11	1.97	0.46
2:B:239:PHE:CD1	2:B:264:LEU:HD11	2.51	0.46
1:C:20:ARG:NH1	1:C:377:ILE:CD1	2.79	0.46
1:A:209:VAL:O	1:A:209:VAL:CG2	2.64	0.46
1:A:22:LEU:HD22	1:A:400:PRO:HB2	1.97	0.46
1:A:70:GLN:CG	1:A:402:TYR:OH	2.64	0.46
2:B:123:LEU:N	2:B:124:PRO:CD	2.79	0.46
2:B:268:CYS:SG	2:B:270:MET:HE2	2.55	0.46
1:A:291:MET:O	1:A:292:GLU:C	2.54	0.45
2:B:75:ASN:HB3	2:B:298:LYS:HB2	1.98	0.45
1:C:138:PRO:HG2	1:C:141:TYR:CE2	2.51	0.45
1:C:375:ILE:HG12	1:C:402:TYR:CD2	2.50	0.45
1:C:40:SER:O	1:C:41:LEU:HD23	2.16	0.45
1:A:104:ASN:HD22	1:A:104:ASN:HA	1.53	0.45
1:C:112:MET:CE	1:C:118:SER:HB3	2.45	0.45
1:A:62:PHE:HB2	1:A:67:LEU:HD11	1.97	0.45
2:B:192:LEU:HA	2:B:212:GLN:NE2	2.32	0.45
2:B:85:ASN:N	2:B:85:ASN:ND2	2.64	0.45
1:C:23:LYS:HG2	1:C:23:LYS:HZ2	1.70	0.45
1:C:75:ASP:OD1	1:C:75:ASP:N	2.48	0.45
2:D:121:ASN:O	2:D:124:PRO:HD2	2.17	0.45
2:D:85:ASN:HD22	2:D:85:ASN:H	1.65	0.45
1:A:75:ASP:OD1	1:A:75:ASP:N	2.49	0.45
2:B:110:MET:SD	2:B:185:MET:HE3	2.57	0.45
1:C:324:THR:O	1:C:350:GLU:HA	2.16	0.45
1:A:64:THR:HG21	1:A:368:ASP:CG	2.37	0.45
1:A:68:LEU:HD21	1:A:388:VAL:HG11	1.98	0.45
1:A:28:PHE:CZ	1:A:54:GLY:O	2.70	0.45
1:C:312:GLU:CD	1:C:312:GLU:H	2.20	0.45
1:C:361:LEU:O	1:C:393:SER:HA	2.17	0.45
2:D:77:VAL:CG1	2:D:295:ILE:HG23	2.47	0.45
1:A:100:LEU:HD23	1:A:104:ASN:HD21	1.81	0.44
1:A:371:ASN:O	1:A:414:ILE:HD12	2.16	0.44
1:A:153:ILE:CG2	1:A:170:ALA:HA	2.44	0.44
2:B:148:PHE:O	2:B:151:ALA:HB3	2.17	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:270:MET:HB2	2:B:289:VAL:HG13	1.98	0.44
2:D:240:VAL:C	2:D:241:LEU:HD12	2.37	0.44
2:D:148:PHE:O	2:D:149:VAL:C	2.56	0.44
1:A:367:VAL:HG22	1:A:403:MET:HE2	2.00	0.44
1:A:21:ALA:HB2	1:A:401:PHE:CE2	2.52	0.44
1:C:106:THR:O	1:C:106:THR:HG22	2.18	0.44
1:C:212:GLN:NE2	1:C:242:ARG:HD2	2.31	0.44
2:B:240:VAL:O	2:B:241:LEU:HD12	2.17	0.44
2:B:268:CYS:O	2:B:270:MET:HE3	2.18	0.44
1:C:157:TRP:HA	1:C:165:VAL:HG23	2.00	0.44
2:D:123:LEU:N	2:D:124:PRO:CD	2.80	0.44
2:D:70:LEU:HD11	3:D:480:ADP:C6	2.53	0.44
1:C:427:GLN:N	1:C:427:GLN:HE21	2.15	0.44
1:A:426:ARG:C	1:A:427:GLN:HE21	2.21	0.44
1:C:40:SER:O	1:C:97:HIS:HA	2.17	0.44
1:A:10:PRO:HD2	1:A:290:PHE:CZ	2.53	0.43
1:C:26:ARG:HB3	1:C:82:ASP:O	2.18	0.43
2:D:150:LEU:O	2:D:151:ALA:C	2.56	0.43
2:D:75:ASN:HB3	2:D:298:LYS:HB2	1.98	0.43
1:A:175:ALA:HB1	1:A:188:THR:HG22	2.00	0.43
2:B:153:LEU:HD11	2:B:185:MET:HB3	2.00	0.43
2:B:222:LEU:HD12	2:B:222:LEU:O	2.17	0.43
1:C:24:LYS:HZ3	1:C:78:ASN:HD22	1.65	0.43
1:A:312:GLU:CD	1:A:312:GLU:H	2.21	0.43
2:B:203:LEU:CD1	2:B:209:ILE:HD11	2.48	0.43
1:C:326:VAL:HG21	1:C:389:LEU:HD21	2.00	0.43
1:C:47:LYS:HG3	1:C:418:GLU:OE2	2.19	0.43
1:A:59:LEU:HD21	1:A:107:LEU:HD21	2.01	0.43
1:A:175:ALA:CB	1:A:188:THR:HG22	2.49	0.43
1:A:22:LEU:N	1:A:22:LEU:CD1	2.81	0.43
2:B:85:ASN:H	2:B:85:ASN:HD22	1.65	0.43
1:C:149:GLY:O	1:C:170:ALA:HB3	2.17	0.43
2:D:203:LEU:CD1	2:D:209:ILE:HD11	2.47	0.43
2:D:170:PRO:HG3	2:D:243:GLU:HB2	2.01	0.43
1:A:285:GLU:N	1:A:285:GLU:OE1	2.51	0.43
2:B:132:GLN:HB3	2:B:293:ASN:HD21	1.83	0.43
1:A:59:LEU:HD12	1:A:60:GLN:N	2.33	0.43
1:C:10:PRO:HD2	1:C:290:PHE:CZ	2.53	0.43
1:C:175:ALA:HB1	1:C:188:THR:HG22	2.01	0.43
2:D:178:THR:O	2:D:182:ILE:HG13	2.19	0.43
2:D:272:LEU:HB2	2:D:289:VAL:HG21	2.00	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:21:ALA:HA	1:A:401:PHE:HA	2.00	0.43
1:A:309:TYR:CE2	1:A:311:GLU:HA	2.54	0.43
1:A:326:VAL:HG21	1:A:389:LEU:HD21	2.00	0.43
1:A:252:TYR:O	1:A:275:LEU:HD12	2.19	0.43
1:A:26:ARG:HB3	1:A:82:ASP:O	2.18	0.43
2:D:169:SER:O	2:D:217:THR:HG22	2.19	0.43
2:D:197:ALA:HB2	2:D:224:TRP:CE3	2.53	0.43
1:A:247:LEU:HB3	1:A:255:ALA:HB3	2.00	0.42
1:C:14:MET:HB3	1:C:343:LEU:HD23	2.01	0.42
1:C:189:LEU:HG	1:C:223:LEU:HD13	2.01	0.42
1:A:371:ASN:HD21	1:A:385:PRO:HB3	1.84	0.42
2:B:163:PRO:HD3	2:B:209:ILE:HG22	1.99	0.42
1:C:278:LYS:H	1:C:281:GLU:HB2	1.84	0.42
2:D:162:TYR:O	2:D:164:GLN:HG3	2.19	0.42
1:A:26:ARG:HB2	1:A:80:ILE:HG21	2.01	0.42
1:A:252:TYR:CE2	1:A:278:LYS:HG2	2.55	0.42
2:B:110:MET:SD	2:B:185:MET:CE	3.07	0.42
1:C:252:TYR:O	1:C:275:LEU:HD12	2.19	0.42
1:C:252:TYR:CE2	1:C:278:LYS:HG2	2.54	0.42
1:C:363:MET:HB2	1:C:392:LEU:HB3	2.02	0.42
2:D:103:LEU:HD12	2:D:103:LEU:C	2.39	0.42
2:D:239:PHE:CG	2:D:264:LEU:HD11	2.54	0.42
1:A:143:LYS:O	1:A:145:LEU:HG	2.19	0.42
2:B:241:LEU:CD2	2:B:288:VAL:HG11	2.49	0.42
1:C:309:TYR:CZ	1:C:311:GLU:HA	2.55	0.42
2:D:121:ASN:C	2:D:124:PRO:HD2	2.39	0.42
2:D:168:LEU:CD1	2:D:260:ILE:HD12	2.50	0.42
2:D:239:PHE:CD1	2:D:264:LEU:HD11	2.54	0.42
1:A:35:PRO:HD2	1:A:394:THR:HB	2.00	0.42
1:C:354:THR:N	1:C:358:ASP:O	2.41	0.42
1:A:324:THR:O	1:A:350:GLU:HA	2.19	0.42
1:A:24:LYS:NZ	1:A:78:ASN:HA	2.32	0.42
2:B:197:ALA:HB2	2:B:224:TRP:CE3	2.55	0.42
1:C:375:ILE:HG12	1:C:402:TYR:CE2	2.55	0.42
2:D:91:VAL:HG12	2:D:93:SER:O	2.20	0.42
2:B:162:TYR:O	2:B:164:GLN:HG3	2.21	0.41
2:D:153:LEU:HD11	2:D:185:MET:HB3	2.03	0.41
1:A:131:GLU:C	1:A:133:LYS:H	2.22	0.41
1:A:278:LYS:H	1:A:281:GLU:HB2	1.85	0.41
1:A:244:LEU:HD21	1:A:303:HIS:HB2	2.02	0.41
1:A:375:ILE:HG12	1:A:402:TYR:CE2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:121:ASN:C	2:B:124:PRO:HD2	2.41	0.41
2:B:77:VAL:CG1	2:B:295:ILE:HG23	2.50	0.41
2:D:236:ILE:HG23	2:D:238:VAL:O	2.20	0.41
2:D:70:LEU:HD21	3:D:480:ADP:C8	2.55	0.41
1:A:18:GLN:HG2	1:A:404:ILE:HB	2.03	0.41
1:C:100:LEU:CD2	1:C:104:ASN:ND2	2.84	0.41
1:C:285:GLU:OE1	1:C:285:GLU:N	2.54	0.41
2:D:157:GLU:OE2	2:D:159:ALA:HB3	2.21	0.41
1:A:138:PRO:HG2	1:A:141:TYR:CE2	2.55	0.41
1:C:315:LEU:HD12	1:C:315:LEU:C	2.41	0.41
2:D:145:THR:HG23	2:D:148:PHE:CZ	2.55	0.41
2:D:73:ASN:OD1	2:D:297:LEU:HD11	2.20	0.41
2:D:238:VAL:HG12	2:D:239:PHE:N	2.35	0.41
2:D:135:ILE:CD1	2:D:285:ALA:HB1	2.49	0.41
2:B:141:GLY:HA2	3:B:480:ADP:C5'	2.47	0.41
1:C:70:GLN:CG	1:C:402:TYR:OH	2.68	0.41
2:B:220:THR:O	2:B:224:TRP:CD1	2.74	0.41
1:C:247:LEU:HB3	1:C:255:ALA:HB3	2.03	0.41
2:B:85:ASN:N	2:B:85:ASN:HD22	2.19	0.41
1:C:371:ASN:O	1:C:414:ILE:HD12	2.20	0.41
2:D:233:PRO:C	2:D:235:LYS:H	2.23	0.41
1:C:169:LEU:HD12	1:C:173:SER:OG	2.21	0.40
2:D:110:MET:SD	2:D:185:MET:HE3	2.62	0.40
2:B:103:LEU:C	2:B:103:LEU:HD12	2.39	0.40
1:C:367:VAL:HG11	1:C:369:TYR:CZ	2.56	0.40
1:C:68:LEU:CD2	1:C:388:VAL:HG11	2.50	0.40
2:D:126:MET:HG2	2:D:271:LEU:HD22	2.02	0.40
1:A:20:ARG:CZ	1:A:377:ILE:HD13	2.52	0.40
1:A:80:ILE:HG22	1:A:81:VAL:N	2.37	0.40
2:B:247:MET:HG3	2:B:253:HIS:HB3	2.03	0.40
1:C:211:LYS:HZ2	1:C:217:VAL:HG21	1.87	0.40
1:C:355:ASP:HA	2:D:287:LYS:NZ	2.36	0.40
1:C:139:PHE:CZ	1:C:426:ARG:NH2	2.90	0.40
1:C:59:LEU:HD12	1:C:60:GLN:N	2.36	0.40
1:A:371:ASN:ND2	1:A:385:PRO:HB3	2.37	0.40
2:B:170:PRO:HG3	2:B:243:GLU:HB2	2.02	0.40
2:D:220:THR:O	2:D:224:TRP:CD1	2.75	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	418/450 (93%)	371 (89%)	40 (10%)	7 (2%)	10	46
1	C	418/450 (93%)	372 (89%)	38 (9%)	8 (2%)	9	43
2	B	227/479 (47%)	206 (91%)	18 (8%)	3 (1%)	13	52
2	D	227/479 (47%)	205 (90%)	19 (8%)	3 (1%)	13	52
All	All	1290/1858 (69%)	1154 (90%)	115 (9%)	21 (2%)	11	47

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	104	ASN
1	A	132	ALA
1	A	264	THR
1	A	423	GLU
2	B	187	LYS
1	C	264	THR
1	C	423	GLU
2	D	187	LYS
1	C	104	ASN
1	C	132	ALA
1	C	147	ASP
1	C	238	ASP
1	A	147	ASP
2	B	227	LYS
2	B	234	LYS
2	D	227	LYS
2	D	234	LYS
1	A	293	PRO
1	C	293	PRO
1	C	35	PRO
1	A	35	PRO

### 5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	372/397 (94%)	350 (94%)	22 (6%)	21	59
1	C	372/397 (94%)	351 (94%)	21 (6%)	23	61
2	B	203/418 (49%)	192 (95%)	11 (5%)	24	62
2	D	203/418 (49%)	192 (95%)	11 (5%)	24	62
All	All	1150/1630 (71%)	1085 (94%)	65 (6%)	23	61

All (65) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	38	ARG
1	A	41	LEU
1	A	44	VAL
1	A	75	ASP
1	A	85	GLN
1	A	104	ASN
1	A	114	SER
1	A	126	ARG
1	A	143	LYS
1	A	168	CYS
1	A	212	GLN
1	A	324	THR
1	A	334	ASP
1	A	355	ASP
1	A	363	MET
1	A	373	VAL
1	A	378	SER
1	A	413	LEU
1	A	416	THR
1	A	420	LEU
1	A	421	SER
1	A	427	GLN
2	B	85	ASN
2	B	89	TYR

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Mol	Chain	Res	Type
2	B	102	GLN
2	B	103	LEU
2	B	145	THR
2	B	166	LEU
2	B	173	GLU
2	B	199	ARG
2	B	209	ILE
2	B	253	HIS
2	B	276	THR
1	C	40	SER
1	C	44	VAL
1	C	75	ASP
1	C	85	GLN
1	C	104	ASN
1	C	114	SER
1	C	126	ARG
1	C	127	THR
1	C	143	LYS
1	C	168	CYS
1	C	182	THR
1	C	324	THR
1	C	334	ASP
1	C	355	ASP
1	C	363	MET
1	C	373	VAL
1	C	413	LEU
1	C	416	THR
1	C	420	LEU
1	C	421	SER
1	C	427	GLN
2	D	85	ASN
2	D	89	TYR
2	D	102	GLN
2	D	103	LEU
2	D	145	THR
2	D	166	LEU
2	D	173	GLU
2	D	199	ARG
2	D	209	ILE
2	D	253	HIS
2	D	276	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such

sidechains are listed below:

Mol	Chain	Res	Type
1	A	60	GLN
1	A	71	ASN
1	A	78	ASN
1	A	212	GLN
1	A	218	GLN
1	A	427	GLN
2	B	81	GLN
2	B	85	ASN
2	B	286	GLN
1	C	60	GLN
1	C	71	ASN
1	C	78	ASN
1	C	212	GLN
1	C	218	GLN
1	C	427	GLN
2	D	81	GLN
2	D	85	ASN
2	D	286	GLN

### 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](#)

2 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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  $|Z| > 2$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z  > 2	Counts	RMSZ	# Z  > 2
3	ADP	B	480	-	25,29,29	0.90	1 (4%)	25,45,45	2.19	2 (8%)
3	ADP	D	480	-	25,29,29	0.84	1 (4%)	25,45,45	2.33	3 (12%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	ADP	B	480	-	-	0/12/32/32	0/3/3/3
3	ADP	D	480	-	-	0/12/32/32	0/3/3/3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	480	ADP	O4'-C1'	2.25	1.44	1.41
3	D	480	ADP	O4'-C1'	2.28	1.44	1.41

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	480	ADP	N3-C2-N1	-9.86	120.43	128.86
3	B	480	ADP	N3-C2-N1	-9.45	120.78	128.86
3	D	480	ADP	PA-O3A-PB	-3.18	121.95	132.63
3	B	480	ADP	PA-O3A-PB	-3.00	122.55	132.63
3	D	480	ADP	O3B-PB-O2B	2.04	115.68	107.59

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 7 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	480	ADP	4	0
3	D	480	ADP	3	0



## 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	420/450 (93%)	0.74	38 (9%) <b>9</b> <b>5</b>	83, 86, 88, 91	0
1	C	420/450 (93%)	0.69	36 (8%) <b>10</b> <b>6</b>	83, 86, 88, 91	0
2	B	229/479 (47%)	0.60	10 (4%) <b>34</b> <b>21</b>	84, 86, 88, 89	0
2	D	229/479 (47%)	0.61	9 (3%) <b>39</b> <b>26</b>	84, 86, 88, 89	0
All	All	1298/1858 (69%)	0.67	93 (7%) <b>15</b> <b>9</b>	83, 86, 88, 91	0

All (93) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	274	ALA	7.7
1	A	279	LYS	6.8
1	C	279	LYS	5.8
1	C	274	ALA	5.7
1	C	280	GLU	3.8
1	A	280	GLU	3.7
2	D	297	LEU	3.7
1	A	316	VAL	3.4
1	C	275	LEU	3.3
1	C	239	HIS	3.2
1	A	308	SER	3.1
1	A	275	LEU	3.1
1	A	239	HIS	3.0
1	C	68	LEU	3.0
1	A	276	LEU	3.0
1	A	318	ALA	3.0
1	C	287	PHE	2.9
1	A	68	LEU	2.9
1	A	287	PHE	2.9
1	A	67	LEU	2.9
1	A	238	ASP	2.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	B	244	ALA	2.8
2	D	142	THR	2.8
2	B	233	PRO	2.8
1	C	69	ILE	2.7
2	B	277	PHE	2.7
1	A	282	LYS	2.7
1	A	265	LEU	2.7
1	C	62	PHE	2.7
1	C	379	ASP	2.7
1	A	69	ILE	2.7
2	B	73	ASN	2.6
1	C	67	LEU	2.6
1	C	282	LYS	2.5
1	A	254	PHE	2.5
1	C	293	PRO	2.5
1	C	265	LEU	2.5
1	A	307	LEU	2.4
1	A	228	VAL	2.4
1	C	319	ALA	2.4
1	A	317	LEU	2.4
1	A	52	PHE	2.4
2	D	233	PRO	2.4
1	C	273	MET	2.3
1	A	290	PHE	2.3
1	C	276	LEU	2.3
2	D	277	PHE	2.3
1	C	305	TYR	2.3
2	B	118	ILE	2.3
1	C	254	PHE	2.3
2	D	118	ILE	2.3
1	C	316	VAL	2.3
1	C	107	LEU	2.3
1	A	404	ILE	2.3
1	C	283	HIS	2.3
1	A	298	CYS	2.3
2	D	89	TYR	2.3
1	A	273	MET	2.2
1	C	34	LEU	2.2
2	D	209	ILE	2.2
1	C	271	VAL	2.2
1	A	319	ALA	2.2
2	D	77	VAL	2.2

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Mol	Chain	Res	Type	RSRZ
1	C	318	ALA	2.2
2	D	71	VAL	2.2
2	B	297	LEU	2.2
1	A	403	MET	2.2
1	C	52	PHE	2.2
1	C	398	LEU	2.2
1	A	216	VAL	2.2
1	A	266	GLU	2.2
1	A	229	ILE	2.2
1	A	247	LEU	2.1
2	B	72	ASP	2.1
1	A	106	THR	2.1
1	A	392	LEU	2.1
1	C	317	LEU	2.1
1	C	238	ASP	2.1
1	C	295	TYR	2.1
1	C	392	LEU	2.1
2	B	231	ILE	2.1
1	C	326	VAL	2.1
1	A	256	ILE	2.1
1	C	420	LEU	2.1
2	B	260	ILE	2.1
1	A	62	PHE	2.0
1	A	107	LEU	2.0
1	C	403	MET	2.0
1	C	248	TRP	2.0
1	A	329	LEU	2.0
1	C	143	LYS	2.0
2	B	209	ILE	2.0
1	A	285	GLU	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](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å <sup>2</sup> )	Q<0.9
3	ADP	B	480	27/27	0.92	0.17	85,89,89,90	0
3	ADP	D	480	27/27	0.92	0.17	84,91,92,92	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.