Full wwPDB X-ray Structure Validation Report ⓘ

Dec 3, 2023 – 01:47 am GMT

PDB ID	:	1GY3
Title	:	pCDK2/cyclin A in complex with MgADP, nitrate and peptide substrate
Authors	:	Cook, A.; Lowe, E.D.; Chrysina, E.D.; Skamnaki, V.T.; Oikonomakos, N.G.; Johnson, L.N.
Deposited on	:	2002-04-19
Resolution	:	2.70 Å(reported)

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

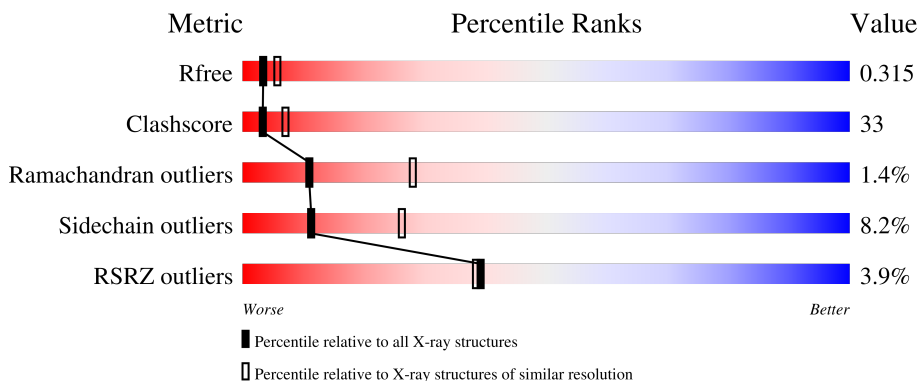|		
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (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 2.70 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	Percentile Ranks	Value
Rfree		0.315
Clashscore		33
Ramachandran outliers		1.4%
Sidechain outliers		8.2%
RSRZ outliers		3.9%

Worse   *Better*

▌ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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 <=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	299	3% / 42% / 49% / 7% •
1	C	299	4% / 43% / 47% / 8% •
2	B	258	2% / 50% / 46% •
2	D	258	2% / 53% / 41% / 5% •
3	E	7	100% / 71% / 29%

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Mol	Chain	Length	Quality of chain
3	F	7	86% ... 43% / 14% / 29% / 14%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
5	MG	A	1298	-	-	-	X
6	NO3	A	1299	-	-	X	-
6	NO3	C	1300	-	-	X	-

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 9284 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
1	A	296	Total 2382	C 1547	N 403	O 423	P 1	S 8	0	0	0
1	C	296	Total 2381	C 1547	N 403	O 422	P 1	S 8	0	0	0

- Molecule 2 is a protein called CYCLIN A2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	258	Total 2083	C 1350	N 339	O 383	S 11	0	0	0
2	D	258	Total 2084	C 1350	N 339	O 384	S 11	0	0	0

- Molecule 3 is a protein called SUBSTRATE PEPTIDE.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	E	7	Total 58	C 35	N 15	O 8	0	0	0
3	F	7	Total 58	C 35	N 15	O 8	0	0	0

- Molecule 4 is ADENOSINE-5'-TRIPHOSPHATE (three-letter code: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
4	A	1	Total	C	N	O	P	0	0
			27	10	5	10	2		
4	C	1	Total	C	N	O	P	0	0
			27	10	5	10	2		

• Molecule 5 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	1	Total	Mg	0	0
			1	1		
5	C	1	Total	Mg	0	0
			1	1		

• Molecule 6 is NITRATE ION (three-letter code: NO3) (formula: NO_3).

NO3

O1

O

N+

O⁻ O2

N

O⁻

O3

Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	A	1	Total 4	N 1	O 3	0	0
6	C	1	Total 4	N 1	O 3	0	0

• Molecule 7 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).

GOL

C3

OH O3

C1　　C2

HO

O1

OH

O2
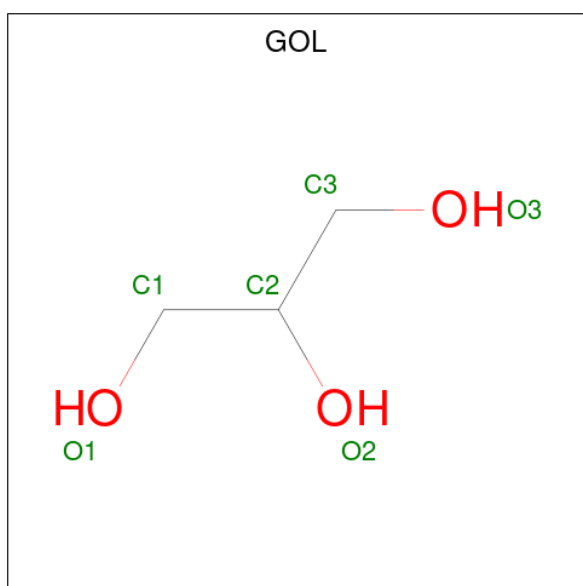
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
7	B	1	Total 6	C 3	O 3	0	0
7	C	1	Total 6	C 3	O 3	0	0

W O R L D W I D E
wwPDB
PROTEIN DATA BANK

• Molecule 8 is water.

| Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	37	Total 37	O 37	0	0
8	B	30	Total 30	O 30	0	0
8	C	48	Total 48	O 48	0	0
8	D	45	Total 45	O 45	0	0
8	F	2	Total 2	O 2	0	0

3   Residue-property plots ⓘ

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 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.
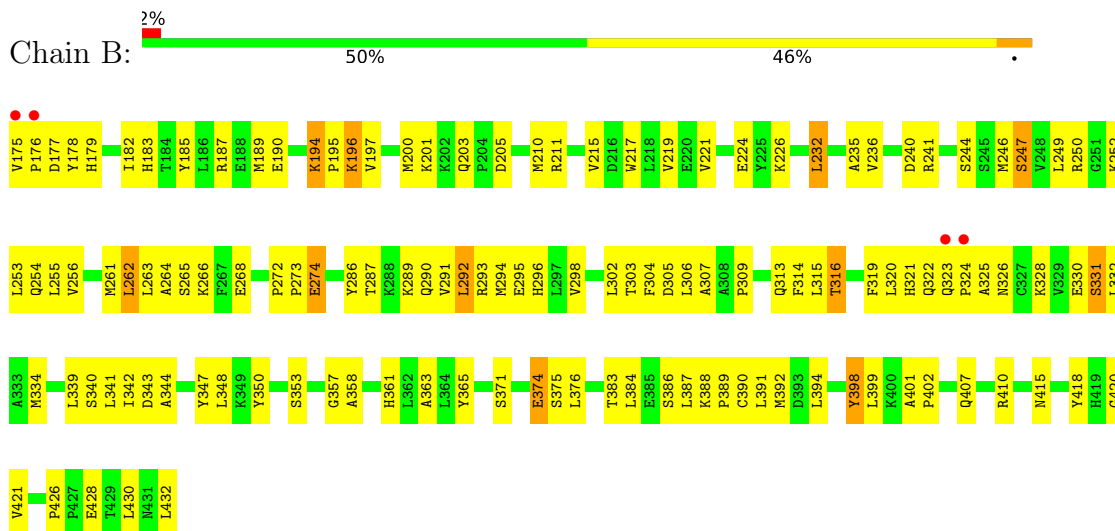
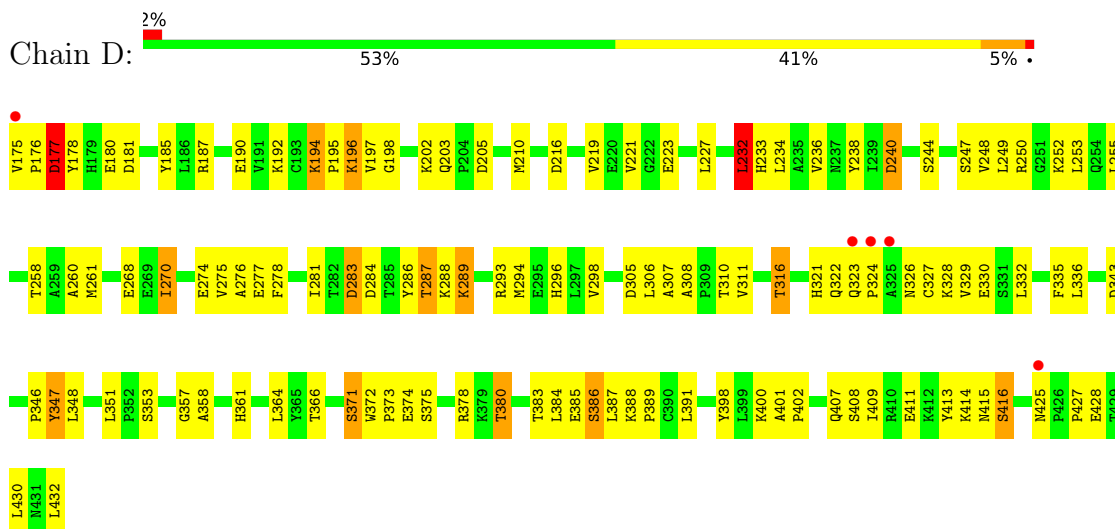• Molecule 1: CELL DIVISION PROTEIN KINASE 2
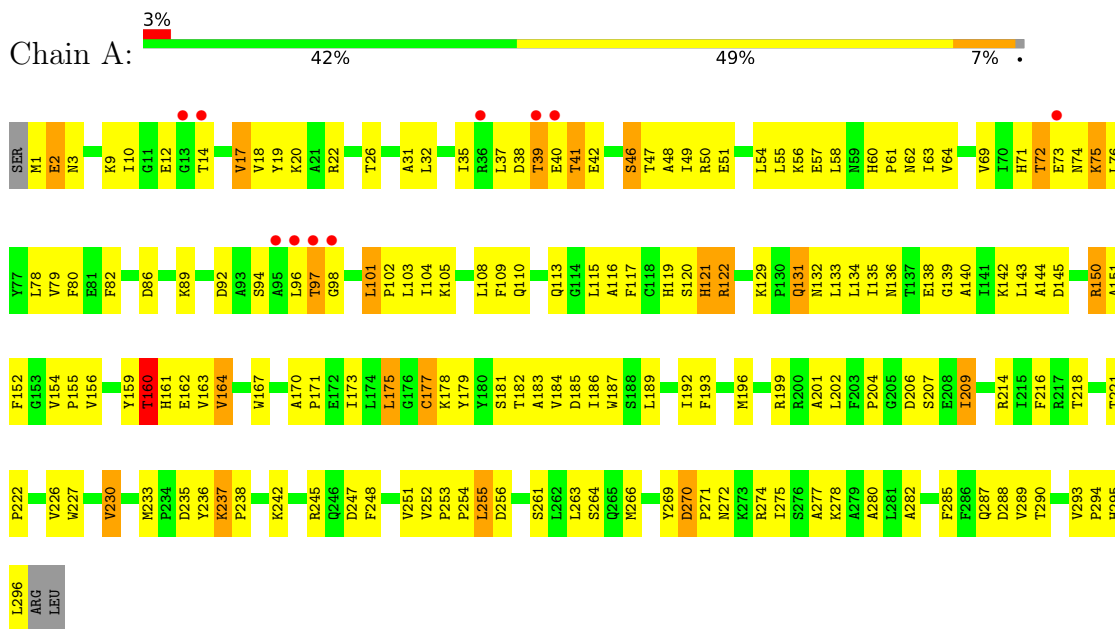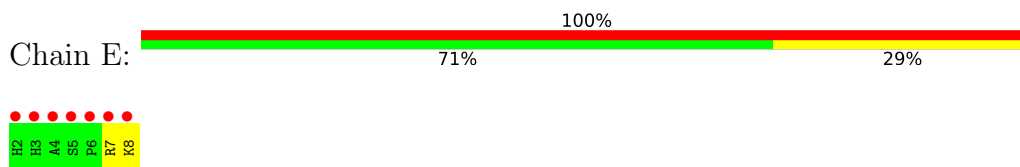

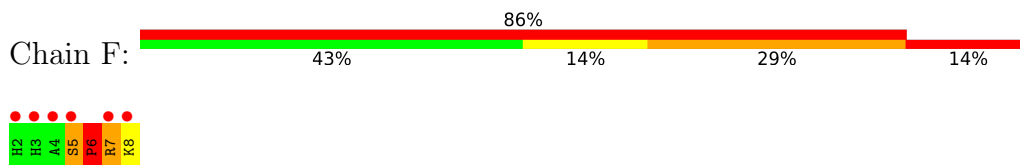• Molecule 1: CELL DIVISION PROTEIN KINASE 2

• Molecule 2: CYCLIN A2

Chain B:

• Molecule 2: CYCLIN A2

Chain D:
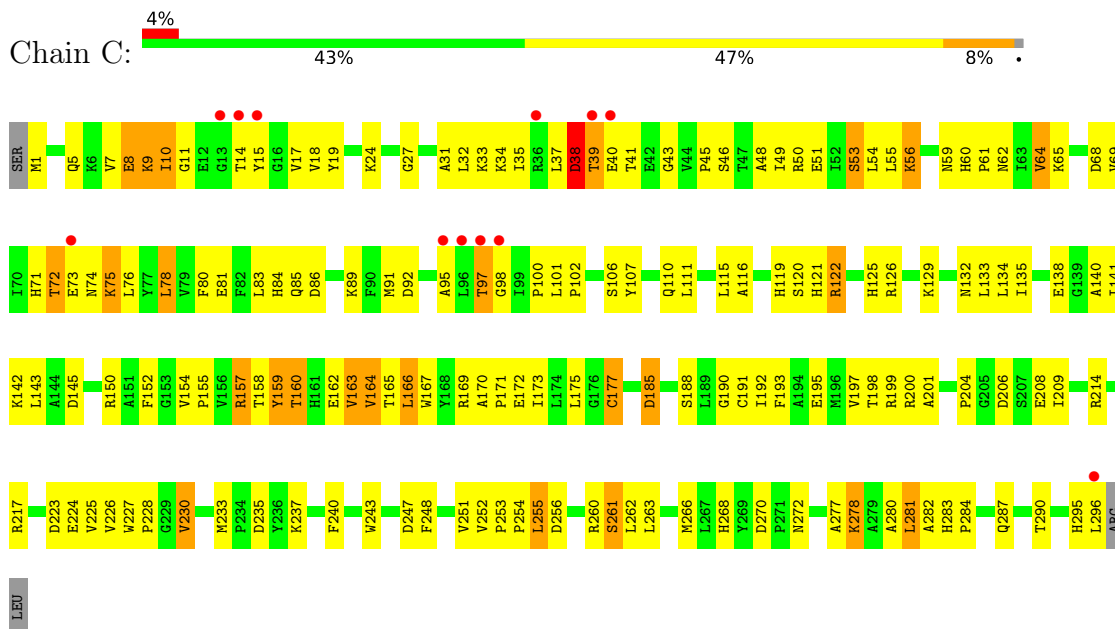
• Molecule 3: SUBSTRATE PEPTIDE

Chain E:

• Molecule 3: SUBSTRATE PEPTIDE

Chain F:

4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants	150.71Å 164.10Å 72.43Å	Depositor
a, b, c, α, β, γ	90.00° 90.00° 90.00°	
Resolution (Å)	20.00 – 2.70	Depositor
	19.90 – 2.70	EDS
% Data completeness	84.4 (20.00-2.70)	Depositor
(in resolution range)	87.6 (19.90-2.70)	EDS
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.62 (at 2.71Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.250 , 0.313	Depositor
	0.253 , 0.315	DCC
R_{free} test set	2247 reflections (5.13%)	wwPDB-VP
Wilson B-factor (Å^2)	38.7	Xtriage
Anisotropy	0.063	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 53.4	EDS
L-test for twinning[2]	$< |L| > = 0.42$, $< L^2 > = 0.24$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	9284	wwPDB-VP
Average B, all atoms (Å^2)	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 37.33 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 4.3569e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ 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: ATP, TPO, MG, GOL, NO3

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	0.89	0/2432	1.04	8/3300 (0.2%)
1	C	0.89	1/2432 (0.0%)	1.02	9/3300 (0.3%)
2	B	0.88	0/2133	1.01	2/2897 (0.1%)
2	D	0.92	1/2134 (0.0%)	1.05	8/2897 (0.3%)
3	E	0.78	0/60	0.70	0/79
3	F	0.92	0/60	0.97	0/79
All	All	0.89	2/9251 (0.0%)	1.03	27/12552 (0.2%)

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	A	0	2
1	C	0	1
All	All	0	3

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	64	VAL	CA-CB	-5.15	1.44	1.54
2	D	347	TYR	CD2-CE2	-5.10	1.31	1.39

All (27) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	185	ASP	CB-CG-OD2	7.83	125.35	118.30
1	A	235	ASP	CB-CG-OD2	7.73	125.26	118.30
2	D	305	ASP	CB-CG-OD2	6.86	124.47	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	206	ASP	CB-CG-OD2	6.37	124.03	118.30
1	C	92	ASP	CB-CG-OD2	6.36	124.03	118.30
2	D	343	ASP	CB-CG-OD2	6.19	123.87	118.30
1	C	247	ASP	CB-CG-OD2	6.19	123.87	118.30
1	A	92	ASP	CB-CG-OD2	6.03	123.73	118.30
1	A	247	ASP	CB-CG-OD2	6.03	123.72	118.30
2	D	283	ASP	CB-CG-OD2	5.94	123.65	118.30
2	D	205	ASP	CB-CG-OD2	5.93	123.64	118.30
1	C	256	ASP	CB-CG-OD2	5.86	123.57	118.30
1	A	185	ASP	CB-CG-OD2	5.77	123.49	118.30
1	C	235	ASP	CB-CG-OD2	5.64	123.38	118.30
2	D	216	ASP	CB-CG-OD2	5.64	123.37	118.30
2	D	240	ASP	CB-CG-OD2	5.55	123.30	118.30
1	A	288	ASP	CB-CG-OD2	5.55	123.29	118.30
1	C	270	ASP	CB-CG-OD2	5.47	123.23	118.30
2	B	205	ASP	CB-CG-OD2	5.41	123.17	118.30
1	C	64	VAL	CA-CB-CG1	-5.31	102.93	110.90
1	A	256	ASP	CB-CG-OD2	5.31	123.08	118.30
1	C	38	ASP	CB-CG-OD2	5.25	123.03	118.30
2	D	177	ASP	CB-CG-OD2	5.23	123.00	118.30
2	D	232	LEU	CA-CB-CG	5.11	127.05	115.30
1	A	270	ASP	CB-CG-OD2	5.05	122.84	118.30
2	B	316	THR	OG1-CB-CG2	-5.01	98.47	110.00
1	A	235	ASP	CB-CG-OD1	-5.00	113.80	118.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	159	TYR	Mainchain
1	A	160	TPO	Mainchain
1	C	159	TYR	Mainchain

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2382	0	2425	173	0
1	C	2381	0	2424	205	0
2	B	2083	0	2107	133	0
2	D	2084	0	2107	121	0
3	E	58	0	56	2	0
3	F	58	0	56	15	0
4	A	27	0	12	5	0
4	C	27	0	12	7	0
5	A	1	0	0	0	0
5	C	1	0	0	0	0
6	A	4	0	0	2	0
6	C	4	0	0	2	0
7	B	6	0	8	1	0
7	C	6	0	8	0	0
8	A	37	0	0	14	0
8	B	30	0	0	14	1
8	C	48	0	0	33	1
8	D	45	0	0	21	0
8	F	2	0	0	0	0
All	All	9284	0	9215	601	1

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 33.

All (601) 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:287:THR:HB	8:D:2023:HOH:O	1.39	1.21
1:A:41:THR:HA	8:A:2010:HOH:O	1.51	1.11
2:B:415:ASN:HB2	8:B:2027:HOH:O	1.50	1.10
2:B:224:GLU:HG3	8:B:2010:HOH:O	1.56	1.06
1:A:122:ARG:HD3	8:A:2021:HOH:O	1.54	1.05
1:C:59:ASN:HB2	8:C:2007:HOH:O	1.58	1.04
1:C:98:GLY:HA3	8:C:2016:HOH:O	1.59	1.02
1:A:22:ARG:HD3	8:A:2005:HOH:O	1.60	1.00
1:A:287:GLN:HB2	8:A:2037:HOH:O	1.62	1.00
1:A:253:PRO:HB2	1:A:254:PRO:HD3	1.44	1.00
1:C:73:GLU:HB2	8:C:2010:HOH:O	1.60	0.99
2:B:256:VAL:HG22	2:B:294:MET:HE3	1.44	0.98
2:B:274:GLU:HG3	8:B:2014:HOH:O	1.62	0.98
2:B:224:GLU:HG2	8:B:2009:HOH:O	1.64	0.98
1:C:197:VAL:HG21	1:C:255:LEU:HD13	1.45	0.97

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:252:VAL:HG12	1:C:255:LEU:HB2	1.46	0.95
2:B:177:ASP:HB3	8:B:2002:HOH:O	1.65	0.95
2:B:428:GLU:HG3	8:B:2029:HOH:O	1.66	0.94
1:A:98:GLY:HA2	1:A:199:ARG:HD3	1.46	0.94
2:D:321:HIS:HD1	2:D:375:SER:HG	0.98	0.94
1:A:252:VAL:HG11	1:A:255:LEU:HD22	1.49	0.93
1:C:260:ARG:HD2	8:C:2044:HOH:O	1.68	0.91
2:B:374:GLU:HB2	8:B:2025:HOH:O	1.71	0.90
2:B:194:LYS:HE3	2:B:195:PRO:O	1.72	0.90
1:C:40:GLU:HA	2:D:288:LYS:HE2	1.52	0.90
1:C:97:THR:HB	8:C:2017:HOH:O	1.72	0.89
1:A:177:CYS:SG	1:A:179:TYR:N	2.45	0.89
1:C:72:THR:CG2	1:C:75:LYS:H	1.85	0.89
2:B:224:GLU:CG	8:B:2009:HOH:O	2.17	0.89
1:A:60:HIS:CD2	1:A:62:ASN:H	1.91	0.88
2:D:194:LYS:HE3	8:D:2011:HOH:O	1.72	0.88
1:C:252:VAL:HG11	1:C:255:LEU:HD22	1.56	0.88
1:C:89:LYS:HE3	8:C:2014:HOH:O	1.72	0.88
1:C:150:ARG:HD3	8:C:2025:HOH:O	1.73	0.88
1:A:71:HIS:HA	1:A:76:LEU:HD12	1.53	0.87
1:C:278:LYS:HE3	8:C:2046:HOH:O	1.73	0.87
2:D:187:ARG:NH1	2:D:380:THR:HG22	1.90	0.87
1:A:101:LEU:CD2	8:A:2035:HOH:O	2.23	0.86
2:D:288:LYS:N	8:D:2023:HOH:O	2.07	0.86
2:B:316:THR:HG21	8:B:2021:HOH:O	1.73	0.86
1:C:10:ILE:HG13	1:C:18:VAL:O	1.76	0.86
1:A:72:THR:HG23	1:A:74:ASN:H	1.41	0.85
1:C:166:LEU:HD12	1:C:166:LEU:O	1.76	0.85
1:A:227:TRP:O	1:A:230:VAL:HG22	1.77	0.85
1:C:69:VAL:N	8:C:2009:HOH:O	2.08	0.85
2:B:194:LYS:NZ	2:B:195:PRO:HD2	1.93	0.84
1:C:62:ASN:ND2	1:C:110:GLN:HB3	1.91	0.84
2:B:262:LEU:O	2:B:265:SER:HB2	1.77	0.84
2:D:187:ARG:HH11	2:D:380:THR:HG22	1.41	0.83
1:A:71:HIS:CE1	2:B:296:HIS:ND1	2.46	0.83
1:C:150:ARG:CD	8:C:2025:HOH:O	2.26	0.83
1:A:177:CYS:SG	1:A:178:LYS:N	2.51	0.82
1:A:154:VAL:O	2:B:316:THR:HG23	1.79	0.82
2:D:192:LYS:HD3	8:D:2009:HOH:O	1.78	0.82
6:C:1300:NO3:N	3:F:5:SER:OG	2.12	0.82
1:C:39:THR:HG23	2:D:289:LYS:HE3	1.62	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:256:VAL:CG2	2:B:294:MET:HE3	2.10	0.81
2:D:361:HIS:CD2	2:D:391:LEU:HD21	2.16	0.81
2:B:210:MET:HE3	2:B:250:ARG:HB2	1.62	0.81
1:C:150:ARG:NH2	2:D:268:GLU:O	2.14	0.81
1:A:12:GLU:HG3	1:A:17:VAL:HA	1.63	0.81
2:B:293:ARG:HH11	2:B:293:ARG:HG2	1.45	0.81
1:C:68:ASP:HA	8:C:2008:HOH:O	1.80	0.81
1:A:101:LEU:HD12	1:A:101:LEU:H	1.46	0.80
1:C:163:VAL:HG13	1:C:164:VAL:HG23	1.64	0.80
1:C:60:HIS:CD2	1:C:61:PRO:HD2	2.17	0.80
1:C:9:LYS:HD3	1:C:17:VAL:HG13	1.63	0.79
1:A:129:LYS:HA	1:A:192:ILE:HD11	1.63	0.78
1:C:121:HIS:HD2	2:D:185:TYR:CE1	2.00	0.78
1:C:227:TRP:O	1:C:230:VAL:HG22	1.83	0.78
1:C:64:VAL:HG12	1:C:65:LYS:N	1.98	0.78
1:C:197:VAL:HG21	1:C:255:LEU:CD1	2.13	0.77
1:C:72:THR:HG22	1:C:75:LYS:O	1.83	0.77
1:C:116:ALA:O	1:C:120:SER:OG	2.01	0.77
1:A:38:ASP:O	1:A:39:THR:HG22	1.85	0.76
2:B:401:ALA:HB3	2:B:402:PRO:HD3	1.64	0.76
2:B:348:LEU:HD12	7:B:1433:GOL:H31	1.67	0.76
2:B:347:TYR:OH	2:B:394:LEU:HA	1.86	0.76
1:A:252:VAL:HG12	1:A:255:LEU:HB2	1.66	0.76
2:B:256:VAL:HG22	2:B:294:MET:CE	2.16	0.76
2:D:321:HIS:ND1	2:D:375:SER:OG	2.05	0.76
1:C:252:VAL:CG1	1:C:255:LEU:HB2	2.16	0.76
2:D:383:THR:N	2:D:386:SER:OG	2.19	0.75
2:B:365:TYR:CD1	8:B:2024:HOH:O	2.38	0.75
1:A:10:ILE:HD11	1:A:20:LYS:CA	2.16	0.74
2:D:401:ALA:HB3	2:D:402:PRO:HD3	1.68	0.74
1:A:101:LEU:HD21	8:A:2035:HOH:O	1.87	0.73
2:B:210:MET:CE	2:B:250:ARG:HB2	2.17	0.73
2:B:388:LYS:HB3	2:B:389:PRO:HD3	1.68	0.73
1:C:159:TYR:CD1	8:C:2025:HOH:O	2.41	0.73
1:C:64:VAL:HG23	1:C:143:LEU:O	1.88	0.73
1:C:260:ARG:CD	8:C:2044:HOH:O	2.30	0.72
1:C:223:ASP:H	1:C:226:VAL:HG12	1.54	0.72
2:B:217:TRP:O	2:B:221:VAL:HG23	1.90	0.71
1:C:154:VAL:O	2:D:316:THR:HG22	1.89	0.71
1:A:51:GLU:O	1:A:55:LEU:HB2	1.90	0.71
1:C:155:PRO:HD2	2:D:316:THR:HG23	1.71	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:201:ALA:O	1:A:204:PRO:HD3	1.90	0.71
2:B:298:VAL:HG12	2:B:302:LEU:HD12	1.73	0.71
1:C:195:GLU:HG3	1:C:201:ALA:HA	1.72	0.71
2:D:361:HIS:HD2	2:D:391:LEU:HD21	1.54	0.71
2:D:175:VAL:HG12	2:D:175:VAL:O	1.91	0.71
2:D:175:VAL:HA	8:D:2002:HOH:O	1.91	0.71
1:C:164:VAL:O	3:F:6:PRO:HG2	1.92	0.70
1:A:10:ILE:HD11	1:A:20:LYS:HA	1.74	0.69
1:A:170:ALA:HB1	1:A:171:PRO:HD2	1.74	0.69
1:A:32:LEU:CD2	1:A:79:VAL:HG13	2.22	0.69
1:C:59:ASN:CB	8:C:2007:HOH:O	2.29	0.69
1:C:51:GLU:O	1:C:55:LEU:HB2	1.92	0.69
1:C:253:PRO:HB2	1:C:254:PRO:HD3	1.74	0.69
1:C:38:ASP:O	1:C:39:THR:OG1	2.08	0.69
1:C:107:TYR:OH	1:C:135:ILE:HD12	1.91	0.69
2:B:418:TYR:O	2:B:421:VAL:HG13	1.93	0.68
2:B:256:VAL:HA	2:B:294:MET:HE3	1.75	0.68
1:C:18:VAL:HG22	1:C:33:LYS:HG3	1.76	0.68
2:D:270:ILE:HA	3:F:8:LYS:NZ	2.06	0.68
1:A:253:PRO:CB	1:A:254:PRO:HD3	2.21	0.68
2:D:180:GLU:HB3	8:D:2006:HOH:O	1.93	0.68
2:D:270:ILE:HA	3:F:8:LYS:HZ2	1.58	0.68
1:A:136:ASN:ND2	1:A:140:ALA:HB3	2.09	0.68
1:A:136:ASN:HD21	1:A:140:ALA:HB3	1.59	0.68
2:B:254:GLN:HB3	2:B:286:TYR:OH	1.93	0.68
1:C:164:VAL:HG11	1:C:169:ARG:HA	1.76	0.67
1:C:166:LEU:HD12	1:C:166:LEU:C	2.14	0.67
2:B:407:GLN:OE1	2:B:410:ARG:HD3	1.94	0.67
1:A:89:LYS:HE3	8:A:2014:HOH:O	1.94	0.67
1:A:96:LEU:H	1:A:96:LEU:HD23	1.60	0.66
1:C:145:ASP:HB2	4:C:1298:ATP:O2A	1.94	0.66
2:B:387:LEU:O	2:B:391:LEU:HB2	1.96	0.66
2:B:241:ARG:O	2:B:244:SER:HB3	1.95	0.66
1:C:214:ARG:HG2	1:C:214:ARG:HH11	1.61	0.66
1:C:121:HIS:CD2	2:D:185:TYR:CE1	2.84	0.66
2:D:391:LEU:HD23	2:D:432:LEU:HD11	1.77	0.66
1:A:251:VAL:HG12	1:A:252:VAL:HG23	1.77	0.66
1:A:253:PRO:HB2	1:A:254:PRO:CD	2.24	0.65
1:C:165:THR:HA	8:C:2030:HOH:O	1.95	0.65
2:B:194:LYS:CE	2:B:195:PRO:HD2	2.25	0.65
1:C:150:ARG:HG2	8:C:2025:HOH:O	1.95	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:40:GLU:HA	2:D:288:LYS:CE	2.26	0.65
1:C:101:LEU:N	1:C:102:PRO:HD2	2.11	0.65
1:C:223:ASP:O	1:C:226:VAL:N	2.29	0.65
2:D:335:PHE:HB2	2:D:413:TYR:CD2	2.31	0.65
2:D:425:ASN:HB2	8:D:2044:HOH:O	1.97	0.65
2:B:203:GLN:NE2	2:B:246:MET:O	2.30	0.65
1:C:72:THR:HG23	1:C:75:LYS:H	1.61	0.65
1:C:190:GLY:O	1:C:191:CYS:C	2.33	0.65
1:A:145:ASP:HB2	4:A:1297:ATP:O2A	1.97	0.64
1:A:295:HIS:O	1:A:296:LEU:HG	1.98	0.64
2:B:361:HIS:CD2	2:B:391:LEU:HD21	2.32	0.64
1:C:284:PRO:O	1:C:287:GLN:HG2	1.98	0.64
1:C:18:VAL:HG22	1:C:33:LYS:HA	1.80	0.63
1:C:111:LEU:HD21	1:C:141:ILE:HD13	1.79	0.63
1:C:121:HIS:CD2	2:D:185:TYR:CD1	2.85	0.63
1:A:252:VAL:CG1	1:A:255:LEU:HB2	2.27	0.63
1:A:121:HIS:O	1:A:122:ARG:HG3	1.98	0.63
2:D:371:SER:O	2:D:372:TRP:C	2.36	0.63
1:A:109:PHE:CE2	1:A:113:GLN:NE2	2.66	0.63
2:B:256:VAL:CA	2:B:294:MET:HE3	2.29	0.63
1:C:18:VAL:CG2	1:C:33:LYS:HG3	2.29	0.63
1:C:41:THR:HB	8:C:2005:HOH:O	1.99	0.63
1:A:61:PRO:O	1:A:142:LYS:HE2	1.98	0.62
2:D:275:VAL:O	2:D:278:PHE:N	2.32	0.62
1:C:40:GLU:CA	2:D:288:LYS:HE2	2.27	0.62
2:D:198:GLY:N	8:D:2013:HOH:O	2.25	0.62
1:A:78:LEU:HD23	1:A:78:LEU:N	2.14	0.62
2:B:287:THR:O	2:B:291:VAL:HG23	1.99	0.62
1:A:46:SER:HB2	2:B:266:LYS:HB3	1.81	0.62
1:C:227:TRP:CG	1:C:230:VAL:HG13	2.35	0.62
1:C:248:PHE:CE2	1:C:263:LEU:HD23	2.35	0.61
1:A:129:LYS:CA	1:A:192:ILE:HD11	2.31	0.61
1:A:226:VAL:HG13	1:A:227:TRP:N	2.14	0.61
2:B:322:GLN:NE2	2:B:325:ALA:HA	2.15	0.61
1:C:162:GLU:O	3:F:6:PRO:HB3	2.01	0.61
1:C:98:GLY:CA	8:C:2016:HOH:O	2.29	0.61
1:C:177:CYS:HB3	8:C:2034:HOH:O	2.00	0.61
1:C:150:ARG:CG	8:C:2025:HOH:O	2.49	0.60
1:C:39:THR:HG23	2:D:289:LYS:CE	2.31	0.60
1:C:69:VAL:HB	8:C:2009:HOH:O	2.00	0.60
1:C:167:TRP:CD1	1:C:204:PRO:HA	2.36	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:185:ASP:O	1:C:188:SER:HB2	2.01	0.60
1:A:181:SER:O	1:A:184:VAL:HG22	2.02	0.60
1:C:154:VAL:O	2:D:316:THR:CG2	2.49	0.60
1:C:78:LEU:HB2	1:C:80:PHE:CE1	2.37	0.60
1:C:132:ASN:ND2	1:C:145:ASP:OD2	2.34	0.59
2:D:327:CYS:HB3	8:D:2032:HOH:O	2.01	0.59
1:C:150:ARG:NH1	1:C:160:TPO:O2P	2.32	0.59
1:C:38:ASP:O	1:C:39:THR:CB	2.49	0.59
1:A:145:ASP:OD2	4:A:1297:ATP:O1B	2.20	0.59
1:A:270:ASP:OD1	1:A:272:ASN:N	2.26	0.59
1:C:81:GLU:OE2	1:C:142:LYS:NZ	2.30	0.59
1:A:17:VAL:HG12	1:A:18:VAL:H	1.68	0.59
2:B:392:MET:CE	2:B:430:LEU:HD12	2.33	0.58
1:C:157:ARG:NH1	2:D:268:GLU:OE2	2.30	0.58
1:C:39:THR:CG2	2:D:289:LYS:CE	2.81	0.58
1:C:248:PHE:HE2	1:C:263:LEU:HD23	1.66	0.58
2:D:238:TYR:OH	2:D:306:LEU:HB3	2.03	0.58
2:B:255:LEU:HB2	2:B:286:TYR:CZ	2.38	0.58
2:D:270:ILE:O	3:F:8:LYS:HE3	2.02	0.58
1:A:71:HIS:NE2	2:B:296:HIS:ND1	2.52	0.58
1:C:283:HIS:ND1	1:C:284:PRO:HD2	2.19	0.58
1:A:280:ALA:O	1:A:282:ALA:N	2.36	0.58
1:A:2:GLU:OE1	1:A:3:ASN:OD1	2.20	0.58
2:D:329:VAL:HG11	2:D:364:LEU:HD12	1.86	0.57
1:A:163:VAL:HG13	1:A:164:VAL:HG23	1.85	0.57
1:C:197:VAL:HG11	1:C:252:VAL:HG13	1.86	0.57
1:A:72:THR:CG2	1:A:75:LYS:H	2.17	0.57
1:C:208:GLU:HG3	8:C:2040:HOH:O	2.03	0.57
2:D:175:VAL:O	2:D:175:VAL:CG1	2.53	0.57
1:A:35:ILE:HD13	1:A:48:ALA:HB2	1.87	0.57
1:C:39:THR:HG22	1:C:40:GLU:HG2	1.85	0.57
1:A:248:PHE:CE2	1:A:263:LEU:HD23	2.40	0.57
2:B:293:ARG:HH11	2:B:293:ARG:CG	2.17	0.57
1:C:60:HIS:HD2	1:C:62:ASN:H	1.50	0.57
1:A:177:CYS:HB3	8:A:2025:HOH:O	2.05	0.56
2:B:194:LYS:HZ2	2:B:195:PRO:HD2	1.70	0.56
1:C:119:HIS:HD2	8:D:2005:HOH:O	1.87	0.56
1:C:33:LYS:NZ	4:C:1298:ATP:O3A	2.28	0.56
2:D:219:VAL:HG21	2:D:409:ILE:HG13	1.88	0.56
1:C:5:GLN:HB2	1:C:24:LYS:HE2	1.86	0.56
1:C:227:TRP:CD2	1:C:230:VAL:HG13	2.41	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:272:ASN:HB2	8:C:2045:HOH:O	2.05	0.56
2:D:289:LYS:HG2	2:D:293:ARG:NH2	2.20	0.56
1:C:278:LYS:O	1:C:281:LEU:HB2	2.06	0.56
6:C:1300:NO3:O1	3:F:5:SER:OG	2.23	0.56
2:B:185:TYR:CZ	2:B:189:MET:HG3	2.41	0.56
1:C:7:VAL:HG12	1:C:8:GLU:HG2	1.87	0.56
1:C:34:LYS:NZ	1:C:75:LYS:HE2	2.20	0.56
1:A:37:LEU:C	1:A:39:THR:H	2.09	0.56
1:A:214:ARG:HG2	1:A:214:ARG:HH11	1.71	0.55
2:B:319:PHE:CE2	2:B:330:GLU:HG2	2.41	0.55
1:C:253:PRO:CB	1:C:254:PRO:HD3	2.37	0.55
1:A:122:ARG:HA	1:A:152:PHE:CE1	2.41	0.55
2:D:270:ILE:O	3:F:8:LYS:CE	2.54	0.55
2:D:326:ASN:CG	2:D:329:VAL:HG23	2.26	0.55
1:C:56:LYS:NZ	8:C:2006:HOH:O	2.38	0.55
2:D:322:GLN:OE1	2:D:326:ASN:HB3	2.06	0.55
1:C:43:GLY:O	1:C:45:PRO:HD3	2.07	0.55
1:C:72:THR:HG23	1:C:74:ASN:H	1.72	0.55
1:C:190:GLY:O	1:C:193:PHE:N	2.40	0.55
1:A:270:ASP:OD1	1:A:270:ASP:C	2.44	0.55
2:B:215:VAL:HG12	2:B:342:ILE:HD13	1.89	0.55
2:B:326:ASN:OD1	2:B:328:LYS:N	2.39	0.55
1:A:139:GLY:HA2	1:A:294:PRO:HD3	1.89	0.55
2:D:194:LYS:HD3	2:D:351:LEU:HD23	1.88	0.55
1:A:71:HIS:O	2:B:296:HIS:HE1	1.89	0.55
1:C:217:ARG:HG2	1:C:243:TRP:CE2	2.40	0.55
3:F:5:SER:O	3:F:7:ARG:HD3	2.07	0.55
1:C:72:THR:HG23	1:C:73:GLU:N	2.22	0.55
2:B:321:HIS:ND1	2:B:375:SER:OG	2.29	0.54
1:C:64:VAL:CG1	1:C:65:LYS:N	2.69	0.54
1:A:60:HIS:HD2	1:A:62:ASN:H	1.48	0.54
1:A:295:HIS:C	1:A:296:LEU:HG	2.27	0.54
1:A:280:ALA:C	1:A:282:ALA:N	2.60	0.54
1:A:280:ALA:C	1:A:282:ALA:H	2.09	0.54
2:D:283:ASP:O	2:D:284:ASP:HB2	2.08	0.54
1:A:248:PHE:HE2	1:A:263:LEU:HD23	1.72	0.54
1:C:134:LEU:O	1:C:141:ILE:HA	2.07	0.54
2:D:374:GLU:HB3	8:D:2036:HOH:O	2.06	0.54
1:C:115:LEU:HD11	1:C:119:HIS:CE1	2.43	0.53
1:C:227:TRP:CE3	1:C:230:VAL:CG1	2.91	0.53
2:B:388:LYS:HB3	2:B:389:PRO:CD	2.37	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:161:HIS:O	1:A:163:VAL:N	2.40	0.53
2:B:241:ARG:O	2:B:244:SER:CB	2.57	0.53
2:B:268:GLU:HG3	2:B:268:GLU:O	2.08	0.53
2:B:322:GLN:HB3	2:B:324:PRO:O	2.08	0.53
1:C:141:ILE:HG12	1:C:142:LYS:N	2.22	0.53
1:C:223:ASP:O	1:C:225:VAL:N	2.42	0.53
1:A:167:TRP:CD1	1:A:204:PRO:HA	2.44	0.53
1:A:10:ILE:N	1:A:18:VAL:O	2.36	0.53
1:C:106:SER:HB2	1:C:290:THR:O	2.08	0.53
2:D:289:LYS:HG3	2:D:293:ARG:NE	2.25	0.52
1:A:31:ALA:HB3	1:A:80:PHE:HB2	1.92	0.52
1:A:71:HIS:CG	2:B:296:HIS:CE1	2.98	0.52
1:A:72:THR:HG23	1:A:74:ASN:N	2.17	0.52
2:B:182:ILE:O	2:B:183:HIS:C	2.45	0.52
2:B:219:VAL:HG22	2:B:232:LEU:HD11	1.91	0.52
1:C:95:ALA:O	1:C:199:ARG:HD3	2.09	0.52
1:C:154:VAL:O	1:C:154:VAL:HG12	2.10	0.52
1:A:1:MET:N	8:A:2001:HOH:O	2.41	0.52
1:C:78:LEU:HD23	1:C:78:LEU:N	2.25	0.52
2:B:293:ARG:HG2	2:B:293:ARG:NH1	2.21	0.52
1:C:84:HIS:CD2	1:C:296:LEU:HD22	2.45	0.52
1:C:197:VAL:CG2	1:C:255:LEU:HD13	2.29	0.52
1:C:262:LEU:O	1:C:263:LEU:C	2.46	0.52
1:C:280:ALA:O	1:C:282:ALA:N	2.43	0.52
2:D:255:LEU:HB2	2:D:286:TYR:CZ	2.45	0.52
2:D:425:ASN:N	8:D:2044:HOH:O	2.43	0.52
2:B:252:LYS:O	2:B:255:LEU:N	2.42	0.52
1:C:111:LEU:HD21	1:C:141:ILE:CD1	2.38	0.52
2:D:374:GLU:CB	8:D:2036:HOH:O	2.57	0.52
8:A:2023:HOH:O	3:E:8:LYS:HD3	2.09	0.52
1:C:280:ALA:O	1:C:281:LEU:C	2.49	0.52
1:A:178:LYS:HG2	1:A:179:TYR:CE2	2.45	0.51
2:B:332:LEU:HD23	2:B:363:ALA:HA	1.91	0.51
1:C:83:LEU:HD21	1:C:142:LYS:HD2	1.92	0.51
1:C:227:TRP:CD2	1:C:230:VAL:CG1	2.93	0.51
2:B:331:SER:HB2	2:B:421:VAL:HG11	1.92	0.51
1:C:133:LEU:HB3	1:C:141:ILE:HD11	1.92	0.51
1:A:9:LYS:HG2	1:A:19:TYR:HE2	1.76	0.51
1:A:145:ASP:CG	4:A:1297:ATP:O1B	2.48	0.51
2:B:235:ALA:O	2:B:236:VAL:C	2.47	0.51
2:B:236:VAL:HG21	2:B:341:LEU:HD22	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:14:THR:HG1	1:C:15:TYR:HD1	1.58	0.51
1:A:49:ILE:HD13	2:B:263:LEU:HD23	1.92	0.51
1:A:129:LYS:HE2	1:A:132:ASN:ND2	2.25	0.51
2:B:178:TYR:HB2	8:B:2004:HOH:O	2.10	0.51
1:C:39:THR:HG21	2:D:289:LYS:NZ	2.26	0.51
2:D:203:GLN:HE22	2:D:247:SER:HA	1.74	0.51
2:D:411:GLU:OE2	2:D:414:LYS:HE3	2.10	0.51
2:D:210:MET:SD	2:D:250:ARG:HB2	2.51	0.51
2:B:185:TYR:O	2:B:189:MET:HG2	2.10	0.51
1:C:31:ALA:CB	4:C:1298:ATP:C6	2.93	0.51
1:C:217:ARG:HG2	1:C:243:TRP:CD2	2.46	0.51
2:D:175:VAL:N	2:D:176:PRO:HD3	2.26	0.51
2:D:415:ASN:OD1	2:D:416:SER:N	2.44	0.51
2:D:383:THR:O	2:D:386:SER:N	2.43	0.51
2:B:392:MET:HE2	2:B:430:LEU:HD12	1.93	0.50
1:C:72:THR:HG22	1:C:75:LYS:H	1.69	0.50
1:C:252:VAL:HG12	1:C:252:VAL:O	2.11	0.50
2:D:294:MET:O	2:D:298:VAL:HG23	2.10	0.50
2:B:398:TYR:CE2	2:B:426:PRO:HB3	2.45	0.50
1:A:102:PRO:HG2	1:A:103:LEU:H	1.76	0.50
1:A:108:LEU:HD22	1:A:193:PHE:CD1	2.47	0.50
1:A:289:VAL:HG22	1:A:290:THR:N	2.26	0.50
2:D:232:LEU:O	2:D:236:VAL:HG23	2.11	0.50
2:D:361:HIS:CE1	2:D:384:LEU:HD11	2.47	0.50
2:B:210:MET:CE	2:B:250:ARG:CB	2.88	0.50
1:C:33:LYS:NZ	4:C:1298:ATP:O1A	2.44	0.50
1:C:188:SER:O	1:C:192:ILE:HD12	2.11	0.50
2:D:176:PRO:HD2	8:D:2002:HOH:O	2.11	0.50
1:C:277:ALA:HB3	2:D:178:TYR:OH	2.11	0.50
2:B:314:PHE:CE1	2:B:353:SER:HB3	2.47	0.50
1:C:39:THR:CG2	2:D:289:LYS:HE3	2.35	0.50
1:C:98:GLY:C	8:C:2016:HOH:O	2.48	0.50
1:C:162:GLU:C	3:F:6:PRO:HB3	2.32	0.50
1:C:177:CYS:CB	8:C:2034:HOH:O	2.57	0.50
2:D:289:LYS:HG2	2:D:293:ARG:HH21	1.77	0.50
1:A:50:ARG:HH22	1:A:150:ARG:NH2	2.09	0.49
1:C:101:LEU:N	1:C:102:PRO:CD	2.75	0.49
1:A:72:THR:OG1	1:A:73:GLU:N	2.43	0.49
1:C:71:HIS:ND1	2:D:296:HIS:NE2	2.60	0.49
1:C:17:VAL:HG12	1:C:18:VAL:H	1.77	0.49
2:B:388:LYS:HE3	2:B:432:LEU:O	2.13	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:101:LEU:N	1:A:102:PRO:HD2	2.26	0.49
2:D:385:GLU:N	8:D:2039:HOH:O	2.45	0.49
1:A:269:TYR:O	1:A:271:PRO:HD3	2.13	0.49
2:B:249:LEU:HD12	1:C:27:GLY:HA3	1.95	0.49
2:B:319:PHE:CD2	2:B:330:GLU:HG2	2.47	0.49
1:C:160:TPO:O3P	3:F:8:LYS:NZ	2.45	0.49
1:C:1:MET:HE1	1:C:32:LEU:HD13	1.94	0.49
1:A:49:ILE:HG23	2:B:306:LEU:HD12	1.92	0.49
1:A:117:PHE:O	1:A:120:SER:N	2.46	0.49
1:C:9:LYS:HD3	1:C:17:VAL:CG1	2.39	0.49
1:C:125:HIS:O	1:C:126:ARG:HB2	2.13	0.49
1:C:214:ARG:HG2	1:C:214:ARG:NH1	2.27	0.49
2:B:210:MET:HE1	2:B:250:ARG:CB	2.43	0.49
2:B:293:ARG:CG	2:B:293:ARG:NH1	2.76	0.48
1:C:39:THR:HG21	2:D:289:LYS:HZ2	1.78	0.48
1:C:134:LEU:O	1:C:141:ILE:HG13	2.13	0.48
2:D:223:GLU:HA	2:D:223:GLU:OE2	2.13	0.48
1:A:9:LYS:HG2	1:A:19:TYR:CE2	2.48	0.48
1:A:135:ILE:O	1:A:135:ILE:HG13	2.12	0.48
1:C:121:HIS:C	1:C:122:ARG:HG3	2.34	0.48
1:A:226:VAL:CG1	1:A:227:TRP:N	2.76	0.48
2:B:187:ARG:HD2	2:B:190:GLU:OE2	2.13	0.48
1:C:34:LYS:HZ3	1:C:75:LYS:HE2	1.78	0.48
2:B:343:ASP:O	2:B:344:ALA:C	2.50	0.48
1:C:17:VAL:HG12	1:C:18:VAL:N	2.28	0.48
1:C:72:THR:O	2:D:296:HIS:HE1	1.96	0.48
1:A:64:VAL:HG21	1:A:144:ALA:HB2	1.96	0.48
2:B:211:ARG:HG2	2:B:211:ARG:HH11	1.78	0.48
2:B:361:HIS:HD2	2:B:391:LEU:HD21	1.76	0.48
1:C:68:ASP:CG	8:C:2008:HOH:O	2.50	0.48
1:A:132:ASN:O	1:A:133:LEU:HD23	2.13	0.48
1:C:227:TRP:O	1:C:228:PRO:C	2.52	0.48
1:A:131:GLN:O	4:A:1297:ATP:O3'	2.29	0.48
2:D:366:THR:HG23	2:D:427:PRO:HD3	1.95	0.48
2:B:287:THR:N	2:B:290:GLN:OE1	2.45	0.48
3:F:5:SER:O	3:F:6:PRO:C	2.51	0.48
2:D:270:ILE:O	3:F:8:LYS:NZ	2.47	0.47
1:A:218:THR:HG22	1:A:218:THR:O	2.13	0.47
1:A:50:ARG:HH22	1:A:150:ARG:HH21	1.62	0.47
2:B:292:LEU:O	2:B:295:GLU:HB3	2.14	0.47
2:D:329:VAL:O	2:D:330:GLU:C	2.50	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:163:VAL:O	1:C:164:VAL:HB	2.14	0.47
1:A:129:LYS:HG3	1:A:132:ASN:HB2	1.97	0.47
4:A:1297:ATP:O1B	6:A:1299:NO3:N	2.47	0.47
1:C:159:TYR:CE1	8:C:2025:HOH:O	2.66	0.47
2:D:323:GLN:HA	2:D:324:PRO:HA	1.64	0.47
1:A:122:ARG:CD	8:A:2021:HOH:O	2.33	0.47
1:C:10:ILE:CG1	1:C:18:VAL:O	2.56	0.47
2:D:194:LYS:CE	8:D:2011:HOH:O	2.44	0.47
1:A:56:LYS:NZ	2:B:303:THR:O	2.48	0.47
1:A:72:THR:HG23	1:A:73:GLU:N	2.30	0.47
1:A:133:LEU:C	1:A:134:LEU:HD23	2.34	0.47
1:A:71:HIS:HA	1:A:76:LEU:CD1	2.36	0.47
2:D:219:VAL:HG21	2:D:409:ILE:CG1	2.44	0.47
1:C:248:PHE:HA	1:C:251:VAL:HG23	1.97	0.46
2:D:383:THR:O	2:D:384:LEU:C	2.54	0.46
1:A:266:MET:HA	1:A:275:ILE:HG22	1.97	0.46
2:B:210:MET:HE2	2:B:210:MET:HB3	1.72	0.46
1:C:122:ARG:NH2	2:D:307:ALA:HB1	2.30	0.46
1:C:71:HIS:HA	1:C:76:LEU:HD13	1.97	0.46
1:C:283:HIS:CE1	1:C:284:PRO:HD2	2.50	0.46
1:A:63:ILE:O	1:A:64:VAL:C	2.50	0.46
1:A:71:HIS:O	2:B:296:HIS:CE1	2.69	0.46
2:B:322:GLN:HE22	2:B:326:ASN:H	1.64	0.46
1:C:10:ILE:HD11	1:C:19:TYR:C	2.34	0.46
3:F:5:SER:O	3:F:6:PRO:O	2.33	0.46
1:A:10:ILE:HD13	1:A:82:PHE:HE1	1.80	0.46
1:A:105:LYS:HE2	1:A:285:PHE:CZ	2.51	0.46
1:A:136:ASN:C	1:A:138:GLU:H	2.19	0.46
1:C:49:ILE:O	1:C:53:SER:OG	2.31	0.46
2:D:274:GLU:HG3	2:D:277:GLU:HG3	1.97	0.46
2:B:178:TYR:O	2:B:179:HIS:C	2.52	0.46
2:B:263:LEU:O	2:B:266:LYS:N	2.49	0.46
1:C:100:PRO:C	1:C:102:PRO:HD2	2.36	0.46
1:C:253:PRO:HB2	1:C:254:PRO:CD	2.45	0.46
2:D:326:ASN:OD1	2:D:328:LYS:N	2.49	0.46
1:A:245:ARG:NH2	1:A:248:PHE:HE1	2.14	0.46
2:B:350:TYR:CD1	2:B:390:CYS:HB2	2.50	0.46
1:C:261:SER:O	1:C:262:LEU:C	2.52	0.46
1:A:60:HIS:CE1	1:A:61:PRO:HD2	2.51	0.46
1:A:122:ARG:NH2	2:B:307:ALA:HB1	2.31	0.46
1:A:160:TPO:O3P	3:E:8:LYS:NZ	2.49	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:11:GLY:CA	8:C:2003:HOH:O	2.64	0.46
1:A:94:SER:HA	1:A:97:THR:OG1	2.15	0.46
1:A:295:HIS:O	1:A:296:LEU:CG	2.63	0.46
2:B:332:LEU:CD2	2:B:363:ALA:HA	2.46	0.46
2:D:255:LEU:HB2	2:D:286:TYR:CE1	2.51	0.46
1:A:26:THR:HB	2:D:248:VAL:HG22	1.97	0.45
1:A:227:TRP:CE3	1:A:269:TYR:HB3	2.51	0.45
2:D:332:LEU:O	2:D:336:LEU:HG	2.16	0.45
2:D:407:GLN:O	2:D:408:SER:C	2.53	0.45
1:A:209:ILE:O	1:A:209:ILE:HG13	2.15	0.45
2:B:357:GLY:O	2:B:358:ALA:C	2.54	0.45
1:C:71:HIS:CE1	2:D:296:HIS:CD2	3.04	0.45
1:A:71:HIS:CD2	1:A:76:LEU:HD13	2.51	0.45
2:B:240:ASP:O	2:B:241:ARG:C	2.52	0.45
2:B:303:THR:O	2:B:305:ASP:N	2.49	0.45
1:C:237:LYS:HB2	1:C:240:PHE:CE1	2.52	0.45
2:D:387:LEU:O	2:D:391:LEU:HB2	2.16	0.45
1:A:110:GLN:OE1	1:A:140:ALA:HA	2.17	0.45
1:C:111:LEU:HD23	1:C:111:LEU:HA	1.74	0.45
2:B:322:GLN:NE2	2:B:326:ASN:H	2.14	0.45
2:B:326:ASN:OD1	2:B:326:ASN:C	2.55	0.45
1:C:281:LEU:HD23	1:C:281:LEU:HA	1.68	0.45
3:F:5:SER:C	3:F:6:PRO:O	2.54	0.45
1:A:214:ARG:HG2	1:A:214:ARG:NH1	2.31	0.45
2:B:196:LYS:O	2:B:196:LYS:HG3	2.15	0.45
1:C:248:PHE:HA	1:C:251:VAL:CG2	2.47	0.45
2:D:260:ALA:O	2:D:261:MET:C	2.55	0.45
2:D:286:TYR:HA	8:D:2025:HOH:O	2.16	0.45
2:D:233:HIS:O	2:D:234:LEU:C	2.54	0.45
1:A:110:GLN:O	1:A:113:GLN:N	2.50	0.45
1:A:119:HIS:CD2	1:A:182:THR:HB	2.52	0.45
1:C:39:THR:HG21	2:D:289:LYS:CE	2.47	0.45
1:A:22:ARG:NH1	8:A:2005:HOH:O	2.40	0.44
1:A:237:LYS:HA	1:A:238:PRO:HD2	1.87	0.44
8:C:2046:HOH:O	2:D:177:ASP:HB3	2.16	0.44
2:D:401:ALA:N	2:D:402:PRO:CD	2.81	0.44
2:B:298:VAL:CG1	2:B:302:LEU:HD12	2.45	0.44
2:B:383:THR:O	2:B:386:SER:OG	2.34	0.44
2:B:323:GLN:HA	2:B:324:PRO:HA	1.81	0.44
1:A:175:LEU:HD22	1:A:233:MET:HE2	1.99	0.44
1:A:115:LEU:HD11	1:A:119:HIS:CE1	2.52	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:246:MET:HE3	8:C:2004:HOH:O	2.17	0.44
2:B:178:TYR:CE2	8:B:2003:HOH:O	2.71	0.44
2:B:178:TYR:OH	8:B:2003:HOH:O	2.12	0.44
2:D:190:GLU:OE2	2:D:353:SER:OG	2.33	0.44
2:D:346:PRO:O	2:D:348:LEU:N	2.50	0.44
1:A:108:LEU:HD22	1:A:193:PHE:CG	2.53	0.44
1:A:109:PHE:CD2	1:A:113:GLN:NE2	2.85	0.44
1:C:135:ILE:HA	1:C:140:ALA:O	2.18	0.44
2:D:306:LEU:O	2:D:308:ALA:N	2.48	0.44
1:A:122:ARG:HD2	1:A:151:ALA:HB1	1.99	0.44
1:A:154:VAL:HA	1:A:155:PRO:HA	1.63	0.44
2:B:263:LEU:O	2:B:264:ALA:C	2.56	0.43
1:C:280:ALA:C	1:C:282:ALA:N	2.71	0.43
1:A:58:LEU:HA	1:A:58:LEU:HD23	1.50	0.43
1:A:121:HIS:C	1:A:122:ARG:HG3	2.37	0.43
1:A:216:PHE:CE1	1:A:222:PRO:HD2	2.52	0.43
2:B:256:VAL:HA	2:B:294:MET:CE	2.44	0.43
1:C:72:THR:HG23	1:C:74:ASN:N	2.31	0.43
1:A:145:ASP:OD2	6:A:1299:NO3:O1	2.36	0.43
1:C:150:ARG:NH2	2:D:268:GLU:C	2.72	0.43
2:D:388:LYS:HB3	2:D:389:PRO:HD3	2.00	0.43
1:A:173:ILE:HD13	1:A:173:ILE:HG21	1.80	0.43
1:C:197:VAL:CG2	1:C:255:LEU:CD1	2.93	0.43
2:D:248:VAL:HG12	2:D:249:LEU:O	2.18	0.43
1:A:41:THR:HB	1:A:42:GLU:H	1.65	0.43
2:B:178:TYR:HD2	8:B:2004:HOH:O	2.01	0.43
2:B:200:MET:O	2:B:201:LYS:C	2.56	0.43
2:B:255:LEU:HB2	2:B:286:TYR:CE1	2.53	0.43
1:C:31:ALA:HB2	4:C:1298:ATP:C6	2.53	0.43
1:A:54:LEU:HA	1:A:54:LEU:HD23	1.72	0.43
1:A:104:ILE:HG23	1:A:196:MET:HE3	2.01	0.43
1:A:135:ILE:HA	1:A:140:ALA:O	2.19	0.43
2:B:252:LYS:O	2:B:253:LEU:C	2.55	0.43
1:C:197:VAL:HG12	1:C:198:THR:N	2.32	0.43
2:B:302:LEU:O	2:B:303:THR:C	2.57	0.43
2:D:180:GLU:CB	8:D:2006:HOH:O	2.60	0.43
8:A:2012:HOH:O	2:B:296:HIS:HB2	2.19	0.43
2:B:194:LYS:HE3	2:B:195:PRO:N	2.33	0.43
2:B:215:VAL:CG1	2:B:342:ILE:HD13	2.49	0.43
2:D:398:TYR:O	2:D:398:TYR:CD1	2.71	0.43
1:C:46:SER:O	1:C:50:ARG:N	2.45	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:262:LEU:O	1:C:266:MET:HG3	2.19	0.43
2:D:227:LEU:HA	2:D:227:LEU:HD23	1.66	0.43
2:D:310:THR:O	2:D:311:VAL:C	2.56	0.43
1:A:62:ASN:HA	1:A:142:LYS:HG2	2.00	0.43
1:A:182:THR:O	1:A:183:ALA:C	2.57	0.43
1:A:183:ALA:HB1	1:A:274:ARG:NH1	2.34	0.43
2:B:340:SER:HB2	2:B:347:TYR:CG	2.54	0.43
2:B:420:GLY:O	2:B:421:VAL:C	2.57	0.43
1:C:91:MET:HB2	1:C:91:MET:HE3	1.76	0.43
1:C:175:LEU:HD13	1:C:233:MET:CE	2.49	0.43
1:A:37:LEU:C	1:A:39:THR:N	2.72	0.42
1:A:60:HIS:CG	1:A:61:PRO:HD2	2.54	0.42
1:C:11:GLY:HA3	8:C:2003:HOH:O	2.19	0.42
1:C:33:LYS:HZ1	4:C:1298:ATP:PA	2.38	0.42
1:A:17:VAL:C	1:A:18:VAL:HG23	2.39	0.42
2:B:320:LEU:HA	2:B:320:LEU:HD23	1.76	0.42
2:D:178:TYR:HB2	8:D:2003:HOH:O	2.18	0.42
1:C:121:HIS:O	1:C:122:ARG:C	2.57	0.42
2:D:252:LYS:O	2:D:253:LEU:C	2.54	0.42
2:D:371:SER:O	2:D:373:PRO:N	2.52	0.42
2:D:432:LEU:HD23	2:D:432:LEU:HA	1.68	0.42
1:A:64:VAL:HG23	1:A:143:LEU:O	2.19	0.42
1:A:221:THR:OG1	1:A:242:LYS:HA	2.19	0.42
1:C:158:THR:HG23	8:C:2035:HOH:O	2.18	0.42
2:D:430:LEU:HB3	2:D:432:LEU:HG	2.01	0.42
2:B:314:PHE:O	2:B:315:LEU:C	2.58	0.42
1:A:72:THR:HG23	1:A:75:LYS:H	1.85	0.42
2:D:187:ARG:HD2	2:D:190:GLU:OE2	2.19	0.42
1:A:122:ARG:HG3	1:A:122:ARG:HH11	1.82	0.42
1:C:39:THR:O	1:C:40:GLU:C	2.58	0.42
1:C:122:ARG:HA	1:C:152:PHE:CE1	2.55	0.42
1:A:40:GLU:O	8:A:2010:HOH:O	2.21	0.41
1:A:42:GLU:O	2:B:266:LYS:NZ	2.53	0.41
1:A:170:ALA:HB1	1:A:171:PRO:CD	2.46	0.41
1:C:192:ILE:O	1:C:193:PHE:C	2.57	0.41
1:A:261:SER:O	1:A:264:SER:OG	2.38	0.41
2:B:211:ARG:HG2	2:B:211:ARG:NH1	2.35	0.41
2:B:309:PRO:HA	2:B:313:GLN:NE2	2.36	0.41
2:B:398:TYR:O	2:B:399:LEU:C	2.56	0.41
2:B:398:TYR:CD2	2:B:426:PRO:HB3	2.55	0.41
1:C:170:ALA:HB1	1:C:171:PRO:HD2	2.02	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:60:HIS:HD2	1:A:62:ASN:N	2.15	0.41
1:A:175:LEU:CD2	1:A:236:TYR:HB2	2.51	0.41
1:A:202:LEU:HA	1:A:202:LEU:HD12	1.75	0.41
1:C:86:ASP:HA	1:C:133:LEU:O	2.20	0.41
1:C:223:ASP:C	1:C:225:VAL:N	2.72	0.41
1:A:186:ILE:O	1:A:187:TRP:C	2.59	0.41
2:B:261:MET:O	2:B:262:LEU:C	2.55	0.41
2:D:357:GLY:O	2:D:358:ALA:C	2.58	0.41
2:B:203:GLN:HE22	2:B:247:SER:HA	1.86	0.41
1:C:78:LEU:HB2	1:C:80:PHE:HE1	1.83	0.41
1:A:57:GLU:O	1:A:58:LEU:HD23	2.20	0.41
1:A:206:ASP:O	1:A:207:SER:HB3	2.21	0.41
1:A:251:VAL:HG12	1:A:252:VAL:CG2	2.49	0.41
2:D:327:CYS:CA	8:D:2032:HOH:O	2.68	0.41
2:D:388:LYS:N	2:D:389:PRO:HD2	2.35	0.41
1:C:33:LYS:NZ	4:C:1298:ATP:PA	2.93	0.41
1:C:167:TRP:NE1	1:C:204:PRO:HA	2.36	0.41
1:A:289:VAL:CG2	1:A:290:THR:N	2.83	0.41
2:D:221:VAL:O	2:D:221:VAL:HG12	2.17	0.41
2:D:388:LYS:N	2:D:389:PRO:CD	2.83	0.41
1:A:189:LEU:HA	1:A:189:LEU:HD23	1.66	0.41
2:B:401:ALA:N	2:B:402:PRO:CD	2.84	0.41
1:C:35:ILE:HD13	1:C:48:ALA:HB2	2.02	0.41
1:C:54:LEU:HD23	1:C:54:LEU:HA	1.65	0.41
1:C:60:HIS:CD2	1:C:61:PRO:CD	2.96	0.41
1:C:295:HIS:ND1	1:C:295:HIS:C	2.73	0.41
1:A:60:HIS:CD2	1:A:62:ASN:HB2	2.56	0.41
1:A:60:HIS:CD2	1:A:62:ASN:N	2.73	0.41
1:A:116:ALA:HB2	1:A:277:ALA:CB	2.51	0.41
1:A:122:ARG:NH1	2:B:185:TYR:HE2	2.19	0.41
2:B:376:LEU:HA	2:B:376:LEU:HD23	1.83	0.41
2:D:275:VAL:O	2:D:276:ALA:C	2.54	0.41
1:A:178:LYS:HG2	1:A:179:TYR:CZ	2.56	0.40
2:B:272:PRO:HA	2:B:273:PRO:HD3	1.83	0.40
1:C:37:LEU:O	1:C:38:ASP:HB2	2.21	0.40
1:C:172:GLU:HG2	1:C:173:ILE:N	2.36	0.40
2:D:178:TYR:HD2	8:D:2003:HOH:O	2.03	0.40
1:A:86:ASP:HA	1:A:133:LEU:O	2.22	0.40
1:A:293:VAL:HG13	1:A:294:PRO:HD2	2.03	0.40
2:B:361:HIS:HE1	2:B:371:SER:OG	2.04	0.40
1:C:133:LEU:HA	1:C:133:LEU:HD23	1.81	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:400:LYS:O	2:D:401:ALA:C	2.58	0.40
1:A:101:LEU:H	1:A:101:LEU:CD1	2.15	0.40
2:B:388:LYS:O	2:B:389:PRO:C	2.59	0.40
1:C:60:HIS:CG	1:C:61:PRO:HD2	2.55	0.40
1:A:10:ILE:HD11	1:A:20:LYS:HB2	2.03	0.40
1:A:96:LEU:HG	1:A:97:THR:N	2.36	0.40
2:D:196:LYS:HG2	2:D:244:SER:HB3	2.03	0.40
2:B:262:LEU:O	2:B:265:SER:N	2.53	0.40
2:B:339:LEU:HD23	2:B:339:LEU:HA	1.89	0.40
1:C:85:GLN:HE21	1:C:85:GLN:HB3	1.64	0.40
1:C:141:ILE:CG1	1:C:142:LYS:N	2.85	0.40
2:D:195:PRO:HG2	2:D:240:ASP:HB3	2.03	0.40

All (1) 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)
8:B:2010:HOH:O	8:C:2011:HOH:O[3_546]	2.09	0.11

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	293/299 (98%)	256 (87%)	34 (12%)	3 (1%)	15	37
1	C	293/299 (98%)	260 (89%)	27 (9%)	6 (2%)	7	19
2	B	256/258 (99%)	240 (94%)	13 (5%)	3 (1%)	13	32
2	D	256/258 (99%)	236 (92%)	18 (7%)	2 (1%)	19	43
3	E	5/7 (71%)	3 (60%)	2 (40%)	0	100	100
3	F	5/7 (71%)	3 (60%)	1 (20%)	1 (20%)	0	0
All	All	1108/1128 (98%)	998 (90%)	95 (9%)	15 (1%)	11	28

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	C	39	THR
1	A	162	GLU
1	A	164	VAL
2	B	197	VAL
2	B	304	PHE
1	C	164	VAL
2	D	197	VAL
2	D	347	TYR
1	A	72	THR
1	C	38	ASP
1	C	72	THR
3	F	6	PRO
2	B	262	LEU
1	C	281	LEU
1	C	224	GLU

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	260/263 (99%)	237 (91%)	23 (9%)	10	23
1	C	260/263 (99%)	238 (92%)	22 (8%)	10	24
2	B	232/232 (100%)	217 (94%)	15 (6%)	17	38
2	D	232/232 (100%)	214 (92%)	18 (8%)	12	29
3	E	6/6 (100%)	5 (83%)	1 (17%)	2	5
3	F	6/6 (100%)	3 (50%)	3 (50%)	0	0
All	All	996/1002 (99%)	914 (92%)	82 (8%)	11	26

All (82) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	GLU
1	A	14	THR

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Mol	Chain	Res	Type
1	A	17	VAL
1	A	39	THR
1	A	41	THR
1	A	46	SER
1	A	47	THR
1	A	69	VAL
1	A	75	LYS
1	A	97	THR
1	A	101	LEU
1	A	121	HIS
1	A	122	ARG
1	A	131	GLN
1	A	150	ARG
1	A	156	VAL
1	A	175	LEU
1	A	177	CYS
1	A	209	ILE
1	A	230	VAL
1	A	237	LYS
1	A	255	LEU
1	A	278	LYS
2	B	175	VAL
2	B	176	PRO
2	B	194	LYS
2	B	196	LYS
2	B	226	LYS
2	B	232	LEU
2	B	247	SER
2	B	274	GLU
2	B	289	LYS
2	B	292	LEU
2	B	331	SER
2	B	334	MET
2	B	374	GLU
2	B	384	LEU
2	B	398	TYR
1	C	8	GLU
1	C	9	LYS
1	C	10	ILE
1	C	53	SER
1	C	56	LYS
1	C	75	LYS

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Mol	Chain	Res	Type
1	C	78	LEU
1	C	97	THR
1	C	122	ARG
1	C	129	LYS
1	C	138	GLU
1	C	157	ARG
1	C	163	VAL
1	C	166	LEU
1	C	177	CYS
1	C	200	ARG
1	C	209	ILE
1	C	230	VAL
1	C	255	LEU
1	C	261	SER
1	C	268	HIS
1	C	278	LYS
2	D	177	ASP
2	D	181	ASP
2	D	194	LYS
2	D	196	LYS
2	D	202	LYS
2	D	232	LEU
2	D	258	THR
2	D	270	ILE
2	D	281	ILE
2	D	287	THR
2	D	289	LYS
2	D	316	THR
2	D	371	SER
2	D	378	ARG
2	D	380	THR
2	D	386	SER
2	D	416	SER
2	D	428	GLU
3	E	7	ARG
3	F	5	SER
3	F	6	PRO
3	F	7	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (22) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	60	HIS
1	A	62	ASN
1	A	113	GLN
1	A	119	HIS
1	A	268	HIS
2	B	203	GLN
2	B	254	GLN
2	B	361	HIS
1	C	5	GLN
1	C	59	ASN
1	C	60	HIS
1	C	62	ASN
1	C	85	GLN
1	C	119	HIS
1	C	121	HIS
1	C	161	HIS
1	C	265	GLN
2	D	254	GLN
2	D	296	HIS
2	D	361	HIS
2	D	425	ASN
2	D	431	ASN

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

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	C	160	1	8,9,11	1.64	1 (12%)	9,13,16	1.79	1 (11%)
1	TPO	A	160	1	8,10,11	1.79	1 (12%)	10,14,16	1.47	2 (20%)

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	C	160	1	-	2/8/9/13	-
1	TPO	A	160	1	-	1/9/11/13	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	160	TPO	P-OG1	-4.76	1.50	1.59
1	C	160	TPO	P-OG1	-3.85	1.52	1.59

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	160	TPO	CB-CA-N	-4.65	98.86	110.46
1	A	160	TPO	O-C-CA	-2.76	117.55	124.78
1	A	160	TPO	P-OG1-CB	-2.36	116.07	123.21

There are no chirality outliers.

All (3) torsion outliers are listed below:

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

There are no ring outliers.

2 monomers are involved in 3 short contacts:

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 8 ligands modelled in this entry, 2 are monoatomic - leaving 6 for Mogul analysis.

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	#$|Z| > 2$
4	ATP	A	1297	5	24,29,33	1.26	2 (8%)	29,45,52	1.54	3 (10%)
4	ATP	C	1298	5	24,29,33	1.32	2 (8%)	29,45,52	1.39	2 (6%)
7	GOL	B	1433	-	5,5,5	0.30	0	5,5,5	0.39	0
6	NO3	C	1300	-	1,3,3	3.39	1 (100%)	0,3,3	-	-
6	NO3	A	1299	5	1,3,3	4.22	1 (100%)	0,3,3	-	-
7	GOL	C	1297	-	5,5,5	0.55	0	5,5,5	1.23	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
4	ATP	A	1297	5	-	2/12/32/38	0/3/3/3
7	GOL	B	1433	-	-	4/4/4/4	-
4	ATP	C	1298	5	-	2/12/32/38	0/3/3/3
7	GOL	C	1297	-	-	2/4/4/4	-

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	1297	ATP	C2-N3	4.61	1.39	1.32
4	C	1298	ATP	C2-N3	4.27	1.39	1.32
6	A	1299	NO3	O1-N	4.22	1.43	1.24
4	C	1298	ATP	C2-N1	3.67	1.40	1.33
6	C	1300	NO3	O1-N	3.39	1.39	1.24
4	A	1297	ATP	C2-N1	2.61	1.38	1.33

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
4	A	1297	ATP	N3-C2-N1	-5.26	120.46	128.68
4	A	1297	ATP	PA-O3A-PB	-4.83	116.26	132.83
4	C	1298	ATP	N3-C2-N1	-4.72	121.30	128.68
4	C	1298	ATP	PA-O3A-PB	-2.92	122.81	132.83
4	A	1297	ATP	C5-C6-N6	-2.14	117.10	120.35

There are no chirality outliers.
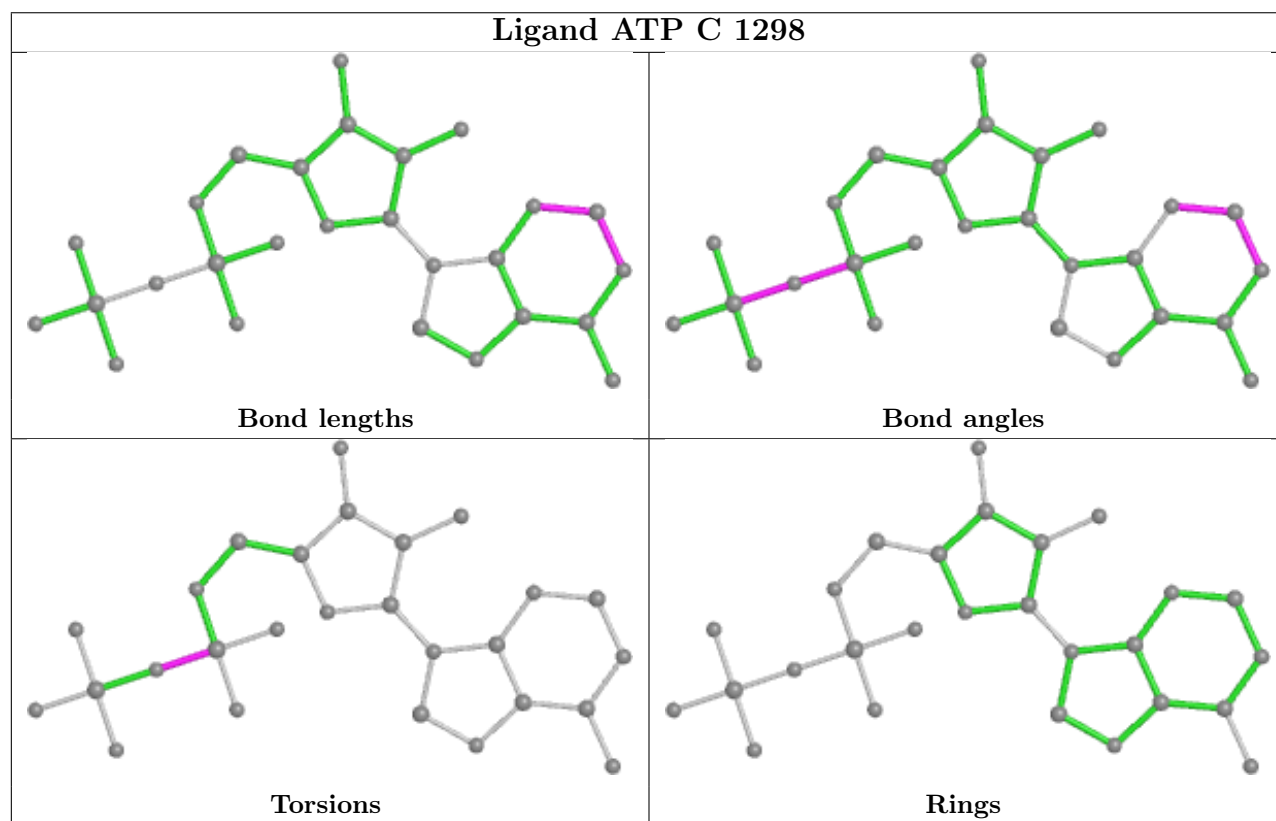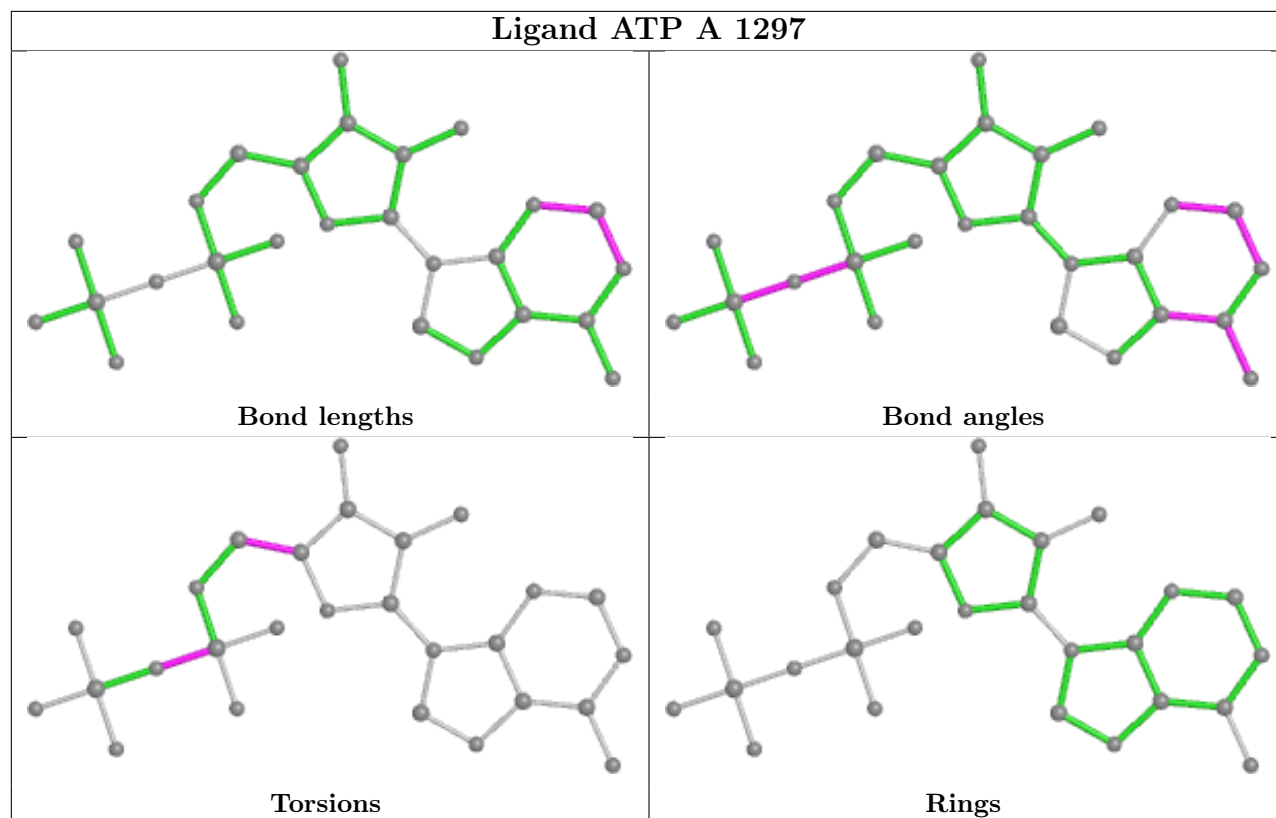
All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	B	1433	GOL	C1-C2-C3-O3
7	C	1297	GOL	O1-C1-C2-C3
7	B	1433	GOL	O1-C1-C2-O2
7	B	1433	GOL	O1-C1-C2-C3
7	B	1433	GOL	O2-C2-C3-O3
7	C	1297	GOL	O1-C1-C2-O2
4	C	1298	ATP	PB-O3A-PA-O1A
4	A	1297	ATP	PB-O3A-PA-O1A
4	C	1298	ATP	PB-O3A-PA-O2A
4	A	1297	ATP	O4'-C4'-C5'-O5'

There are no ring outliers.

5 monomers are involved in 16 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	A	1297	ATP	5	0
4	C	1298	ATP	7	0
7	B	1433	GOL	1	0
6	C	1300	NO3	2	0
6	A	1299	NO3	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

WORLDWIDE
wwPDB
PROTEIN DATA BANK

Ligand ATP A 1297

Bond lengths

Bond angles

Torsions

Rings

Ligand ATP C 1298

Bond lengths

Bond angles

Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 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	295/299 (98%)	-0.04	10 (3%)	45	45	16, 33, 62, 71	0
1	C	295/299 (98%)	-0.06	12 (4%)	37	36	17, 32, 62, 76	0
2	B	258/258 (100%)	-0.19	4 (1%)	72	74	9, 31, 49, 68	0
2	D	258/258 (100%)	-0.16	5 (1%)	66	69	12, 30, 48, 62	0
3	E	7/7 (100%)	4.16	7 (100%)	0	0	54, 56, 60, 60	0
3	F	7/7 (100%)	3.58	6 (85%)	0	0	54, 57, 61, 62	0
All	All	1120/1128 (99%)	-0.06	44 (3%)	39	38	9, 32, 58, 76	0

All (44) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	B	175	VAL	6.8
3	E	4	ALA	6.0
3	F	2	HIS	5.6
3	F	4	ALA	5.5
1	A	95	ALA	5.3
1	C	95	ALA	4.7
3	E	7	ARG	4.5
1	A	40	GLU	4.4
3	E	2	HIS	4.3
1	C	96	LEU	4.2
1	C	40	GLU	4.0
3	E	5	SER	4.0
2	D	175	VAL	3.9
1	C	13	GLY	3.8
1	A	13	GLY	3.8
3	F	8	LYS	3.6
1	C	97	THR	3.5
3	E	3	HIS	3.5
3	E	8	LYS	3.5

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Mol	Chain	Res	Type	RSRZ
1	C	39	THR	3.4
3	E	6	PRO	3.3
3	F	7	ARG	3.2
1	A	98	GLY	3.2
1	A	96	LEU	3.2
1	A	39	THR	3.2
2	D	425	ASN	3.2
2	B	323	GLN	3.1
1	A	97	THR	3.1
3	F	3	HIS	3.0
1	C	73	GLU	2.7
2	D	324	PRO	2.7
1	A	14	THR	2.6
1	C	14	THR	2.5
1	A	36	ARG	2.5
1	C	15	TYR	2.4
2	D	323	GLN	2.3
2	B	176	PRO	2.3
1	C	36	ARG	2.3
3	F	5	SER	2.2
1	C	296	LEU	2.2
1	A	73	GLU	2.1
2	B	324	PRO	2.1
2	D	325	ALA	2.1
1	C	98	GLY	2.0

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

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.

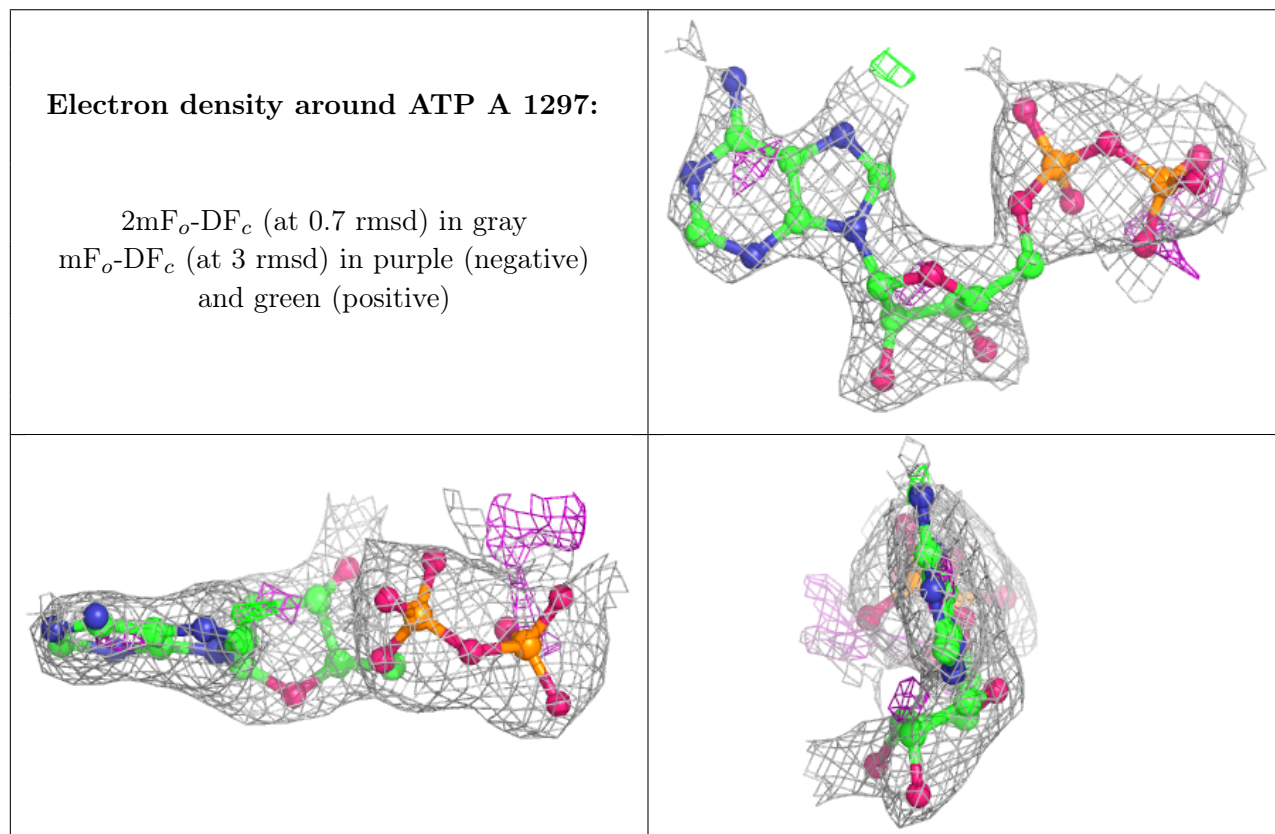| Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
1	TPO	C	160	10/12	0.96	0.13	17,21,22,23	0
1	TPO	A	160	11/12	0.97	0.11	20,29,31,31	0

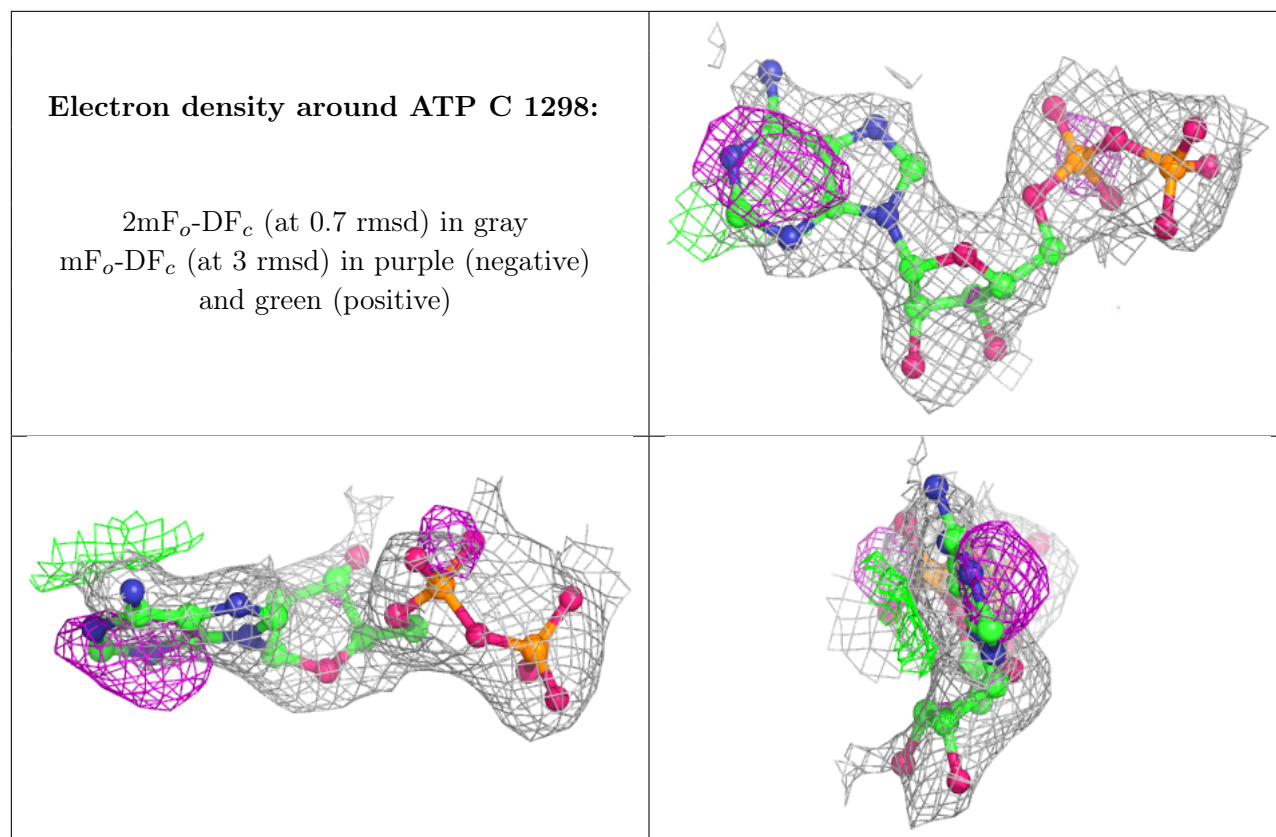## 6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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
5	MG	A	1298	1/1	0.57	0.46	44,44,44,44	0
6	NO3	A	1299	4/4	0.75	0.34	49,50,50,51	0
5	MG	C	1299	1/1	0.81	0.18	49,49,49,49	0
7	GOL	B	1433	6/6	0.84	0.31	50,52,53,53	0
6	NO3	C	1300	4/4	0.86	0.32	58,59,59,60	0
4	ATP	A	1297	27/31	0.88	0.25	47,52,59,60	0
4	ATP	C	1298	27/31	0.90	0.21	52,57,61,63	0
7	GOL	C	1297	6/6	0.91	0.20	20,27,29,33	0

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around ATP A 1297:

$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

Electron density around ATP C 1298:

$2mF_o\text{-}DF_c$ (at 0.7 rmsd) in gray
$mF_o\text{-}DF_c$ (at 3 rmsd) in purple (negative)
and green (positive)

6.5 Other polymers ⓘ

There are no such residues in this entry.