



Full wwPDB X-ray Structure Validation Report ⓘ

Dec 4, 2023 – 10:29 pm GMT

PDB ID : 1H25
Title : CDK2/Cyclin A in complex with an 11-residue recruitment peptide from retinoblastoma-associated protein
Authors : Tews, I.; Cheng, K.Y.; Lowe, E.D.; Noble, M.E.M.; Brown, N.R.; Gul, S.; Gamblin, S.; Johnson, L.N.
Deposited on : 2002-07-31
Resolution : 2.50 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 types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

MolProbity : 4.02b-467
Mogul : 1.8.4, CSD as541be (2020)
Xtriage (Phenix) : 1.13
EDS : 2.36
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac : 5.8.0158
CCP4 : 7.0.044 (Gargrove)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.36

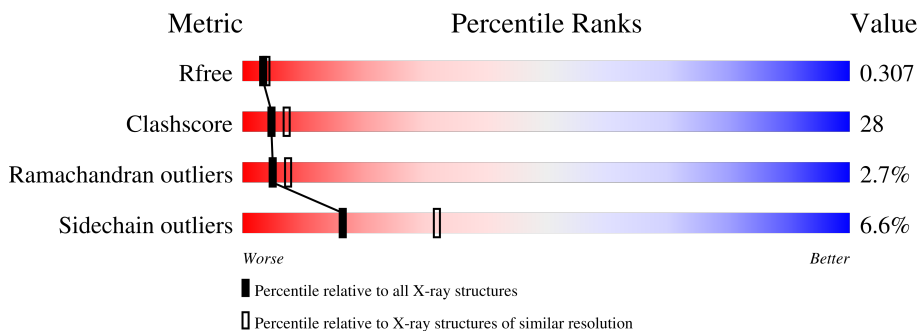
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	4661 (2.50-2.50)
Clashscore	141614	5346 (2.50-2.50)
Ramachandran outliers	138981	5231 (2.50-2.50)
Sidechain outliers	138945	5233 (2.50-2.50)

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 of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$.

Mol	Chain	Length	Quality of chain
1	A	303	51% 39% 7% . .
1	C	303	44% 42% 6% . 8%
2	B	259	60% 34% 5%
2	D	259	49% 45% 5%
3	E	11	45% 27% 18% 9%

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 9037 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 CELL DIVISION PROTEIN KINASE 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace	
			Total	C	N	O	P				S
1	A	294	Total	C	N	O	P	S	0	0	0
			2363	1533	399	422	1	8			
1	C	279	Total	C	N	O	P	S	0	0	0
			2229	1443	376	401	1	8			

- Molecule 2 is a protein called CYCLIN A2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	258	Total	C	N	O	S	0	0	0
			2083	1350	339	383	11			
2	D	258	Total	C	N	O	S	0	0	0
			2083	1350	339	383	11			

- Molecule 3 is a protein called RETINOBLASTOMA-ASSOCIATED PROTEIN.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	E	10	Total	C	N	O	0	0	0
			87	59	16	12			

- Molecule 4 is water.

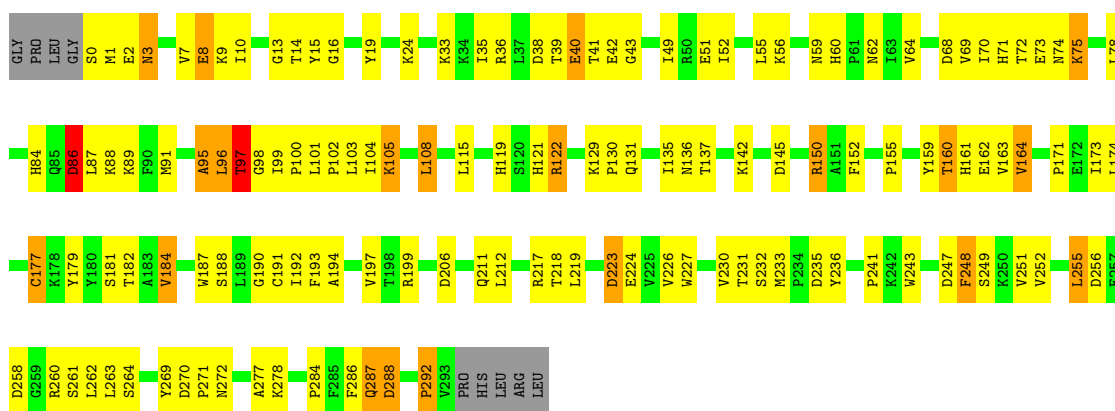
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	62	Total	O	0	0
			62	62		
4	B	61	Total	O	0	0
			61	61		
4	C	47	Total	O	0	0
			47	47		
4	D	21	Total	O	0	0
			21	21		
4	E	1	Total	O	0	0
			1	1		

3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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. 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. 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.

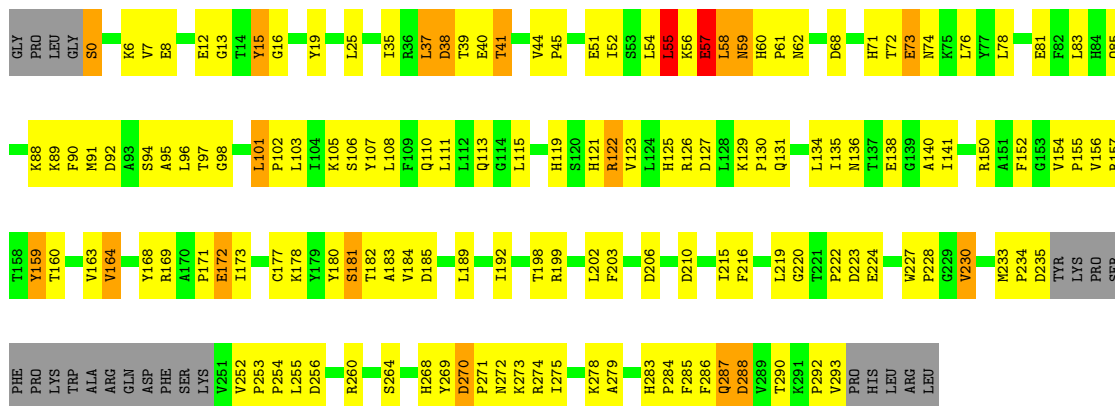
- Molecule 1: CELL DIVISION PROTEIN KINASE 2

Chain A: 



- Molecule 1: CELL DIVISION PROTEIN KINASE 2

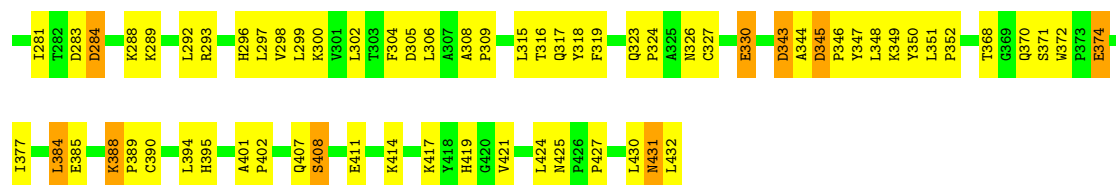
Chain C: 



- Molecule 2: CYCLIN A2

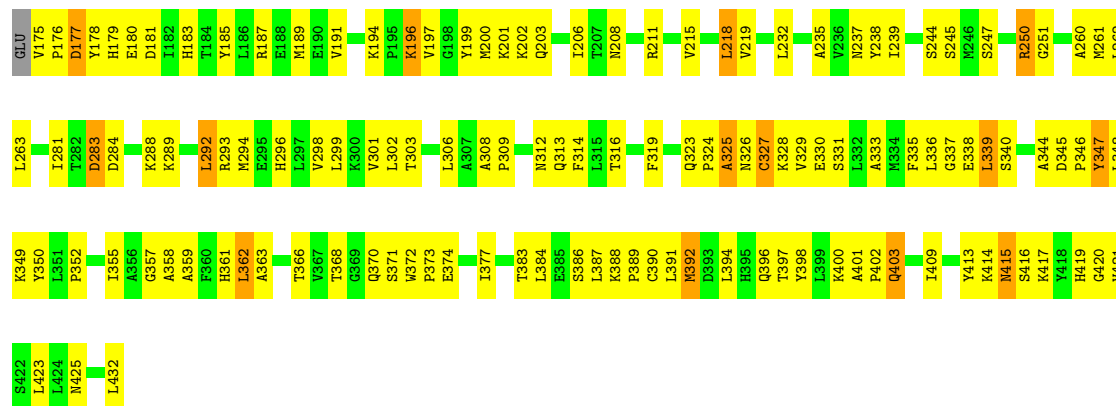
Chain B: 





- Molecule 2: CYCLIN A2

Chain D: 49% 45% 5%



- Molecule 3: RETINOBLASTOMA-ASSOCIATED PROTEIN

Chain E: 45% 27% 18% 9%



4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	73.61Å 133.85Å 147.91Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	28.00 – 2.50 28.80 – 2.48	Depositor EDS
% Data completeness (in resolution range)	99.9 (28.00-2.50) 98.8 (28.80-2.48)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.85 (at 2.48Å)	Xtrriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.249 , 0.266 0.295 , 0.307	Depositor DCC
R_{free} test set	2656 reflections (5.10%)	wwPDB-VP
Wilson B-factor (Å ²)	43.2	Xtrriage
Anisotropy	0.307	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 41.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.42$, $\langle L^2 \rangle = 0.24$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.86	EDS
Total number of atoms	9037	wwPDB-VP
Average B, all atoms (Å ²)	55.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.74% 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: TPO

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	0.78	0/2411	1.02	11/3270 (0.3%)
1	C	0.61	0/2269	0.87	10/3077 (0.3%)
2	B	0.82	0/2133	0.95	6/2897 (0.2%)
2	D	0.54	0/2133	0.81	4/2897 (0.1%)
3	E	0.62	0/89	0.97	0/116
All	All	0.70	0/9035	0.92	31/12257 (0.3%)

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	C	0	1

There are no bond length outliers.

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	68	ASP	CB-CG-OD2	9.24	126.61	118.30
2	B	345	ASP	CB-CG-OD2	8.18	125.66	118.30
1	C	38	ASP	CB-CG-OD2	7.69	125.22	118.30
1	A	247	ASP	CB-CG-OD2	7.24	124.82	118.30
1	A	256	ASP	CB-CG-OD2	6.80	124.42	118.30
1	C	127	ASP	CB-CG-OD2	6.63	124.27	118.30
1	A	223	ASP	CB-CG-OD2	6.58	124.23	118.30
2	B	205	ASP	CB-CG-OD2	6.44	124.09	118.30
2	B	305	ASP	CB-CG-OD2	6.14	123.82	118.30
1	C	235	ASP	CB-CG-OD2	6.12	123.81	118.30
1	A	86	ASP	CB-CG-OD2	6.07	123.76	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	B	343	ASP	CB-CG-OD2	6.06	123.75	118.30
1	A	38	ASP	CB-CG-OD2	5.98	123.68	118.30
1	C	92	ASP	CB-CG-OD2	5.98	123.68	118.30
2	D	177	ASP	CB-CG-OD2	5.89	123.60	118.30
1	C	68	ASP	CB-CG-OD2	5.77	123.50	118.30
1	C	270	ASP	CB-CG-OD2	5.76	123.49	118.30
1	A	258	ASP	CB-CG-OD2	5.66	123.39	118.30
1	A	288	ASP	CB-CG-OD2	5.65	123.38	118.30
2	D	181	ASP	CB-CG-OD2	5.51	123.26	118.30
1	A	145	ASP	CB-CG-OD2	5.49	123.24	118.30
1	C	256	ASP	CB-CG-OD2	5.31	123.08	118.30
1	C	206	ASP	CB-CG-OD2	5.28	123.05	118.30
1	A	108	LEU	CB-CG-CD1	-5.26	102.05	111.00
2	B	283	ASP	CB-CG-OD2	5.26	123.04	118.30
1	A	235	ASP	CB-CG-OD2	5.23	123.01	118.30
2	D	283	ASP	CB-CG-OD2	5.19	122.97	118.30
2	B	284	ASP	CB-CG-OD2	5.08	122.88	118.30
1	C	223	ASP	CB-CG-OD2	5.03	122.82	118.30
1	C	288	ASP	CB-CG-OD2	5.03	122.82	118.30
2	D	284	ASP	CB-CG-OD2	5.02	122.82	118.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	C	159	TYR	Mainchain

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	2363	0	2405	130	1
1	C	2229	0	2273	158	0
2	B	2083	0	2107	102	1
2	D	2083	0	2107	126	0
3	E	87	0	101	12	0
4	A	62	0	0	15	1

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	B	61	0	0	15	1
4	C	47	0	0	22	0
4	D	21	0	0	10	0
4	E	1	0	0	0	0
All	All	9037	0	8993	497	2

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 28.

All (497) 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:B:327:CYS:HB3	4:B:2039:HOH:O	1.34	1.23
1:A:163:VAL:HG12	1:A:164:VAL:HG23	1.26	1.11
1:C:154:VAL:O	2:D:316:THR:HG23	1.55	1.06
3:E:869:PRO:HB2	3:E:871:PRO:HD2	1.33	1.06
1:A:121:HIS:O	1:A:122:ARG:HG3	1.56	1.05
2:B:300:LYS:HE2	4:B:2027:HOH:O	1.53	1.05
1:A:88:LYS:HD2	1:A:131:GLN:HE21	1.19	1.01
1:C:121:HIS:O	1:C:122:ARG:HG3	1.62	0.98
1:C:136:ASN:ND2	1:C:140:ALA:HB3	1.79	0.97
3:E:872:LEU:O	3:E:872:LEU:HG	1.68	0.93
2:B:227:LEU:HB2	4:B:2019:HOH:O	1.69	0.91
1:A:163:VAL:CG1	1:A:164:VAL:HG23	2.01	0.90
2:D:401:ALA:HB3	2:D:402:PRO:HD3	1.54	0.89
2:B:177:ASP:HB3	4:B:2007:HOH:O	1.70	0.89
2:D:235:ALA:O	2:D:239:ILE:HG13	1.73	0.88
1:A:88:LYS:HD2	1:A:131:GLN:NE2	1.87	0.88
1:A:41:THR:HG21	4:A:2011:HOH:O	1.74	0.88
2:B:300:LYS:HE3	4:C:2009:HOH:O	1.74	0.87
3:E:869:PRO:O	3:E:872:LEU:HD23	1.74	0.87
1:C:136:ASN:HD21	1:C:140:ALA:HB3	1.39	0.86
1:C:95:ALA:O	1:C:199:ARG:NH1	2.06	0.85
1:C:227:TRP:O	1:C:230:VAL:HG23	1.76	0.85
1:C:181:SER:O	1:C:184:VAL:HG22	1.75	0.85
1:A:181:SER:HB3	4:A:2040:HOH:O	1.77	0.85
1:C:60:HIS:HD2	1:C:62:ASN:H	1.19	0.85
2:B:180:GLU:HB3	4:B:2001:HOH:O	1.75	0.85
2:D:238:TYR:CZ	2:D:306:LEU:HD22	2.11	0.85
1:C:172:GLU:OE2	1:C:274:ARG:NH1	2.09	0.84
2:D:333:ALA:HA	4:D:2015:HOH:O	1.77	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:60:HIS:CD2	1:C:61:PRO:HD2	2.12	0.84
2:B:299:LEU:HD22	2:B:304:PHE:CE1	2.13	0.83
2:D:361:HIS:CG	4:D:2016:HOH:O	2.30	0.83
2:B:216:ASP:OD1	2:B:408:SER:OG	1.97	0.83
2:D:319:PHE:HB3	2:D:330:GLU:OE2	1.77	0.83
1:C:71:HIS:HD2	2:D:296:HIS:NE2	1.76	0.83
2:D:313:GLN:O	2:D:316:THR:HG22	1.79	0.82
2:B:417:LYS:HZ3	2:B:417:LYS:HB3	1.45	0.81
2:D:374:GLU:HA	2:D:377:ILE:HD12	1.62	0.81
1:C:163:VAL:HG12	1:C:164:VAL:HG23	1.62	0.81
1:C:40:GLU:O	2:D:288:LYS:HE3	1.82	0.80
1:C:88:LYS:HB2	1:C:131:GLN:HE21	1.45	0.80
1:C:163:VAL:N	4:C:2034:HOH:O	2.16	0.78
2:B:183:HIS:HB2	2:B:317:GLN:HE22	1.46	0.78
1:C:233:MET:HG3	1:C:234:PRO:HD2	1.66	0.77
1:C:51:GLU:O	1:C:55:LEU:HB2	1.84	0.77
2:B:196:LYS:NZ	2:B:196:LYS:HB3	1.99	0.77
2:B:417:LYS:HB3	2:B:417:LYS:NZ	1.98	0.76
2:D:361:HIS:HE1	2:D:371:SER:HB3	1.50	0.76
1:C:253:PRO:HB2	1:C:254:PRO:HD3	1.66	0.75
2:D:361:HIS:CE1	2:D:384:LEU:HD21	2.22	0.75
1:A:98:GLY:HA2	1:A:199:ARG:NE	2.02	0.74
2:B:175:VAL:HG22	2:B:175:VAL:O	1.88	0.74
1:C:164:VAL:N	4:C:2035:HOH:O	2.19	0.74
2:B:196:LYS:HB3	2:B:196:LYS:HZ2	1.54	0.73
1:C:126:ARG:HD2	1:C:163:VAL:HG11	1.70	0.73
2:D:361:HIS:ND1	4:D:2016:HOH:O	2.22	0.73
2:D:372:TRP:HB3	2:D:384:LEU:HD11	1.71	0.73
1:A:16:GLY:N	4:A:2007:HOH:O	2.21	0.72
1:C:13:GLY:HA3	4:C:2006:HOH:O	1.88	0.72
2:D:336:LEU:HB3	2:D:394:LEU:HD11	1.70	0.72
3:E:869:PRO:HB2	3:E:871:PRO:CD	2.16	0.72
2:B:216:ASP:CG	2:B:408:SER:OG	2.28	0.72
2:B:417:LYS:NZ	2:B:417:LYS:CB	2.53	0.72
1:A:2:GLU:HB2	1:C:73:GLU:OE1	1.90	0.71
1:A:40:GLU:C	2:B:288:LYS:HE2	2.12	0.71
1:C:107:TYR:CE1	4:C:2026:HOH:O	2.44	0.71
2:D:176:PRO:O	4:D:2001:HOH:O	2.08	0.70
2:B:299:LEU:HD22	2:B:304:PHE:CD1	2.27	0.70
1:A:177:CYS:SG	1:A:179:TYR:O	2.50	0.69
2:B:194:LYS:NZ	2:B:351:LEU:HD23	2.07	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:72:THR:HB	1:A:75:LYS:H	1.58	0.69
2:B:430:LEU:O	2:B:431:ASN:HB2	1.93	0.69
1:A:121:HIS:C	1:A:122:ARG:HG3	2.13	0.68
2:D:326:ASN:OD1	2:D:329:VAL:HG23	1.93	0.68
2:D:288:LYS:O	2:D:292:LEU:HD22	1.94	0.68
2:D:218:LEU:HD21	2:D:261:MET:HB2	1.76	0.67
2:D:219:VAL:HG22	2:D:232:LEU:HD11	1.77	0.67
2:D:368:THR:OG1	2:D:370:GLN:HG2	1.95	0.67
2:B:193:CYS:C	4:B:2015:HOH:O	2.33	0.67
1:A:249:SER:HA	1:A:260:ARG:HD3	1.77	0.67
1:C:121:HIS:C	1:C:122:ARG:HG3	2.14	0.67
2:D:238:TYR:CE1	2:D:306:LEU:HD22	2.29	0.67
2:B:401:ALA:HB3	2:B:402:PRO:HD3	1.77	0.67
2:D:359:ALA:O	4:D:2015:HOH:O	2.12	0.66
1:A:86:ASP:C	1:A:86:ASP:OD1	2.34	0.66
2:B:181:ASP:OD1	4:B:2010:HOH:O	2.13	0.66
2:B:194:LYS:HZ2	2:B:351:LEU:HD23	1.58	0.66
2:D:196:LYS:HG3	2:D:199:TYR:HB3	1.75	0.66
2:D:388:LYS:HB3	2:D:389:PRO:HD3	1.77	0.66
1:A:223:ASP:H	1:A:226:VAL:HG12	1.61	0.66
2:D:414:LYS:HA	2:D:420:GLY:HA2	1.78	0.66
1:A:7:VAL:O	1:A:8:GLU:HB3	1.96	0.65
1:A:284:PRO:O	1:A:287:GLN:HG2	1.97	0.65
1:C:98:GLY:HA2	1:C:199:ARG:CZ	2.27	0.65
1:C:72:THR:HG22	1:C:74:ASN:H	1.61	0.65
1:C:111:LEU:HD21	1:C:141:ILE:HD13	1.79	0.65
1:A:73:GLU:HA	4:A:2021:HOH:O	1.97	0.65
1:A:227:TRP:CG	1:A:230:VAL:HG13	2.31	0.65
1:C:103:LEU:HD11	1:C:107:TYR:CZ	2.32	0.64
3:E:869:PRO:C	3:E:871:PRO:HD2	2.17	0.64
1:C:252:VAL:HG11	1:C:255:LEU:HD22	1.78	0.64
2:D:263:LEU:HD11	2:D:299:LEU:HG	1.78	0.64
2:D:218:LEU:CD2	2:D:261:MET:SD	2.86	0.64
1:A:88:LYS:CD	1:A:131:GLN:HE21	2.02	0.64
2:D:208:ASN:OD1	2:D:344:ALA:HB3	1.98	0.64
2:D:175:VAL:HG22	2:D:177:ASP:HB2	1.80	0.63
1:A:39:THR:C	1:A:41:THR:H	2.02	0.63
1:A:161:HIS:NE2	1:A:173:ILE:O	2.31	0.63
1:C:219:LEU:HB2	1:C:269:TYR:OH	1.98	0.63
2:D:361:HIS:CE1	2:D:371:SER:HB3	2.31	0.63
1:A:218:THR:HG23	1:A:251:VAL:HG22	1.80	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:39:THR:O	1:A:41:THR:N	2.31	0.63
1:C:215:ILE:HG23	1:C:219:LEU:HD12	1.81	0.63
2:D:361:HIS:HE1	2:D:384:LEU:HD21	1.64	0.63
2:D:176:PRO:HA	2:D:179:HIS:HB2	1.80	0.62
3:E:869:PRO:CB	3:E:871:PRO:HD2	2.21	0.62
1:A:36:ARG:HD3	4:A:2010:HOH:O	1.98	0.62
1:A:41:THR:CG2	4:A:2011:HOH:O	2.40	0.62
2:D:361:HIS:CE1	4:D:2016:HOH:O	2.53	0.62
1:A:122:ARG:HA	1:A:152:PHE:CE1	2.34	0.62
1:C:260:ARG:O	1:C:264:SER:OG	2.14	0.62
1:A:15:TYR:N	4:A:2007:HOH:O	2.24	0.61
1:C:60:HIS:CG	1:C:61:PRO:HD2	2.35	0.61
1:A:71:HIS:HE2	2:B:304:PHE:HE2	1.47	0.61
1:A:95:ALA:O	1:A:199:ARG:NH1	2.33	0.61
2:B:209:SER:O	2:B:213:ILE:HG13	2.01	0.61
1:A:71:HIS:NE2	2:B:304:PHE:HE2	1.99	0.61
1:C:40:GLU:O	2:D:288:LYS:CE	2.48	0.61
1:A:278:LYS:HD2	4:B:2007:HOH:O	2.00	0.61
1:C:111:LEU:HD21	1:C:141:ILE:CD1	2.31	0.61
2:D:294:MET:O	2:D:294:MET:HG3	2.00	0.61
1:A:60:HIS:CD2	1:A:62:ASN:H	2.19	0.61
4:A:2001:HOH:O	2:D:293:ARG:HD3	2.00	0.61
2:D:349:LYS:HE3	2:D:350:TYR:CZ	2.36	0.61
1:C:13:GLY:CA	4:C:2006:HOH:O	2.48	0.60
1:C:108:LEU:O	1:C:108:LEU:HD12	2.01	0.60
1:C:60:HIS:CD2	1:C:61:PRO:CD	2.82	0.60
1:C:85:GLN:HB3	4:C:2023:HOH:O	2.00	0.60
1:C:15:TYR:CE1	1:C:35:ILE:HG12	2.37	0.60
1:C:60:HIS:CD2	1:C:62:ASN:H	2.10	0.60
1:C:94:SER:O	1:C:199:ARG:HD3	2.00	0.59
1:C:54:LEU:O	1:C:56:LYS:N	2.35	0.59
2:D:338:GLU:HG2	2:D:409:ILE:HD13	1.84	0.59
1:A:251:VAL:HG12	1:A:252:VAL:HG23	1.85	0.59
1:A:252:VAL:HG11	1:A:255:LEU:HD22	1.82	0.59
2:B:216:ASP:OD2	2:B:408:SER:OG	2.21	0.59
1:A:39:THR:C	1:A:41:THR:N	2.53	0.59
2:B:249:LEU:HD12	4:C:2008:HOH:O	2.02	0.59
1:C:177:CYS:SG	1:C:233:MET:SD	2.94	0.59
2:D:358:ALA:HA	2:D:391:LEU:HD13	1.85	0.59
2:D:392:MET:HB2	4:D:2019:HOH:O	2.02	0.59
2:B:421:VAL:O	4:B:2058:HOH:O	2.17	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:62:ASN:ND2	1:C:110:GLN:HB3	2.18	0.58
1:C:107:TYR:HE1	4:C:2026:HOH:O	1.80	0.58
2:D:211:ARG:HG2	2:D:211:ARG:HH11	1.67	0.58
2:D:237:ASN:HA	4:D:2008:HOH:O	2.03	0.58
1:A:136:ASN:C	1:A:136:ASN:OD1	2.41	0.58
2:D:339:LEU:HD22	2:D:397:THR:CG2	2.32	0.58
1:C:253:PRO:CB	1:C:254:PRO:HD3	2.33	0.58
2:B:273:PRO:HB2	2:B:278:PHE:CE2	2.38	0.58
1:C:189:LEU:HA	1:C:192:ILE:HD12	1.84	0.58
2:D:196:LYS:NZ	2:D:196:LYS:HB3	2.18	0.58
1:C:95:ALA:HA	1:C:199:ARG:HD2	1.86	0.58
1:C:39:THR:O	1:C:40:GLU:HB2	2.02	0.57
1:C:122:ARG:HD3	4:C:2030:HOH:O	2.04	0.57
2:D:298:VAL:HG13	2:D:302:LEU:HD12	1.85	0.57
1:A:219:LEU:CD2	1:A:248:PHE:HE1	2.17	0.57
1:C:106:SER:O	1:C:110:GLN:HG3	2.04	0.57
1:C:83:LEU:HD13	1:C:134:LEU:HB2	1.86	0.57
2:B:388:LYS:HB3	2:B:389:PRO:HD3	1.85	0.57
1:A:86:ASP:OD1	1:A:86:ASP:O	2.22	0.57
1:A:41:THR:O	2:B:288:LYS:NZ	2.34	0.57
1:A:49:ILE:CG2	2:B:306:LEU:HD12	2.35	0.57
1:A:227:TRP:CD2	1:A:230:VAL:CG1	2.88	0.57
2:B:302:LEU:C	4:B:2028:HOH:O	2.43	0.57
1:C:130:PRO:HB2	1:C:131:GLN:NE2	2.20	0.56
1:C:216:PHE:O	1:C:220:GLY:HA2	2.05	0.56
1:C:270:ASP:HB3	1:C:273:LYS:HB2	1.88	0.56
1:A:64:VAL:HG13	1:A:64:VAL:O	2.05	0.56
2:D:362:LEU:O	2:D:362:LEU:HD12	2.05	0.56
2:D:414:LYS:HE2	2:D:423:LEU:HG	1.88	0.56
2:B:203:GLN:HB3	2:B:206:ILE:HG12	1.87	0.56
2:B:224:GLU:HB2	3:E:871:PRO:HG2	1.87	0.56
2:B:327:CYS:CB	4:B:2039:HOH:O	2.14	0.56
1:A:39:THR:HG21	2:B:289:LYS:NZ	2.21	0.56
2:B:211:ARG:HG2	2:B:211:ARG:HH11	1.71	0.56
1:C:37:LEU:HD21	1:C:76:LEU:HD13	1.87	0.55
2:D:361:HIS:O	2:D:363:ALA:N	2.40	0.55
1:C:216:PHE:O	1:C:220:GLY:CA	2.54	0.55
1:C:122:ARG:HA	1:C:152:PHE:CE1	2.41	0.55
1:C:216:PHE:CD1	1:C:222:PRO:HD3	2.42	0.55
1:A:129:LYS:HA	1:A:192:ILE:HD11	1.89	0.55
1:C:94:SER:O	1:C:199:ARG:CD	2.54	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:346:PRO:O	2:D:348:LEU:N	2.39	0.55
2:D:415:ASN:OD1	2:D:416:SER:N	2.40	0.55
1:C:60:HIS:CG	1:C:61:PRO:CD	2.89	0.55
1:A:51:GLU:O	1:A:55:LEU:HB2	2.06	0.55
1:C:129:LYS:HD2	1:C:131:GLN:OE1	2.07	0.55
2:D:199:TYR:O	2:D:202:LYS:HB2	2.07	0.55
2:D:196:LYS:HG2	2:D:244:SER:HB3	1.89	0.55
1:C:91:MET:CE	1:C:130:PRO:HB3	2.37	0.54
2:B:350:TYR:CE1	2:B:390:CYS:HB2	2.41	0.54
2:B:395:HIS:HE1	2:B:427:PRO:O	1.90	0.54
1:A:9:LYS:HA	1:A:19:TYR:HD2	1.73	0.54
2:D:387:LEU:O	2:D:391:LEU:HB2	2.08	0.54
2:B:316:THR:O	2:B:319:PHE:HB2	2.08	0.54
2:D:298:VAL:CG1	2:D:302:LEU:HD12	2.38	0.54
2:D:346:PRO:HD2	2:D:347:TYR:CD2	2.42	0.54
2:D:323:GLN:HB2	2:D:324:PRO:HD3	1.90	0.53
1:C:0:SER:C	4:C:2002:HOH:O	2.47	0.53
1:A:97:THR:HG23	1:A:98:GLY:H	1.72	0.53
2:B:323:GLN:HB3	4:B:2036:HOH:O	2.08	0.53
1:A:197:VAL:HG11	1:A:252:VAL:CG1	2.39	0.53
1:A:217:ARG:HG2	1:A:243:TRP:CD2	2.43	0.53
1:C:51:GLU:HG3	4:C:2014:HOH:O	2.08	0.53
1:C:71:HIS:CD2	2:D:296:HIS:NE2	2.67	0.53
1:C:57:GLU:O	1:C:58:LEU:C	2.46	0.53
1:A:84:HIS:CE1	1:A:137:THR:HG23	2.43	0.53
1:A:101:LEU:N	1:A:102:PRO:CD	2.72	0.53
1:C:54:LEU:O	1:C:55:LEU:C	2.46	0.53
2:D:323:GLN:N	2:D:324:PRO:CD	2.71	0.53
1:C:38:ASP:HA	4:C:2013:HOH:O	2.08	0.53
2:B:202:LYS:O	2:B:204:PRO:HD3	2.10	0.52
2:D:218:LEU:HD22	2:D:261:MET:SD	2.49	0.52
2:D:361:HIS:C	2:D:363:ALA:H	2.13	0.52
1:A:269:TYR:O	1:A:271:PRO:HD3	2.08	0.52
1:C:252:VAL:HG12	1:C:255:LEU:HB2	1.90	0.52
1:A:252:VAL:CG1	1:A:255:LEU:HD22	2.39	0.52
1:C:286:PHE:O	1:C:288:ASP:N	2.43	0.52
1:A:190:GLY:O	1:A:191:CYS:C	2.48	0.52
1:A:217:ARG:HD3	1:A:243:TRP:CE2	2.44	0.52
1:C:39:THR:HG21	2:D:289:LYS:HZ2	1.75	0.52
2:B:417:LYS:CB	2:B:417:LYS:HZ2	2.23	0.52
2:D:337:GLY:O	2:D:340:SER:OG	2.21	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:41:THR:O	2:B:288:LYS:CE	2.58	0.52
2:D:362:LEU:HD23	2:D:394:LEU:HG	1.91	0.52
1:A:103:LEU:HD13	1:A:292:PRO:HB2	1.92	0.51
1:A:171:PRO:HD3	1:A:187:TRP:CZ2	2.45	0.51
2:D:377:ILE:HG22	4:D:2017:HOH:O	2.11	0.51
2:D:301:VAL:CG1	2:D:301:VAL:O	2.58	0.51
1:A:150:ARG:NH2	1:A:160:TPO:O1P	2.44	0.51
1:A:62:ASN:HA	1:A:142:LYS:HG2	1.92	0.51
2:D:401:ALA:HB3	2:D:402:PRO:CD	2.34	0.51
1:A:262:LEU:O	1:A:263:LEU:C	2.49	0.51
1:A:122:ARG:HA	1:A:152:PHE:CZ	2.45	0.51
1:C:268:HIS:HD2	1:C:270:ASP:H	1.59	0.51
2:D:388:LYS:O	2:D:392:MET:HG2	2.11	0.51
1:A:119:HIS:CD2	1:A:182:THR:HB	2.46	0.50
1:C:39:THR:HG22	2:D:289:LYS:NZ	2.26	0.50
2:D:203:GLN:HB3	2:D:206:ILE:HG13	1.93	0.50
3:E:869:PRO:C	3:E:871:PRO:CD	2.78	0.50
2:B:194:LYS:NZ	2:B:351:LEU:CD2	2.73	0.50
1:A:184:VAL:O	4:A:2041:HOH:O	2.17	0.50
1:A:218:THR:HG23	1:A:251:VAL:CG2	2.41	0.50
1:C:39:THR:CG2	2:D:289:LYS:HZ2	2.25	0.50
1:A:162:GLU:HG2	4:A:2035:HOH:O	2.11	0.50
1:C:169:ARG:HD3	1:C:173:ILE:HG22	1.92	0.50
1:C:272:ASN:HB3	4:C:2046:HOH:O	2.12	0.50
2:D:302:LEU:O	2:D:303:THR:C	2.50	0.50
2:D:211:ARG:HD3	2:D:344:ALA:HB2	1.92	0.50
1:A:131:GLN:CD	1:A:131:GLN:H	2.15	0.50
2:B:175:VAL:C	2:B:177:ASP:H	2.15	0.50
1:A:161:HIS:HB3	1:A:162:GLU:OE2	2.12	0.50
1:A:193:PHE:O	1:A:194:ALA:C	2.47	0.50
1:C:293:VAL:HG12	1:C:293:VAL:O	2.12	0.50
1:A:96:LEU:O	1:A:97:THR:C	2.49	0.49
1:C:268:HIS:CD2	1:C:270:ASP:H	2.31	0.49
2:D:357:GLY:HA2	2:D:372:TRP:CZ3	2.47	0.49
1:A:100:PRO:C	1:A:102:PRO:HD2	2.33	0.49
1:C:52:ILE:HD11	1:C:78:LEU:HD21	1.95	0.49
1:C:228:PRO:HD2	1:C:270:ASP:OD2	2.12	0.49
1:C:253:PRO:HB2	1:C:254:PRO:CD	2.40	0.49
2:B:175:VAL:O	2:B:177:ASP:N	2.46	0.49
2:B:194:LYS:HZ3	2:B:351:LEU:CD2	2.25	0.49
2:D:196:LYS:HB3	2:D:196:LYS:HZ3	1.78	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:281:ILE:O	3:E:872:LEU:HA	2.12	0.49
2:D:200:MET:HG2	2:D:208:ASN:ND2	2.28	0.49
1:A:230:VAL:HG23	1:A:231:THR:N	2.28	0.48
2:B:191:VAL:HG12	2:B:191:VAL:O	2.13	0.48
1:C:101:LEU:N	1:C:102:PRO:CD	2.75	0.48
1:C:203:PHE:N	4:C:2037:HOH:O	2.39	0.48
2:B:175:VAL:C	2:B:177:ASP:N	2.66	0.48
2:B:187:ARG:HD2	2:B:190:GLU:OE2	2.13	0.48
2:D:183:HIS:O	2:D:187:ARG:HG2	2.13	0.48
1:A:159:TYR:O	1:A:160:TPO:C	2.61	0.48
2:B:327:CYS:HG	2:B:419:HIS:CD2	2.31	0.48
1:A:3:ASN:O	1:A:24:LYS:HG3	2.12	0.48
1:A:98:GLY:HA2	1:A:199:ARG:CD	2.42	0.48
1:C:157:ARG:NH1	1:C:159:TYR:HE1	2.11	0.48
2:D:298:VAL:HG13	2:D:302:LEU:CD1	2.44	0.48
2:D:191:VAL:O	2:D:194:LYS:HB3	2.14	0.48
2:D:335:PHE:HB2	2:D:413:TYR:CD2	2.49	0.48
3:E:870:LYS:N	3:E:871:PRO:CD	2.76	0.48
1:C:95:ALA:C	1:C:199:ARG:HH11	2.16	0.48
1:C:98:GLY:HA2	1:C:199:ARG:NE	2.28	0.48
1:C:260:ARG:HH11	1:C:260:ARG:HG3	1.79	0.48
2:D:331:SER:O	2:D:421:VAL:HG21	2.14	0.48
2:B:346:PRO:O	2:B:349:LYS:HG2	2.14	0.48
1:C:115:LEU:HG	1:C:119:HIS:NE2	2.29	0.47
2:B:288:LYS:O	2:B:292:LEU:HD13	2.14	0.47
2:B:424:LEU:HB2	4:B:2058:HOH:O	2.13	0.47
1:A:230:VAL:HA	1:A:233:MET:SD	2.54	0.47
1:C:76:LEU:HD12	1:C:76:LEU:HA	1.71	0.47
2:D:314:PHE:HE2	2:D:352:PRO:HB2	1.78	0.47
1:A:10:ILE:HG12	1:A:10:ILE:O	2.15	0.47
2:B:395:HIS:CE1	2:B:427:PRO:O	2.67	0.47
1:C:171:PRO:O	1:C:173:ILE:N	2.47	0.47
1:A:131:GLN:CD	1:A:131:GLN:N	2.68	0.47
1:C:111:LEU:CD2	1:C:141:ILE:HD13	2.44	0.47
2:D:175:VAL:O	2:D:177:ASP:N	2.48	0.47
1:A:73:GLU:CA	4:A:2021:HOH:O	2.61	0.47
2:B:224:GLU:HB2	3:E:871:PRO:CG	2.44	0.47
2:B:347:TYR:OH	2:B:394:LEU:HA	2.14	0.47
2:B:368:THR:OG1	2:B:370:GLN:HG3	2.14	0.47
1:C:136:ASN:HD21	1:C:140:ALA:CB	2.18	0.47
2:D:281:ILE:C	2:D:283:ASP:H	2.16	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:39:THR:CG2	2:D:289:LYS:NZ	2.77	0.47
1:C:40:GLU:OE2	2:D:289:LYS:NZ	2.48	0.47
2:D:401:ALA:O	2:D:403:GLN:N	2.48	0.47
2:B:191:VAL:O	2:B:191:VAL:CG1	2.63	0.47
1:C:12:GLU:HG3	1:C:16:GLY:O	2.14	0.47
1:C:269:TYR:O	1:C:271:PRO:HD3	2.16	0.46
2:D:361:HIS:C	2:D:363:ALA:N	2.69	0.46
2:B:315:LEU:O	2:B:316:THR:C	2.52	0.46
2:B:374:GLU:HA	2:B:377:ILE:HD12	1.96	0.46
2:D:350:TYR:CZ	2:D:390:CYS:HA	2.50	0.46
1:C:96:LEU:C	4:C:2025:HOH:O	2.53	0.46
2:D:373:PRO:O	2:D:377:ILE:HG13	2.16	0.46
1:A:0:SER:HA	1:A:70:ILE:HD13	1.96	0.46
1:C:57:GLU:HB2	1:C:58:LEU:H	1.36	0.46
2:B:323:GLN:CB	4:B:2036:HOH:O	2.63	0.46
1:C:107:TYR:O	1:C:111:LEU:HG	2.16	0.46
2:D:308:ALA:HA	2:D:309:PRO:HD3	1.84	0.46
2:D:327:CYS:SG	2:D:419:HIS:NE2	2.89	0.46
2:D:355:ILE:HA	2:D:390:CYS:SG	2.55	0.46
2:D:361:HIS:CD2	2:D:391:LEU:HD21	2.51	0.46
1:A:39:THR:HG22	1:A:40:GLU:H	1.81	0.46
1:A:188:SER:O	1:A:192:ILE:HG13	2.15	0.46
1:A:197:VAL:HG11	1:A:252:VAL:HG13	1.98	0.46
2:B:205:ASP:OD1	2:B:250:ARG:NH2	2.37	0.46
2:B:343:ASP:O	2:B:344:ALA:C	2.53	0.46
1:C:108:LEU:HG	1:C:286:PHE:HZ	1.81	0.46
1:A:108:LEU:HD12	1:A:108:LEU:HA	1.62	0.46
1:A:231:THR:HA	1:A:236:TYR:CD1	2.51	0.46
2:B:319:PHE:CZ	2:B:330:GLU:HA	2.50	0.46
2:B:350:TYR:CD1	2:B:390:CYS:HB2	2.51	0.46
2:D:383:THR:H	2:D:386:SER:HG	1.62	0.46
1:A:88:LYS:HA	1:A:91:MET:HE2	1.97	0.46
1:A:224:GLU:OE2	1:A:231:THR:HG23	2.16	0.46
2:B:323:GLN:HA	2:B:324:PRO:HA	1.78	0.46
1:C:105:LYS:HD3	1:C:285:PHE:O	2.16	0.46
2:B:211:ARG:HG2	2:B:211:ARG:NH1	2.31	0.46
2:B:293:ARG:HB3	1:C:25:LEU:HD11	1.98	0.46
1:A:286:PHE:O	1:A:288:ASP:N	2.49	0.45
1:A:2:GLU:HG3	1:C:73:GLU:CD	2.37	0.45
1:C:125:HIS:O	1:C:126:ARG:HB2	2.16	0.45
2:D:306:LEU:O	2:D:308:ALA:N	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:88:LYS:HB2	1:A:130:PRO:HB2	1.98	0.45
2:B:176:PRO:HB2	4:B:2005:HOH:O	2.16	0.45
2:B:230:GLU:OE1	2:B:230:GLU:HA	2.15	0.45
1:A:227:TRP:CD2	1:A:230:VAL:HG13	2.51	0.45
2:D:396:GLN:HB3	2:D:400:LYS:CE	2.47	0.45
1:A:194:ALA:O	1:A:197:VAL:HB	2.17	0.45
1:C:156:VAL:HG11	1:C:181:SER:HB3	1.98	0.45
1:C:163:VAL:HA	4:C:2035:HOH:O	2.17	0.45
1:C:60:HIS:HD2	1:C:62:ASN:N	2.01	0.45
1:C:60:HIS:NE2	1:C:61:PRO:HD2	2.32	0.45
1:C:91:MET:HE1	1:C:130:PRO:HB3	1.99	0.45
1:C:168:TYR:CD2	1:C:168:TYR:N	2.85	0.45
1:A:223:ASP:HB2	4:A:2047:HOH:O	2.17	0.45
2:B:190:GLU:OE1	2:B:352:PRO:HD2	2.17	0.45
2:D:345:ASP:HA	2:D:346:PRO:HA	1.57	0.44
1:A:13:GLY:C	4:A:2007:HOH:O	2.55	0.44
2:D:237:ASN:ND2	4:D:2008:HOH:O	2.49	0.44
2:D:196:LYS:NZ	2:D:196:LYS:CB	2.80	0.44
2:D:263:LEU:HD23	2:D:263:LEU:HA	1.89	0.44
2:D:309:PRO:HA	2:D:313:GLN:NE2	2.31	0.44
2:D:403:GLN:HE21	2:D:403:GLN:HB2	1.57	0.44
2:B:430:LEU:O	2:B:431:ASN:CB	2.62	0.44
1:C:72:THR:HG22	1:C:73:GLU:N	2.32	0.44
2:B:175:VAL:HG23	2:B:177:ASP:OD2	2.18	0.44
1:A:121:HIS:O	1:A:122:ARG:CG	2.47	0.44
2:B:193:CYS:O	2:B:241:ARG:HD2	2.17	0.44
1:A:98:GLY:HA2	1:A:199:ARG:HD3	1.99	0.44
1:C:54:LEU:C	1:C:56:LYS:N	2.71	0.44
1:C:88:LYS:O	1:C:89:LYS:C	2.55	0.44
1:A:155:PRO:HD2	2:B:316:THR:HB	2.00	0.43
2:B:345:ASP:HA	2:B:346:PRO:HA	1.73	0.43
1:C:115:LEU:HD21	1:C:185:ASP:HB3	2.00	0.43
1:A:252:VAL:HG12	1:A:252:VAL:O	2.18	0.43
1:C:152:PHE:C	4:C:2030:HOH:O	2.57	0.43
1:A:33:LYS:HE2	4:A:2003:HOH:O	2.18	0.43
2:B:407:GLN:O	2:B:411:GLU:HG2	2.18	0.43
2:B:430:LEU:HD12	2:B:432:LEU:HD11	2.00	0.43
2:B:344:ALA:HB1	2:B:348:LEU:HD22	1.99	0.43
1:A:64:VAL:O	1:A:64:VAL:CG1	2.66	0.43
2:B:384:LEU:HD12	2:B:384:LEU:HA	1.50	0.43
1:C:154:VAL:HA	1:C:155:PRO:HA	1.80	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:202:LEU:CD2	1:C:203:PHE:CE2	3.02	0.43
1:A:262:LEU:C	1:A:264:SER:N	2.67	0.43
2:D:215:VAL:O	2:D:219:VAL:HG23	2.19	0.43
2:D:324:PRO:O	2:D:325:ALA:HB3	2.18	0.43
1:A:263:LEU:HA	1:A:263:LEU:HD12	1.73	0.43
1:C:72:THR:CG2	4:C:2020:HOH:O	2.67	0.43
2:D:326:ASN:ND2	2:D:328:LYS:H	2.17	0.43
1:A:35:ILE:HD11	4:A:2003:HOH:O	2.19	0.43
1:A:212:LEU:HD23	1:A:212:LEU:HA	1.88	0.43
2:B:238:TYR:N	2:B:238:TYR:CD1	2.83	0.43
1:C:202:LEU:O	1:C:203:PHE:CD1	2.72	0.43
2:D:250:ARG:HG3	2:D:251:GLY:N	2.34	0.43
1:A:87:LEU:O	1:A:87:LEU:HD12	2.19	0.42
1:A:135:ILE:O	1:A:135:ILE:HG13	2.18	0.42
1:C:122:ARG:HB2	4:C:2030:HOH:O	2.17	0.42
1:C:198:THR:O	1:C:199:ARG:HB2	2.19	0.42
1:C:260:ARG:HG3	1:C:260:ARG:NH1	2.34	0.42
2:D:203:GLN:OE1	2:D:247:SER:HA	2.17	0.42
1:A:69:VAL:O	1:A:69:VAL:HG12	2.18	0.42
1:C:60:HIS:CD2	1:C:61:PRO:N	2.88	0.42
1:C:85:GLN:HE21	1:C:135:ILE:HD11	1.83	0.42
1:C:224:GLU:OE2	1:C:230:VAL:HB	2.19	0.42
1:A:223:ASP:H	1:A:226:VAL:CG1	2.31	0.42
1:A:13:GLY:O	1:A:16:GLY:N	2.50	0.42
1:A:223:ASP:O	1:A:226:VAL:HG12	2.20	0.42
2:B:181:ASP:OD1	2:B:181:ASP:N	2.52	0.42
1:C:97:THR:N	4:C:2025:HOH:O	2.53	0.42
1:C:182:THR:O	1:C:183:ALA:C	2.58	0.42
1:C:270:ASP:HA	1:C:271:PRO:HD3	1.87	0.42
2:D:185:TYR:O	2:D:189:MET:HG2	2.19	0.42
2:D:323:GLN:N	2:D:324:PRO:HD3	2.34	0.42
1:C:180:TYR:C	1:C:180:TYR:CD1	2.93	0.42
1:A:72:THR:HG21	1:A:74:ASN:OD1	2.19	0.42
2:B:395:HIS:CG	2:B:430:LEU:HD21	2.54	0.42
1:C:7:VAL:O	1:C:8:GLU:HB3	2.20	0.42
1:C:39:THR:C	1:C:41:THR:H	2.23	0.42
1:C:135:ILE:HA	1:C:140:ALA:O	2.20	0.42
2:D:208:ASN:HD22	2:D:208:ASN:H	1.68	0.42
2:B:175:VAL:HG23	2:B:177:ASP:CG	2.40	0.42
2:D:372:TRP:HB3	2:D:384:LEU:CD1	2.46	0.42
1:C:121:HIS:O	1:C:123:VAL:HG23	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:227:TRP:CE3	1:C:269:TYR:HB3	2.55	0.42
1:A:42:GLU:OE1	2:B:275:VAL:HG23	2.19	0.42
2:B:242:PHE:CD1	2:B:298:VAL:HG22	2.55	0.42
1:C:171:PRO:C	1:C:173:ILE:N	2.71	0.42
2:D:294:MET:HB2	2:D:294:MET:HE2	1.89	0.42
1:A:49:ILE:HG23	2:B:306:LEU:HD12	2.01	0.41
2:B:411:GLU:O	2:B:414:LYS:HB2	2.20	0.41
1:C:129:LYS:HB2	1:C:130:PRO:HD2	2.02	0.41
1:C:154:VAL:O	2:D:316:THR:CG2	2.46	0.41
1:C:215:ILE:CG2	1:C:219:LEU:HD12	2.49	0.41
2:D:327:CYS:HG	2:D:419:HIS:CE1	2.37	0.41
1:A:161:HIS:O	1:A:161:HIS:CG	2.73	0.41
1:C:110:GLN:HA	1:C:113:GLN:HE21	1.85	0.41
1:C:6:LYS:HD3	1:C:19:TYR:CD2	2.55	0.41
1:C:40:GLU:O	2:D:288:LYS:NZ	2.51	0.41
1:C:189:LEU:CA	1:C:192:ILE:HD12	2.50	0.41
1:C:227:TRP:HB3	1:C:230:VAL:CG2	2.50	0.41
2:D:260:ALA:O	2:D:263:LEU:N	2.53	0.41
1:A:55:LEU:HD12	1:A:55:LEU:HA	1.63	0.41
1:A:115:LEU:HD12	1:A:115:LEU:HA	1.91	0.41
1:A:174:LEU:HD11	1:A:211:GLN:HG2	2.03	0.41
2:B:211:ARG:O	2:B:214:LEU:N	2.52	0.41
1:C:39:THR:HG22	2:D:289:LYS:HZ3	1.85	0.41
2:D:312:ASN:O	2:D:316:THR:HB	2.21	0.41
1:A:241:PRO:HB2	1:A:243:TRP:CZ3	2.56	0.41
1:C:275:ILE:CG1	1:C:279:ALA:HB3	2.50	0.41
2:D:208:ASN:HD22	2:D:208:ASN:N	2.18	0.41
1:A:41:THR:HB	1:A:43:GLY:H	1.85	0.41
2:B:308:ALA:HA	2:B:309:PRO:HD3	1.93	0.41
2:B:317:GLN:O	2:B:318:TYR:C	2.57	0.41
2:B:318:TYR:O	2:B:319:PHE:C	2.56	0.41
1:C:51:GLU:CD	4:C:2014:HOH:O	2.59	0.41
1:C:59:ASN:HD22	1:C:59:ASN:HA	1.54	0.41
1:A:96:LEU:HD23	1:A:96:LEU:HA	1.92	0.41
1:A:277:ALA:O	1:A:278:LYS:C	2.59	0.41
2:D:261:MET:O	2:D:262:LEU:C	2.59	0.41
2:D:366:THR:O	2:D:366:THR:HG22	2.21	0.41
3:E:872:LEU:O	3:E:872:LEU:CG	2.54	0.41
1:A:40:GLU:CA	2:B:288:LYS:HE2	2.51	0.41
1:A:193:PHE:CD2	1:A:263:LEU:HD13	2.56	0.41
2:B:296:HIS:O	2:B:297:LEU:C	2.59	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:371:SER:O	2:B:372:TRP:C	2.60	0.41
1:C:136:ASN:OD1	1:C:138:GLU:N	2.53	0.41
1:C:283:HIS:HA	1:C:284:PRO:HD3	1.82	0.41
1:A:104:ILE:O	1:A:105:LYS:C	2.60	0.40
1:A:270:ASP:O	1:A:271:PRO:C	2.58	0.40
1:C:278:LYS:HG3	2:D:178:TYR:CE1	2.56	0.40
1:A:52:ILE:O	1:A:56:LYS:HG3	2.22	0.40
1:C:85:GLN:NE2	1:C:90:PHE:HB2	2.37	0.40
1:C:101:LEU:HD13	1:C:101:LEU:O	2.21	0.40
1:C:169:ARG:HD3	1:C:173:ILE:CG2	2.51	0.40
1:C:287:GLN:HG3	1:C:288:ASP:N	2.35	0.40
2:D:361:HIS:HD2	2:D:391:LEU:HD21	1.86	0.40
1:A:122:ARG:HD2	1:A:122:ARG:O	2.21	0.40
2:B:326:ASN:C	2:B:326:ASN:OD1	2.59	0.40
1:C:44:VAL:HA	1:C:45:PRO:HD3	1.93	0.40
1:C:215:ILE:HG23	1:C:219:LEU:CD1	2.50	0.40
2:D:211:ARG:HG2	2:D:211:ARG:NH1	2.35	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:A:2054:HOH:O	4:B:2013:HOH:O[4_456]	1.64	0.56
1:A:199:ARG:NH2	2:B:374:GLU:OE2[4_456]	1.82	0.38

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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	291/303 (96%)	265 (91%)	16 (6%)	10 (3%)	3 5
1	C	274/303 (90%)	240 (88%)	25 (9%)	9 (3%)	4 5

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
2	B	256/259 (99%)	245 (96%)	7 (3%)	4 (2%)	9	17
2	D	256/259 (99%)	225 (88%)	26 (10%)	5 (2%)	7	12
3	E	8/11 (73%)	5 (62%)	2 (25%)	1 (12%)	0	0
All	All	1085/1135 (96%)	980 (90%)	76 (7%)	29 (3%)	5	7

All (29) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	40	GLU
1	A	96	LEU
2	D	347	TYR
1	A	164	VAL
1	C	57	GLU
1	C	58	LEU
1	C	230	VAL
1	C	287	GLN
2	D	197	VAL
1	A	14	THR
1	A	97	THR
1	A	287	GLN
1	C	55	LEU
1	C	172	GLU
1	C	181	SER
1	C	292	PRO
2	D	362	LEU
1	A	1	MET
1	A	8	GLU
1	A	95	ALA
2	B	176	PRO
2	B	284	ASP
2	B	431	ASN
1	C	164	VAL
1	A	292	PRO
2	B	330	GLU
2	D	325	ALA
2	D	415	ASN
3	E	870	LYS

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	258/265 (97%)	239 (93%)	19 (7%)	13	27
1	C	244/265 (92%)	229 (94%)	15 (6%)	18	36
2	B	232/233 (100%)	219 (94%)	13 (6%)	21	40
2	D	232/233 (100%)	217 (94%)	15 (6%)	17	33
3	E	10/11 (91%)	8 (80%)	2 (20%)	1	2
All	All	976/1007 (97%)	912 (93%)	64 (7%)	16	32

All (64) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	ASN
1	A	59	ASN
1	A	75	LYS
1	A	78	LEU
1	A	86	ASP
1	A	89	LYS
1	A	97	THR
1	A	99	ILE
1	A	105	LYS
1	A	122	ARG
1	A	150	ARG
1	A	177	CYS
1	A	184	VAL
1	A	206	ASP
1	A	232	SER
1	A	248	PHE
1	A	255	LEU
1	A	261	SER
1	A	272	ASN
2	B	179	HIS
2	B	180	GLU
2	B	181	ASP
2	B	196	LYS

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Mol	Chain	Res	Type
2	B	232	LEU
2	B	261	MET
2	B	277	GLU
2	B	374	GLU
2	B	384	LEU
2	B	385	GLU
2	B	388	LYS
2	B	408	SER
2	B	425	ASN
1	C	0	SER
1	C	15	TYR
1	C	37	LEU
1	C	41	THR
1	C	55	LEU
1	C	57	GLU
1	C	59	ASN
1	C	73	GLU
1	C	81	GLU
1	C	101	LEU
1	C	122	ARG
1	C	150	ARG
1	C	178	LYS
1	C	210	ASP
1	C	290	THR
2	D	180	GLU
2	D	196	LYS
2	D	201	LYS
2	D	218	LEU
2	D	245	SER
2	D	250	ARG
2	D	292	LEU
2	D	327	CYS
2	D	339	LEU
2	D	392	MET
2	D	398	TYR
2	D	403	GLN
2	D	417	LYS
2	D	425	ASN
2	D	432	LEU
3	E	872	LEU
3	E	878	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (21)

such sidechains are listed below:

Mol	Chain	Res	Type
1	A	60	HIS
1	A	85	GLN
1	A	119	HIS
1	A	131	GLN
1	A	272	ASN
2	B	317	GLN
2	B	395	HIS
2	B	396	GLN
2	B	431	ASN
1	C	59	ASN
1	C	60	HIS
1	C	62	ASN
1	C	71	HIS
1	C	85	GLN
1	C	113	GLN
1	C	131	GLN
1	C	268	HIS
2	D	254	GLN
2	D	313	GLN
2	D	361	HIS
2	D	403	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](#)

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	TPO	A	160	1	8,10,11	3.67	4 (50%)	10,14,16	2.63	1 (10%)
1	TPO	C	160	1	8,10,11	3.58	4 (50%)	10,14,16	2.06	1 (10%)

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	TPO	A	160	1	-	3/9/11/13	-
1	TPO	C	160	1	-	1/9/11/13	-

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	160	TPO	O-C	6.30	1.45	1.19
1	A	160	TPO	P-O1P	6.22	1.70	1.50
1	C	160	TPO	P-O1P	6.10	1.70	1.50
1	C	160	TPO	O-C	5.87	1.43	1.19
1	C	160	TPO	P-O3P	4.07	1.70	1.54
1	A	160	TPO	P-O2P	3.72	1.69	1.54
1	A	160	TPO	P-O3P	3.71	1.69	1.54
1	C	160	TPO	P-O2P	3.65	1.68	1.54

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	160	TPO	O-C-CA	-7.83	104.26	124.78
1	C	160	TPO	O-C-CA	-6.15	108.66	124.78

There are no chirality outliers.

All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
1	A	160	TPO	O-C-CA-CB
1	A	160	TPO	CB-OG1-P-O3P
1	A	160	TPO	CB-OG1-P-O1P
1	C	160	TPO	CB-OG1-P-O2P

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
1	A	160	TPO	2	0

5.5 Carbohydrates [i](#)

There are no monosaccharides 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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.2 Non-standard residues in protein, DNA, RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.