



Full wwPDB X-ray Structure Validation Report ⓘ

Sep 12, 2018 – 09:40 PM EDT

PDB ID : 3BUO
Title : Crystal structure of c-Cbl-TKB domain complexed with its binding motif in EGF receptor'
Authors : Ng, C.; Jackson, R.A.; Buschdorf, J.P.; Sun, Q.; Guy, G.R.; Sivaraman, J.
Deposited on : 2008-01-03
Resolution : 2.60 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7.3 (157068), CSD as539be (2018)
Xtrriage (Phenix) : 1.13
EDS : rb-20031172
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) : rb-20031172

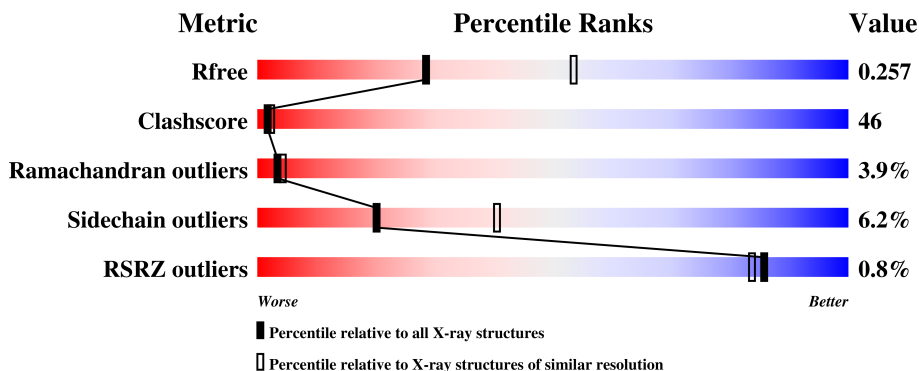
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 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	2767 (2.60-2.60)
Clashscore	122126	3110 (2.60-2.60)
Ramachandran outliers	120053	3062 (2.60-2.60)
Sidechain outliers	120020	3062 (2.60-2.60)
RSRZ outliers	108989	2706 (2.60-2.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. 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	13	15% (Poor fit) 38% (0 outliers), 23% (1 outlier), 23% (2 outliers), 15% (3+ outliers)
1	C	13	15% (Poor fit) 38% (0 outliers), 23% (1 outlier), 23% (2 outliers), 15% (3+ outliers)
2	B	329	38% (0 outliers), 48% (1 outlier), 6% (2 outliers), 8% (3+ outliers)
2	D	329	36% (0 outliers), 49% (1 outlier), 6% (2 outliers), 8% (3+ outliers)

2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 5405 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 13-meric peptide from Epidermal growth factor receptor.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
1	A	11	95	57	15	22	1	0	0	0
1	C	11	95	57	15	22	1	0	0	0

- Molecule 2 is a protein called E3 ubiquitin-protein ligase CBL.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	304	2490	1612	424	441	13	0	0	0
2	D	304	2490	1612	424	441	13	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	24	SER	GLY	CLONING ARTIFACT	UNP P22681
D	24	SER	GLY	CLONING ARTIFACT	UNP P22681

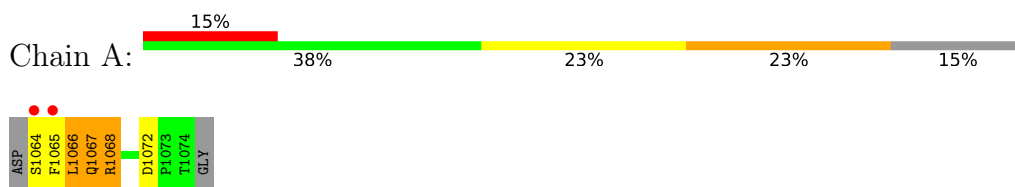
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	6	Total 6	O 6	0	0
3	B	111	Total 111	O 111	0	0
3	C	6	Total 6	O 6	0	0
3	D	112	Total 112	O 112	0	0

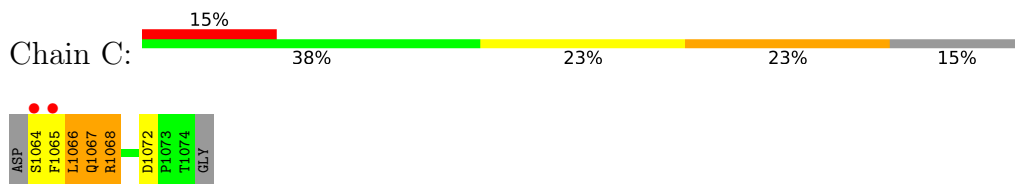
3 Residue-property plots

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

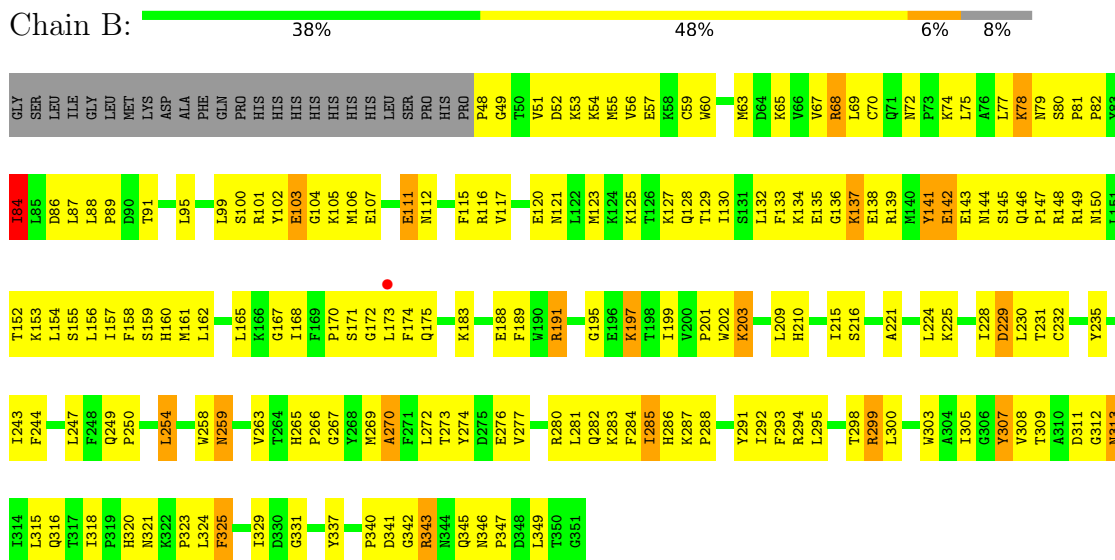
- Molecule 1: 13-meric peptide from Epidermal growth factor receptor



- Molecule 1: 13-meric peptide from Epidermal growth factor receptor



- Molecule 2: E3 ubiquitin-protein ligase CBL



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GLY	Y83	T152	B311	G312
SER	L84	K153	T243	G313
LEU	L85	L154	F244	I314
ILE	D86	S155	L247	L315
GLY	L87	L156	F248	Q316
LEU	L88	I157	Q249	T317
MET	P89	F158	P250	I318
LYS	D90	S159	L254	P319
ASP	T91	H160	L255	H320
ALA	H94	M161	R256	N321
PHE	L95	L162	W257	K322
GLN	L99	L165	W258	P323
PRO	S100	K166	M259	L324
HIS	S101	I168	V263	F325
HIS	R101	G167	T264	I329
HIS	Y102	F169	H265	D330
HIS	E103	P170	P266	G331
HIS	G104	S171	G267	Y337
HIS	K105	G172	Y268	L338
LEU	M106	L173	M269	F339
SER	E107	F174	A270	P340
SER	E111	Q175	F271	D341
PRO	N112	T182	L272	G342
PRO	F115	K183	T273	R343
P48	R116	E188	Y274	N344
G49	V117	F189	D275	Q345
T50	E120	W190	E276	N346
V51	N121	R191	V277	P347
D52	L122	G195	R280	D348
K53	M123	E196	L281	L349
K54	K127	K197	Q282	T350
M55	K58	T198	K283	G351
V56	C59	I199	F284	
E57	C59	W200	T285	
K58	Q128	P201	H286	
C59	T129	W202	K287	
W60	I130	K203	P288	
W60	S131	L209	Y291	
K61	L132	H210	L292	
L62	F133	L215	F293	
M63	K134	S216	R294	
D64	E135	A221	L295	
K65	G136	L224	T298	
W66	K137	K225	R299	
V67	E138	L228	L300	
R68	R139	I228	W303	
C70	M140	D229	A304	
Q71	Y141	L230	I305	
N72	E142	T231	G306	
F73	E143	C232	Y307	
K74	N144	Y235	V308	
L75	S145		T309	
A76	Q146		A310	
L77	P147			
K78	R148			
N79	R149			
S80	N150			
P81	L151			
P82				

4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	63.86Å 110.17Å 55.82Å 90.00° 89.94° 90.00°	Depositor
Resolution (Å)	20.00 – 2.60 39.29 – 2.60	Depositor EDS
% Data completeness (in resolution range)	51.8 (20.00-2.60) 91.3 (39.29-2.60)	Depositor EDS
R_{merge}	0.11	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.49 (at 2.61Å)	Xtrriage
Refinement program	CNS	Depositor
R, R_{free}	0.231 , 0.278 0.249 , 0.257	Depositor DCC
R_{free} test set	2860 reflections (13.04%)	wwPDB-VP
Wilson B-factor (Å ²)	29.0	Xtrriage
Anisotropy	0.858	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 28.0	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	0.458 for -h,-k,l	Xtrriage
F_o, F_c correlation	0.90	EDS
Total number of atoms	5405	wwPDB-VP
Average B, all atoms (Å ²)	33.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.08% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.68	0/79	0.96	0/104
1	C	0.65	0/79	0.95	0/104
2	B	0.52	0/2556	0.65	0/3449
2	D	0.51	0/2556	0.65	0/3449
All	All	0.52	0/5270	0.66	0/7106

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	95	0	80	16	0
1	C	95	0	80	19	0
2	B	2490	0	2499	232	0
2	D	2490	0	2499	232	0
3	A	6	0	0	0	0
3	B	111	0	0	16	0
3	C	6	0	0	1	0
3	D	112	0	0	18	0
All	All	5405	0	5158	478	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 46.

All (478) 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)
2:D:82:PRO:HG3	2:D:156:LEU:HD12	1.33	1.09
2:D:277:VAL:HG13	2:D:292:ILE:HD11	1.37	1.05
2:B:82:PRO:HG3	2:B:156:LEU:HD12	1.33	1.04
2:B:282:GLN:HE22	2:B:285:ILE:HD12	1.23	1.00
2:D:282:GLN:HE22	2:D:285:ILE:HD12	1.22	1.00
2:B:277:VAL:HG13	2:B:292:ILE:HD11	1.40	0.99
2:B:156:LEU:HD11	2:B:273:THR:HG22	1.46	0.98
2:D:156:LEU:HD11	2:D:273:THR:HG22	1.47	0.96
2:B:82:PRO:HG3	2:B:156:LEU:CD1	2.01	0.91
1:C:1068:ARG:HB3	2:D:274:TYR:CE2	2.06	0.90
2:B:331:GLY:HA3	2:B:337:TYR:CD2	2.06	0.90
2:D:331:GLY:HA3	2:D:337:TYR:CD2	2.06	0.90
1:A:1068:ARG:HB3	2:B:274:TYR:CE2	2.07	0.90
2:D:82:PRO:HG3	2:D:156:LEU:CD1	2.00	0.89
2:B:188:GLU:HA	2:B:191:ARG:NH1	1.92	0.84
1:A:1066:LEU:HD21	2:B:298:THR:HG21	1.59	0.84
2:D:188:GLU:HA	2:D:191:ARG:NH1	1.93	0.83
1:C:1066:LEU:O	1:C:1067:GLN:HG3	1.79	0.83
2:D:273:THR:O	2:D:277:VAL:HG23	1.77	0.82
2:D:277:VAL:HG13	2:D:292:ILE:CD1	2.09	0.82
2:B:149:ARG:HH11	2:B:149:ARG:HG3	1.45	0.81
2:B:273:THR:O	2:B:277:VAL:HG23	1.80	0.81
1:C:1066:LEU:HD21	2:D:298:THR:HG21	1.61	0.81
2:D:149:ARG:HH11	2:D:149:ARG:HG3	1.45	0.80
2:D:269:MET:HB3	2:D:272:LEU:HD12	1.62	0.80
1:A:1066:LEU:O	1:A:1067:GLN:HG3	1.81	0.80
2:B:153:LYS:HA	3:B:448:HOH:O	1.82	0.80
2:B:272:LEU:HB2	3:B:373:HOH:O	1.81	0.79
2:B:77:LEU:HA	2:B:78:LYS:NZ	1.98	0.79
2:B:202:TRP:HB3	2:B:203:LYS:HZ3	1.47	0.79
2:D:77:LEU:HA	2:D:78:LYS:NZ	1.97	0.79
2:B:269:MET:HB3	2:B:272:LEU:HD12	1.64	0.79
2:B:203:LYS:CD	2:B:203:LYS:H	1.96	0.79
1:C:1066:LEU:HA	3:C:17:HOH:O	1.82	0.79
2:B:149:ARG:HB3	3:B:359:HOH:O	1.81	0.79
2:B:283:LYS:HE2	2:B:284:PHE:CZ	2.19	0.78
2:D:202:TRP:HB3	2:D:203:LYS:HZ3	1.48	0.78

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:203:LYS:H	2:D:203:LYS:CD	1.97	0.78
2:B:340:PRO:HD3	2:B:346:ASN:ND2	1.99	0.77
2:D:283:LYS:HE2	2:D:284:PHE:CZ	2.18	0.77
2:D:49:GLY:O	2:D:116:ARG:HD2	1.85	0.77
2:B:277:VAL:HG13	2:B:292:ILE:CD1	2.13	0.77
2:B:49:GLY:O	2:B:116:ARG:HD2	1.85	0.76
2:D:91:THR:OG1	2:D:162:LEU:HD13	1.86	0.76
2:B:320:HIS:HA	3:B:406:HOH:O	1.86	0.75
2:D:229:ASP:OD1	2:D:232:CYS:HA	1.86	0.75
2:B:307:TYR:CE1	2:B:315:LEU:HB2	2.21	0.75
2:D:307:TYR:CE1	2:D:315:LEU:HB2	2.22	0.74
2:D:340:PRO:HD3	2:D:346:ASN:ND2	2.02	0.73
2:D:134:LYS:HA	3:D:397:HOH:O	1.88	0.73
2:B:229:ASP:OD1	2:B:232:CYS:HA	1.89	0.73
2:B:129:THR:OG1	2:B:154:LEU:HD23	1.89	0.72
2:B:228:ILE:HG12	2:B:244:PHE:CD1	2.24	0.72
2:D:188:GLU:HA	2:D:191:ARG:HH11	1.54	0.72
2:D:282:GLN:HE22	2:D:285:ILE:CD1	2.01	0.72
2:B:161:MET:HG2	2:B:231:THR:HG22	1.69	0.72
2:D:203:LYS:CE	2:D:203:LYS:H	2.03	0.72
2:D:129:THR:OG1	2:D:154:LEU:HD23	1.89	0.72
2:D:228:ILE:HG12	2:D:244:PHE:CD1	2.24	0.72
2:B:203:LYS:CE	2:B:203:LYS:H	2.02	0.72
2:D:78:LYS:NZ	2:D:78:LYS:H	1.88	0.71
2:D:86:ASP:O	2:D:89:PRO:HD2	1.90	0.71
2:B:282:GLN:HE22	2:B:285:ILE:CD1	2.00	0.71
1:C:1065:PHE:CD2	1:C:1066:LEU:N	2.57	0.71
2:D:225:LYS:HG2	3:D:417:HOH:O	1.89	0.71
2:B:78:LYS:NZ	2:B:78:LYS:H	1.89	0.71
2:D:68:ARG:HG3	2:D:69:LEU:H	1.56	0.71
2:B:84:ILE:HD13	2:B:84:ILE:C	2.11	0.70
2:B:340:PRO:HD3	2:B:346:ASN:HD22	1.53	0.70
2:D:65:LYS:HE2	2:D:69:LEU:HD11	1.72	0.70
1:A:1065:PHE:CD2	1:A:1066:LEU:N	2.58	0.70
2:D:84:ILE:C	2:D:84:ILE:HD13	2.12	0.70
2:B:88:LEU:HB2	2:B:89:PRO:HD3	1.73	0.70
2:D:161:MET:HG2	2:D:231:THR:HG22	1.72	0.70
2:D:199:ILE:HD11	2:D:235:TYR:HB3	1.72	0.70
2:B:188:GLU:HA	2:B:191:ARG:HH11	1.53	0.70
2:D:305:ILE:HG21	2:D:337:TYR:CE1	2.27	0.70
2:D:88:LEU:HB2	2:D:89:PRO:HD3	1.74	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:91:THR:OG1	2:B:162:LEU:HD13	1.93	0.69
2:B:68:ARG:HG3	2:B:69:LEU:H	1.57	0.69
2:B:305:ILE:HG21	2:B:337:TYR:CE1	2.28	0.69
1:C:1068:ARG:HB3	2:D:274:TYR:CZ	2.27	0.69
2:D:52:ASP:OD2	2:D:54:LYS:HB2	1.93	0.69
1:A:1068:ARG:HB3	2:B:274:TYR:CZ	2.27	0.68
2:B:101:ARG:HD3	2:B:173:LEU:CD1	2.23	0.68
2:D:101:ARG:HD3	2:D:173:LEU:CD1	2.23	0.68
2:B:52:ASP:OD2	2:B:54:LYS:HB2	1.93	0.68
2:B:144:ASN:HB3	2:B:149:ARG:HH21	1.59	0.68
2:D:272:LEU:HD22	2:D:276:GLU:HB3	1.76	0.68
2:B:199:ILE:HD11	2:B:235:TYR:HB3	1.75	0.67
2:B:56:VAL:HG12	2:B:60:TRP:NE1	2.09	0.67
2:B:86:ASP:O	2:B:89:PRO:HD2	1.94	0.67
1:A:1064:SER:HB3	2:B:79:ASN:ND2	2.09	0.67
2:B:282:GLN:NE2	2:B:285:ILE:HD12	2.05	0.67
2:D:203:LYS:HD3	2:D:203:LYS:H	1.59	0.67
2:B:203:LYS:HD3	2:B:203:LYS:H	1.58	0.67
2:D:144:ASN:HB3	2:D:149:ARG:HH21	1.59	0.67
2:D:340:PRO:HD3	2:D:346:ASN:HD22	1.56	0.67
1:C:1064:SER:HB3	2:D:79:ASN:ND2	2.10	0.66
2:B:68:ARG:HG3	2:B:69:LEU:N	2.10	0.66
2:B:272:LEU:HD22	2:B:276:GLU:HB3	1.77	0.66
2:D:280:ARG:HH21	2:D:341:ASP:CG	1.99	0.66
2:D:56:VAL:HG12	2:D:60:TRP:NE1	2.09	0.66
2:D:100:SER:O	2:D:103:GLU:HB2	1.96	0.65
2:B:65:LYS:HE2	2:B:69:LEU:HD11	1.76	0.65
2:D:123:MET:HG2	2:D:127:LYS:HE3	1.79	0.65
2:B:280:ARG:HH21	2:B:341:ASP:CG	2.00	0.65
2:D:68:ARG:HG3	2:D:69:LEU:N	2.10	0.65
2:B:132:LEU:HD21	2:B:147:PRO:O	1.96	0.64
2:B:188:GLU:HA	2:B:191:ARG:HD3	1.78	0.64
2:D:282:GLN:NE2	2:D:285:ILE:HD12	2.04	0.64
2:B:123:MET:HG2	2:B:127:LYS:HE3	1.79	0.64
2:B:243:ILE:HD13	2:B:300:LEU:HD22	1.79	0.63
1:C:1068:ARG:NH2	2:D:274:TYR:HB3	2.13	0.63
2:D:188:GLU:HA	2:D:191:ARG:HD3	1.79	0.63
2:D:132:LEU:HD21	2:D:147:PRO:O	1.99	0.63
2:B:188:GLU:CA	2:B:191:ARG:NH1	2.61	0.63
2:B:72:ASN:HD21	2:B:74:LYS:HB2	1.63	0.63
2:B:152:THR:HG21	2:B:276:GLU:CD	2.18	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:319:PRO:HA	3:D:367:HOH:O	1.98	0.63
2:D:152:THR:HG21	2:D:276:GLU:CD	2.20	0.62
2:D:188:GLU:CA	2:D:191:ARG:NH1	2.62	0.62
2:B:100:SER:O	2:B:103:GLU:HB2	2.00	0.62
2:D:191:ARG:O	2:D:195:GLY:HA2	1.99	0.62
2:D:282:GLN:O	2:D:285:ILE:HB	2.00	0.62
2:B:191:ARG:O	2:B:195:GLY:HA2	1.98	0.61
2:B:282:GLN:O	2:B:285:ILE:HB	2.00	0.61
1:A:1068:ARG:NH2	2:B:274:TYR:HB3	2.16	0.61
2:D:149:ARG:NH1	2:D:149:ARG:HG3	2.14	0.61
1:A:1068:ARG:NH2	2:B:80:SER:HB2	2.15	0.61
2:B:63:MET:O	2:B:67:VAL:HG23	2.01	0.61
2:B:149:ARG:HG3	2:B:149:ARG:NH1	2.15	0.60
2:D:269:MET:HE2	2:D:272:LEU:HD11	1.82	0.60
2:D:72:ASN:HD21	2:D:74:LYS:HB2	1.65	0.60
2:B:244:PHE:CE2	2:B:254:LEU:HD11	2.37	0.60
2:D:63:MET:O	2:D:67:VAL:HG23	2.02	0.60
2:B:346:ASN:ND2	2:B:347:PRO:HD2	2.16	0.59
2:D:303:TRP:CD2	2:D:324:LEU:HD22	2.37	0.59
2:D:144:ASN:HA	2:D:149:ARG:HE	1.68	0.59
2:D:244:PHE:CE2	2:D:254:LEU:HD11	2.38	0.59
2:B:81:PRO:HA	2:B:82:PRO:C	2.23	0.59
2:D:346:ASN:ND2	2:D:347:PRO:HD2	2.16	0.59
2:B:144:ASN:HA	2:B:149:ARG:HE	1.67	0.59
2:B:259:ASN:HA	2:B:263:VAL:CG2	2.32	0.59
2:D:57:GLU:HA	3:D:356:HOH:O	2.03	0.59
2:B:87:LEU:HD22	2:B:159:SER:HA	1.84	0.59
2:D:243:ILE:HD13	2:D:300:LEU:HD22	1.84	0.58
2:D:56:VAL:HG21	2:D:99:LEU:HD11	1.85	0.58
2:D:87:LEU:HD22	2:D:159:SER:HA	1.85	0.58
2:B:84:ILE:HG22	3:B:442:HOH:O	2.03	0.58
2:B:65:LYS:HD3	2:B:130:ILE:HD12	1.85	0.58
2:B:303:TRP:CD2	2:B:324:LEU:HD22	2.39	0.58
2:D:259:ASN:HA	2:D:263:VAL:CG2	2.34	0.58
1:C:1068:ARG:NH1	2:D:81:PRO:HD2	2.18	0.58
2:B:203:LYS:HE2	2:B:203:LYS:H	1.68	0.58
2:B:203:LYS:HD3	2:B:203:LYS:N	2.19	0.58
2:B:48:PRO:HB3	2:B:120:GLU:OE1	2.03	0.57
2:D:229:ASP:OD1	2:D:232:CYS:CA	2.51	0.57
2:D:81:PRO:HA	2:D:82:PRO:C	2.23	0.57
2:B:56:VAL:HG21	2:B:99:LEU:HD11	1.86	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:150:ASN:O	2:D:154:LEU:HD13	2.04	0.57
2:D:277:VAL:CG1	2:D:292:ILE:HD11	2.22	0.57
1:C:1068:ARG:NH2	2:D:80:SER:HB2	2.18	0.57
2:B:56:VAL:HG12	2:B:60:TRP:CE2	2.40	0.57
2:B:340:PRO:CD	2:B:346:ASN:HD22	2.18	0.57
2:B:139:ARG:HA	2:B:142:GLU:OE2	2.04	0.56
2:B:343:ARG:NE	3:B:391:HOH:O	2.29	0.56
2:B:52:ASP:O	2:B:55:MET:HB3	2.05	0.56
2:D:139:ARG:HA	2:D:142:GLU:OE2	2.05	0.56
2:D:78:LYS:HZ3	2:D:78:LYS:H	1.52	0.56
2:D:104:GLY:C	2:D:106:MET:H	2.08	0.56
2:D:288:PRO:HG2	3:D:384:HOH:O	2.05	0.56
2:D:56:VAL:HG12	2:D:60:TRP:CE2	2.40	0.56
2:B:229:ASP:OD1	2:B:232:CYS:CA	2.53	0.56
2:D:86:ASP:C	2:D:89:PRO:HD2	2.26	0.56
1:A:1066:LEU:N	1:A:1066:LEU:HD12	2.20	0.56
2:D:54:LYS:O	2:D:57:GLU:HB2	2.06	0.56
2:B:286:HIS:CD2	2:B:312:GLY:HA3	2.41	0.56
2:D:65:LYS:HD3	2:D:130:ILE:HD12	1.88	0.56
2:D:303:TRP:CD1	2:D:324:LEU:HB2	2.41	0.56
2:B:104:GLY:C	2:B:106:MET:H	2.09	0.56
2:B:294:ARG:HB2	3:B:364:HOH:O	2.07	0.55
2:D:325:PHE:O	2:D:329:ILE:HG12	2.06	0.55
2:D:48:PRO:HB3	2:D:120:GLU:OE1	2.07	0.55
2:D:203:LYS:HD3	2:D:203:LYS:N	2.21	0.55
2:B:101:ARG:HD3	2:B:173:LEU:HD13	1.87	0.55
2:B:54:LYS:O	2:B:57:GLU:HB2	2.06	0.55
2:D:202:TRP:CZ2	2:D:225:LYS:HB2	2.42	0.55
2:B:78:LYS:HZ3	2:B:78:LYS:H	1.54	0.55
2:D:228:ILE:O	2:D:230:LEU:HD13	2.07	0.55
2:B:277:VAL:CG1	2:B:292:ILE:HD11	2.26	0.55
2:D:286:HIS:CD2	2:D:312:GLY:HA3	2.42	0.55
1:A:1068:ARG:NH1	2:B:81:PRO:HD2	2.22	0.55
2:D:269:MET:O	2:D:270:ALA:O	2.25	0.55
2:B:303:TRP:CD1	2:B:324:LEU:HB2	2.42	0.55
2:B:86:ASP:C	2:B:89:PRO:HD2	2.27	0.55
2:D:101:ARG:HD3	2:D:173:LEU:HD13	1.87	0.55
2:D:52:ASP:O	2:D:55:MET:HB3	2.06	0.55
2:B:117:VAL:HG21	2:B:199:ILE:HD13	1.88	0.54
2:D:203:LYS:HE2	2:D:203:LYS:H	1.69	0.54
2:B:228:ILE:O	2:B:230:LEU:HD13	2.08	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:117:VAL:HG21	2:D:199:ILE:HD13	1.87	0.54
2:D:101:ARG:NH1	2:D:173:LEU:HD11	2.23	0.54
2:D:136:GLY:O	2:D:139:ARG:HB2	2.07	0.54
2:D:199:ILE:HD11	2:D:235:TYR:CB	2.38	0.54
2:B:210:HIS:CD2	2:B:215:ILE:H	2.26	0.54
2:B:138:GLU:HA	2:B:141:TYR:CE2	2.42	0.54
2:B:101:ARG:NH1	2:B:173:LEU:HD11	2.23	0.54
2:B:202:TRP:CZ2	2:B:225:LYS:HB2	2.42	0.54
1:C:1066:LEU:N	1:C:1066:LEU:HD12	2.24	0.53
2:D:138:GLU:HA	2:D:141:TYR:CE2	2.43	0.53
2:B:269:MET:O	2:B:270:ALA:O	2.26	0.53
2:D:294:ARG:NH1	3:D:357:HOH:O	2.41	0.53
2:B:60:TRP:HD1	2:B:63:MET:HE3	1.74	0.53
2:B:136:GLY:O	2:B:139:ARG:HB2	2.08	0.53
2:D:210:HIS:CD2	2:D:215:ILE:H	2.27	0.53
2:B:188:GLU:HA	2:B:191:ARG:CD	2.39	0.53
1:C:1072:ASP:HB2	3:D:367:HOH:O	2.09	0.52
2:B:269:MET:HE2	2:B:272:LEU:HD11	1.92	0.52
2:D:77:LEU:HA	2:D:78:LYS:HZ3	1.75	0.52
2:B:215:ILE:HG21	2:B:221:ALA:HB2	1.91	0.52
2:B:188:GLU:CA	2:B:191:ARG:HH11	2.22	0.52
2:D:224:LEU:HA	2:D:258:TRP:CZ2	2.45	0.52
2:D:60:TRP:HD1	2:D:63:MET:HE3	1.75	0.52
2:D:152:THR:O	2:D:155:SER:HB2	2.10	0.51
2:B:325:PHE:O	2:B:329:ILE:HG12	2.10	0.51
2:D:188:GLU:HA	2:D:191:ARG:CD	2.40	0.51
2:D:68:ARG:HH11	2:D:68:ARG:HG2	1.75	0.51
2:B:145:SER:O	2:B:146:GLN:C	2.49	0.51
2:B:68:ARG:HH11	2:B:68:ARG:HG2	1.76	0.51
2:D:329:ILE:HD11	2:D:349:LEU:HB2	1.92	0.51
2:B:188:GLU:HA	2:B:191:ARG:CZ	2.41	0.51
2:D:51:VAL:HG11	2:D:115:PHE:CE2	2.46	0.51
2:D:244:PHE:HE2	2:D:254:LEU:HD11	1.76	0.51
2:D:259:ASN:HB3	3:D:383:HOH:O	2.09	0.51
2:B:277:VAL:HG21	2:B:294:ARG:HD3	1.92	0.51
2:B:84:ILE:HD13	2:B:84:ILE:O	2.11	0.50
2:D:84:ILE:O	2:D:84:ILE:HD13	2.10	0.50
2:B:244:PHE:HE2	2:B:254:LEU:HD11	1.75	0.50
2:B:87:LEU:HD13	2:B:159:SER:N	2.26	0.50
2:B:145:SER:O	2:B:148:ARG:N	2.44	0.50
2:B:259:ASN:HA	2:B:263:VAL:HG23	1.92	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:144:ASN:HA	2:B:149:ARG:NE	2.27	0.50
2:B:150:ASN:O	2:B:154:LEU:HD13	2.11	0.50
2:D:277:VAL:HG21	2:D:294:ARG:HD3	1.93	0.50
2:D:285:ILE:HG12	2:D:285:ILE:O	2.10	0.50
2:B:199:ILE:HD11	2:B:235:TYR:CB	2.42	0.49
2:B:269:MET:HE1	3:B:452:HOH:O	2.11	0.49
2:B:152:THR:O	2:B:155:SER:HB2	2.12	0.49
2:B:51:VAL:HG11	2:B:115:PHE:CE2	2.47	0.49
2:B:197:LYS:HZ2	2:B:197:LYS:HB3	1.77	0.49
2:B:183:LYS:NZ	3:B:374:HOH:O	2.44	0.49
2:D:101:ARG:HD3	2:D:173:LEU:HD11	1.94	0.49
2:B:285:ILE:O	2:B:285:ILE:HG12	2.12	0.49
2:D:215:ILE:HG21	2:D:221:ALA:HB2	1.95	0.49
2:D:247:LEU:HD13	2:D:295:LEU:HD11	1.95	0.49
2:D:87:LEU:HD13	2:D:159:SER:N	2.28	0.49
2:D:145:SER:O	2:D:148:ARG:N	2.46	0.49
2:D:65:LYS:HG2	2:D:69:LEU:HD13	1.95	0.49
2:B:65:LYS:HG2	2:B:69:LEU:HD13	1.95	0.48
2:D:188:GLU:HA	2:D:191:ARG:CZ	2.42	0.48
2:D:340:PRO:CD	2:D:346:ASN:HD22	2.23	0.48
2:B:101:ARG:HD3	2:B:173:LEU:HD11	1.94	0.48
2:D:144:ASN:HA	2:D:149:ARG:NE	2.28	0.48
1:A:1068:ARG:CZ	2:B:80:SER:HB2	2.43	0.48
2:D:104:GLY:O	2:D:106:MET:N	2.42	0.48
2:D:143:GLU:HG3	2:D:144:ASN:CG	2.33	0.48
2:B:329:ILE:HD11	2:B:349:LEU:HB2	1.95	0.48
2:B:143:GLU:HG3	2:B:144:ASN:CG	2.33	0.48
2:D:168:ILE:O	2:D:168:ILE:HG22	2.13	0.48
2:D:197:LYS:HZ2	2:D:197:LYS:HB3	1.78	0.48
2:B:104:GLY:O	2:B:106:MET:N	2.45	0.48
2:D:145:SER:O	2:D:146:GLN:C	2.49	0.48
2:D:188:GLU:CA	2:D:191:ARG:HH11	2.23	0.48
2:D:308:VAL:HA	2:D:313:ASN:O	2.13	0.48
2:D:51:VAL:HG11	2:D:115:PHE:HE2	1.79	0.47
2:B:143:GLU:HG3	2:B:144:ASN:OD1	2.14	0.47
2:B:134:LYS:HG3	2:B:135:GLU:HG3	1.96	0.47
2:B:84:ILE:C	2:B:84:ILE:CD1	2.82	0.47
2:D:143:GLU:HG3	2:D:144:ASN:OD1	2.14	0.47
2:D:51:VAL:HG12	2:D:51:VAL:O	2.15	0.47
2:B:269:MET:HB2	3:B:373:HOH:O	2.14	0.47
2:D:259:ASN:HA	2:D:263:VAL:HG23	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:1064:SER:CB	2:D:79:ASN:ND2	2.77	0.47
2:B:170:PRO:O	2:B:171:SER:HB2	2.15	0.47
2:D:167:GLY:O	2:D:170:PRO:HD3	2.13	0.47
2:D:170:PRO:O	2:D:171:SER:HB2	2.15	0.47
2:B:89:PRO:HA	3:B:384:HOH:O	2.15	0.47
2:B:167:GLY:O	2:B:170:PRO:HD3	2.15	0.47
2:B:78:LYS:CD	2:B:78:LYS:H	2.28	0.47
2:B:168:ILE:O	2:B:168:ILE:HG22	2.15	0.47
2:D:303:TRP:O	2:D:318:ILE:HG23	2.15	0.47
2:D:343:ARG:NE	3:D:372:HOH:O	2.32	0.47
2:D:65:LYS:HG2	2:D:69:LEU:CD1	2.45	0.47
1:A:1065:PHE:HD2	1:A:1066:LEU:H	1.56	0.47
2:D:77:LEU:HD23	2:D:148:ARG:HH21	1.80	0.47
2:B:201:PRO:O	2:B:202:TRP:C	2.54	0.46
2:B:308:VAL:HA	2:B:313:ASN:O	2.15	0.46
2:B:74:LYS:HB3	2:B:141:TYR:HB3	1.96	0.46
2:D:101:ARG:HH11	2:D:173:LEU:HD11	1.80	0.46
2:D:201:PRO:O	2:D:202:TRP:C	2.53	0.46
1:A:1066:LEU:HD12	1:A:1066:LEU:H	1.80	0.46
2:B:158:PHE:HA	2:B:161:MET:CE	2.45	0.46
2:B:249:GLN:HB2	2:B:250:PRO:HA	1.97	0.46
2:D:158:PHE:HA	2:D:161:MET:CE	2.45	0.46
2:B:77:LEU:HA	2:B:78:LYS:HZ3	1.75	0.46
2:D:202:TRP:N	2:D:203:LYS:NZ	2.64	0.46
2:D:78:LYS:H	2:D:78:LYS:CD	2.27	0.46
2:B:77:LEU:HD23	2:B:148:ARG:HH21	1.80	0.46
2:B:224:LEU:HA	2:B:258:TRP:CZ2	2.50	0.46
2:B:65:LYS:HG2	2:B:69:LEU:CD1	2.45	0.46
2:D:154:LEU:N	2:D:154:LEU:HD12	2.30	0.46
2:D:291:TYR:CD1	2:D:337:TYR:HA	2.51	0.46
2:B:67:VAL:HG22	2:B:88:LEU:HD12	1.97	0.46
2:D:272:LEU:HD23	2:D:276:GLU:OE1	2.16	0.46
2:D:320:HIS:O	2:D:321:ASN:HB2	2.16	0.46
2:D:197:LYS:HZ3	2:D:197:LYS:HA	1.81	0.46
2:D:112:ASN:O	2:D:116:ARG:HG3	2.16	0.46
2:D:156:LEU:HD11	2:D:273:THR:CG2	2.32	0.46
2:D:249:GLN:HB2	2:D:250:PRO:HA	1.98	0.46
1:C:1068:ARG:CZ	2:D:80:SER:HB2	2.45	0.46
2:B:323:PRO:HA	3:B:403:HOH:O	2.15	0.46
1:A:1064:SER:CB	2:B:79:ASN:ND2	2.76	0.46
2:D:74:LYS:HB3	2:D:141:TYR:HB3	1.97	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:54:LYS:HB3	3:D:407:HOH:O	2.15	0.46
2:B:51:VAL:O	2:B:51:VAL:HG12	2.16	0.45
2:D:272:LEU:O	2:D:294:ARG:HD2	2.15	0.45
2:D:67:VAL:HG22	2:D:88:LEU:HD12	1.98	0.45
2:B:101:ARG:HH11	2:B:173:LEU:HD11	1.82	0.45
2:D:69:LEU:HD23	2:D:133:PHE:CD2	2.52	0.45
2:D:134:LYS:HG3	2:D:135:GLU:HG3	1.97	0.45
2:B:101:ARG:NE	2:B:173:LEU:HD21	2.32	0.45
2:B:189:PHE:CZ	2:B:209:LEU:HA	2.52	0.45
2:B:70:CYS:HA	2:B:75:LEU:CD1	2.47	0.45
2:B:107:GLU:O	2:B:111:GLU:HB2	2.17	0.45
2:D:189:PHE:CD1	2:D:189:PHE:C	2.89	0.45
2:D:202:TRP:N	2:D:203:LYS:HZ1	2.15	0.45
2:D:89:PRO:HA	3:D:402:HOH:O	2.16	0.45
2:B:272:LEU:O	2:B:294:ARG:HD2	2.16	0.45
2:B:272:LEU:HD23	2:B:276:GLU:OE1	2.17	0.45
2:B:284:PHE:O	2:B:286:HIS:N	2.50	0.45
2:B:293:PHE:N	2:B:293:PHE:CD1	2.84	0.45
2:B:305:ILE:O	2:B:316:GLN:HA	2.17	0.45
2:D:189:PHE:CZ	2:D:209:LEU:HA	2.52	0.45
2:D:299:ARG:CG	2:D:299:ARG:HH11	2.30	0.45
2:B:189:PHE:C	2:B:189:PHE:CD1	2.90	0.45
2:B:202:TRP:N	2:B:203:LYS:NZ	2.65	0.45
2:B:277:VAL:CG2	2:B:294:ARG:HD3	2.46	0.45
2:B:82:PRO:HD2	2:B:273:THR:HB	1.99	0.44
2:B:286:HIS:NE2	3:B:423:HOH:O	2.21	0.44
2:B:197:LYS:HZ3	2:B:197:LYS:HA	1.82	0.44
2:D:70:CYS:HA	2:D:75:LEU:CD1	2.47	0.44
2:B:320:HIS:O	2:B:321:ASN:HB2	2.17	0.44
2:B:51:VAL:HG11	2:B:115:PHE:HE2	1.82	0.44
2:B:65:LYS:HA	2:B:68:ARG:HG2	1.99	0.44
2:B:173:LEU:HD22	2:B:173:LEU:N	2.33	0.44
2:B:284:PHE:O	2:B:287:LYS:N	2.49	0.44
2:D:101:ARG:NE	2:D:173:LEU:HD21	2.32	0.44
2:D:61:LYS:NZ	3:D:381:HOH:O	2.50	0.44
2:B:267:GLY:HA3	2:B:293:PHE:CE1	2.53	0.44
2:B:294:ARG:HB3	3:B:373:HOH:O	2.18	0.44
2:B:291:TYR:CD1	2:B:337:TYR:HA	2.52	0.44
2:D:154:LEU:H	2:D:154:LEU:CD1	2.30	0.44
2:D:309:THR:O	2:D:312:GLY:N	2.49	0.44
2:D:305:ILE:O	2:D:316:GLN:HA	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:265:HIS:CD2	2:D:347:PRO:HG2	2.53	0.44
2:D:65:LYS:HA	2:D:68:ARG:HG2	1.99	0.44
2:B:156:LEU:HD11	2:B:273:THR:CG2	2.31	0.44
2:B:281:LEU:HD23	2:B:281:LEU:HA	1.80	0.44
2:B:299:ARG:CG	2:B:299:ARG:HH11	2.30	0.44
2:D:277:VAL:CG2	2:D:294:ARG:HD3	2.48	0.44
2:B:265:HIS:CD2	2:B:347:PRO:HG2	2.53	0.44
2:D:170:PRO:C	2:D:172:GLY:H	2.21	0.43
2:D:280:ARG:NH2	2:D:341:ASP:OD2	2.45	0.43
2:D:82:PRO:HD2	2:D:273:THR:HB	1.99	0.43
2:B:112:ASN:O	2:B:116:ARG:HG3	2.18	0.43
2:B:309:THR:O	2:B:312:GLY:N	2.51	0.43
2:B:154:LEU:O	2:B:155:SER:C	2.55	0.43
2:B:247:LEU:HD13	2:B:295:LEU:HD11	2.00	0.43
2:D:59:CYS:SG	2:D:123:MET:HB2	2.58	0.43
1:C:1065:PHE:HD2	1:C:1066:LEU:H	1.55	0.43
2:B:121:ASN:HA	3:B:397:HOH:O	2.17	0.43
2:B:134:LYS:O	2:B:137:LYS:HG3	2.18	0.43
2:B:265:HIS:HA	2:B:266:PRO:HD2	1.79	0.43
2:D:157:ILE:O	2:D:161:MET:HG3	2.18	0.43
2:D:182:THR:HG22	2:D:183:LYS:HD2	2.01	0.43
2:D:267:GLY:HA3	2:D:293:PHE:CE1	2.54	0.43
2:B:154:LEU:HD12	2:B:154:LEU:N	2.34	0.43
2:B:95:LEU:HD23	2:B:165:LEU:HD21	2.01	0.43
1:C:1072:ASP:C	1:C:1072:ASP:OD1	2.57	0.43
2:D:107:GLU:O	2:D:111:GLU:HB2	2.19	0.43
2:D:174:PHE:O	2:D:175:GLN:HG2	2.18	0.43
2:D:188:GLU:HG3	2:D:191:ARG:CZ	2.48	0.43
2:D:293:PHE:CD1	2:D:293:PHE:N	2.86	0.43
2:D:323:PRO:HA	3:D:354:HOH:O	2.19	0.43
1:A:1064:SER:CB	2:B:79:ASN:HD21	2.32	0.43
2:B:72:ASN:ND2	2:B:74:LYS:HB2	2.32	0.43
2:D:154:LEU:N	2:D:154:LEU:CD1	2.82	0.43
2:D:65:LYS:O	2:D:68:ARG:HG3	2.19	0.43
2:D:95:LEU:HD23	2:D:165:LEU:HD21	2.00	0.43
2:B:170:PRO:C	2:B:172:GLY:H	2.22	0.43
2:D:156:LEU:O	2:D:160:HIS:CD2	2.72	0.43
2:D:138:GLU:O	2:D:142:GLU:OE1	2.37	0.42
2:D:269:MET:HE2	2:D:272:LEU:CD1	2.49	0.42
2:D:340:PRO:O	2:D:343:ARG:HB2	2.19	0.42
2:B:340:PRO:O	2:B:343:ARG:HB2	2.18	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:345:GLN:HA	2:B:345:GLN:NE2	2.34	0.42
2:B:65:LYS:O	2:B:68:ARG:HG3	2.19	0.42
2:B:59:CYS:SG	2:B:123:MET:HB2	2.59	0.42
2:B:266:PRO:HG2	2:B:340:PRO:HB2	2.00	0.42
2:D:133:PHE:O	2:D:137:LYS:N	2.53	0.42
2:B:69:LEU:HD23	2:B:133:PHE:CG	2.55	0.42
2:B:303:TRP:CE2	2:B:324:LEU:HD22	2.54	0.42
2:D:154:LEU:O	2:D:155:SER:C	2.58	0.42
2:D:266:PRO:HG2	2:D:340:PRO:HB2	2.00	0.42
2:D:69:LEU:HD23	2:D:133:PHE:CG	2.54	0.42
2:B:280:ARG:NH2	2:B:341:ASP:OD2	2.46	0.42
2:B:87:LEU:HD11	2:B:159:SER:HB2	2.01	0.42
2:D:173:LEU:HD22	2:D:173:LEU:N	2.34	0.42
2:D:303:TRP:CE2	2:D:324:LEU:HD22	2.54	0.42
2:B:127:LYS:O	2:B:128:GLN:C	2.58	0.42
2:B:210:HIS:ND1	2:B:210:HIS:O	2.53	0.42
2:B:133:PHE:O	2:B:137:LYS:N	2.52	0.42
1:C:1066:LEU:H	1:C:1066:LEU:HD12	1.83	0.42
2:D:127:LYS:O	2:D:128:GLN:C	2.57	0.42
2:D:173:LEU:O	2:D:175:GLN:HG3	2.19	0.42
2:B:272:LEU:HD22	2:B:276:GLU:CB	2.48	0.42
2:D:153:LYS:O	2:D:154:LEU:C	2.58	0.42
2:D:256:ARG:NH2	3:D:457:HOH:O	2.51	0.42
2:B:173:LEU:O	2:B:175:GLN:HG3	2.20	0.42
2:B:69:LEU:HD23	2:B:133:PHE:CD2	2.54	0.42
2:D:229:ASP:HB3	3:D:417:HOH:O	2.20	0.42
2:B:68:ARG:HG3	2:B:69:LEU:HD12	2.02	0.41
2:D:78:LYS:N	2:D:78:LYS:NZ	2.63	0.41
2:B:153:LYS:O	2:B:154:LEU:C	2.58	0.41
2:B:174:PHE:O	2:B:175:GLN:HG2	2.19	0.41
2:B:125:LYS:NZ	2:B:232:CYS:O	2.44	0.41
2:D:121:ASN:HA	3:D:386:HOH:O	2.20	0.41
1:C:1068:ARG:HH21	2:D:274:TYR:HB3	1.85	0.41
1:C:1064:SER:CB	2:D:79:ASN:HD21	2.33	0.41
2:B:303:TRP:O	2:B:318:ILE:HG23	2.20	0.41
2:D:303:TRP:CG	2:D:324:LEU:HD22	2.56	0.41
2:D:127:LYS:O	2:D:130:ILE:N	2.53	0.41
2:D:318:ILE:O	2:D:320:HIS:CD2	2.74	0.41
2:B:269:MET:HE3	2:B:269:MET:HB3	1.78	0.41
2:D:134:LYS:O	2:D:137:LYS:HG3	2.20	0.41
2:D:149:ARG:CG	2:D:149:ARG:NH1	2.80	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:94:HIS:CD2	2:D:166:LYS:HG2	2.56	0.41
2:D:288:PRO:HB3	2:D:310:ALA:HA	2.03	0.41
2:D:272:LEU:HD22	2:D:276:GLU:CB	2.47	0.41
2:D:284:PHE:O	2:D:287:LYS:N	2.53	0.41
2:B:188:GLU:HG3	2:B:191:ARG:CZ	2.50	0.41
2:D:210:HIS:ND1	2:D:210:HIS:O	2.54	0.41
2:B:138:GLU:O	2:B:142:GLU:OE1	2.39	0.41
2:D:158:PHE:HA	2:D:161:MET:HE2	2.03	0.41
2:D:58:LYS:HE2	3:D:442:HOH:O	2.20	0.41
1:A:1072:ASP:OD1	1:A:1072:ASP:C	2.59	0.40
2:B:154:LEU:CD1	2:B:154:LEU:H	2.34	0.40
2:B:157:ILE:O	2:B:161:MET:HG3	2.21	0.40
2:B:158:PHE:HA	2:B:161:MET:HE2	2.03	0.40
2:B:345:GLN:CA	2:B:345:GLN:HE21	2.34	0.40
2:B:95:LEU:CD2	2:B:165:LEU:HD21	2.51	0.40
2:D:72:ASN:ND2	2:D:74:LYS:HB2	2.34	0.40
2:B:188:GLU:CB	2:B:191:ARG:NH1	2.85	0.40
2:B:321:ASN:N	3:B:393:HOH:O	2.54	0.40
2:B:78:LYS:NZ	2:B:78:LYS:N	2.63	0.40
2:D:339:PHE:HB3	2:D:343:ARG:O	2.22	0.40
2:B:102:TYR:O	2:B:104:GLY:N	2.54	0.40
2:B:144:ASN:O	2:B:149:ARG:NH2	2.54	0.40
2:B:156:LEU:O	2:B:160:HIS:CD2	2.74	0.40
2:B:331:GLY:HA3	2:B:337:TYR:HD2	1.74	0.40
2:D:209:LEU:O	2:D:209:LEU:HD12	2.20	0.40
2:D:342:GLY:O	2:D:343:ARG:C	2.60	0.40
2:D:345:GLN:NE2	2:D:345:GLN:HA	2.36	0.40
2:D:84:ILE:HG22	3:D:404:HOH:O	2.21	0.40
2:B:154:LEU:CD1	2:B:154:LEU:N	2.84	0.40
2:B:342:GLY:O	2:B:343:ARG:C	2.60	0.40
2:D:339:PHE:HA	2:D:340:PRO:HD2	1.95	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	8/13 (62%)	4 (50%)	2 (25%)	2 (25%)	0	0
1	C	8/13 (62%)	4 (50%)	2 (25%)	2 (25%)	0	0
2	B	302/329 (92%)	248 (82%)	44 (15%)	10 (3%)	4	6
2	D	302/329 (92%)	248 (82%)	44 (15%)	10 (3%)	4	6
All	All	620/684 (91%)	504 (81%)	92 (15%)	24 (4%)	3	4

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	B	103	GLU
2	B	270	ALA
2	B	285	ILE
2	D	103	GLU
2	D	270	ALA
2	D	285	ILE
1	A	1067	GLN
1	A	1068	ARG
2	B	137	LYS
1	C	1067	GLN
1	C	1068	ARG
2	D	137	LYS
2	B	105	LYS
2	B	216	SER
2	D	105	LYS
2	D	216	SER
2	B	229	ASP
2	B	254	LEU
2	D	229	ASP
2	D	254	LEU
2	B	84	ILE
2	B	288	PRO
2	D	84	ILE
2	D	288	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	10/11 (91%)	9 (90%)	1 (10%)	8	16
1	C	10/11 (91%)	9 (90%)	1 (10%)	8	16
2	B	271/293 (92%)	254 (94%)	17 (6%)	20	40
2	D	271/293 (92%)	255 (94%)	16 (6%)	21	43
All	All	562/608 (92%)	527 (94%)	35 (6%)	20	40

All (35) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1066	LEU
2	B	53	LYS
2	B	68	ARG
2	B	78	LYS
2	B	84	ILE
2	B	111	GLU
2	B	141	TYR
2	B	142	GLU
2	B	191	ARG
2	B	197	LYS
2	B	203	LYS
2	B	259	ASN
2	B	299	ARG
2	B	307	TYR
2	B	311	ASP
2	B	313	ASN
2	B	325	PHE
2	B	343	ARG
1	C	1066	LEU
2	D	53	LYS
2	D	68	ARG
2	D	78	LYS
2	D	84	ILE
2	D	111	GLU
2	D	141	TYR
2	D	142	GLU
2	D	191	ARG
2	D	197	LYS
2	D	203	LYS
2	D	259	ASN

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Mol	Chain	Res	Type
2	D	299	ARG
2	D	307	TYR
2	D	313	ASN
2	D	325	PHE
2	D	343	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
2	B	79	ASN
2	B	94	HIS
2	B	160	HIS
2	B	213	HIS
2	B	282	GLN
2	B	313	ASN
2	B	316	GLN
2	B	321	ASN
2	B	344	ASN
2	B	345	GLN
2	B	346	ASN
2	D	79	ASN
2	D	94	HIS
2	D	160	HIS
2	D	213	HIS
2	D	257	ASN
2	D	282	GLN
2	D	286	HIS
2	D	316	GLN
2	D	321	ASN
2	D	344	ASN
2	D	345	GLN
2	D	346	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](#)

2 non-standard protein/DNA/RNA residues 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
1	PTR	A	1069	1	16,16,17	1.41	2 (12%)	21,22,24	0.99	0
1	PTR	C	1069	1	16,16,17	1.40	2 (12%)	21,22,24	0.98	0

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
1	PTR	A	1069	1	-	0/9/11/13	0/1/1/1
1	PTR	C	1069	1	-	0/9/11/13	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	1069	PTR	CE1-CD1	2.03	1.42	1.38
1	A	1069	PTR	CE1-CD1	2.14	1.42	1.38
1	C	1069	PTR	P-OH	2.80	1.64	1.59
1	A	1069	PTR	P-OH	2.85	1.64	1.59

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled '#RSRZ > 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q < 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	10/13 (76%)	0.12	2 (20%) 1 0	22, 32, 48, 51	0
1	C	10/13 (76%)	0.10	2 (20%) 1 0	22, 32, 48, 51	0
2	B	304/329 (92%)	-0.43	1 (0%) 93 93	16, 32, 52, 71	0
2	D	304/329 (92%)	-0.43	0 100 100	16, 32, 52, 71	0
All	All	628/684 (91%)	-0.42	5 (0%) 86 84	16, 32, 52, 71	0

All (5) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1065	PHE	2.8
1	C	1064	SER	2.7
1	A	1064	SER	2.4
2	B	173	LEU	2.1
1	C	1065	PHE	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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, 95th 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 ²)	Q<0.9
1	PTR	C	1069	16/17	0.96	0.14	27,28,29,30	0
1	PTR	A	1069	16/17	0.97	0.13	27,28,29,30	0

6.3 Carbohydrates [i](#)

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.