Full wwPDB X-ray Structure Validation Report ⓘ

Dec 4, 2023 – 10:40 pm GMT

PDB ID	:	1UNH
Title	:	Structural mechanism for the inhibition of CDK5-p25 by roscovitine, aloisine and indirubin.
Authors	:	Mapelli, M.; Crovace, C.; Massimiliano, L.; Musacchio, A.
Deposited on	:	2003-09-10
Resolution	:	2.35 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:

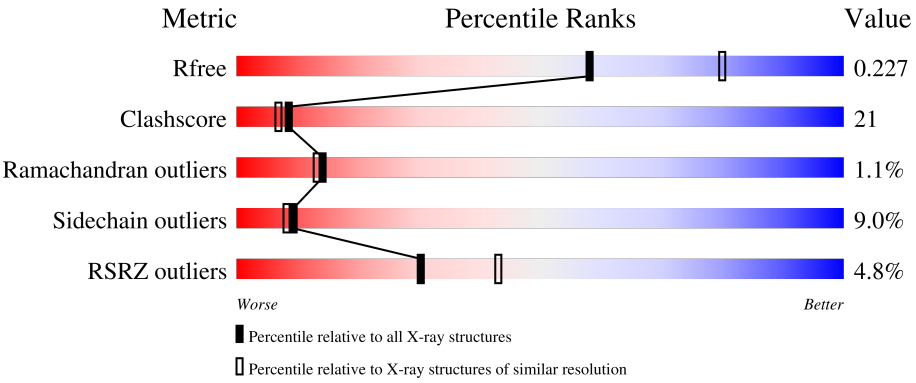
MolProbity	:	4.02b-467
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.35 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	1164 (2.36-2.36)
Clashscore	141614	1232 (2.36-2.36)
Ramachandran outliers	138981	1211 (2.36-2.36)
Sidechain outliers	138945	1212 (2.36-2.36)
RSRZ outliers	127900	1150 (2.36-2.36)

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	292	4% 66% 25% • 5%
1	B	292	6% 59% 29% 6% • 5%
2	D	208	2% 54% 13% • 29%
2	E	208	4% 45% 21% • • 29%

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 7086 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 CYCLIN-DEPENDENT KINASE 5.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	277	Total	C	N	O	S	0	0	1
			2226	1435	388	393	10			
1	B	277	Total	C	N	O	S	0	0	1
			2226	1435	388	393	10			

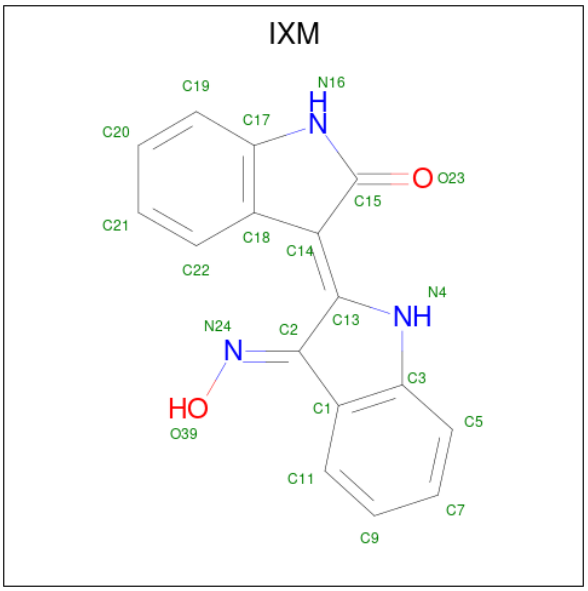
There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	144	ASN	ASP	engineered mutation	UNP Q00535
B	144	ASN	ASP	engineered mutation	UNP Q00535

- Molecule 2 is a protein called CYCLIN-DEPENDENT KINASE 5 ACTIVATOR 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	148	Total	C	N	O	S	0	0	1
			1191	765	197	218	11			
2	E	148	Total	C	N	O	S	0	0	1
			1191	765	197	218	11			

- Molecule 3 is (Z)-1H,1'H-[2,3']BIINDOLYLIDENE-3,2'-DIONE-3-OXIME (three-letter code: IXM) (formula: $C_{16}H_{11}N_3O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O 21 16 3 2	0	0
3	B	1	Total C N O 21 16 3 2	0	0

- Molecule 4 is water.

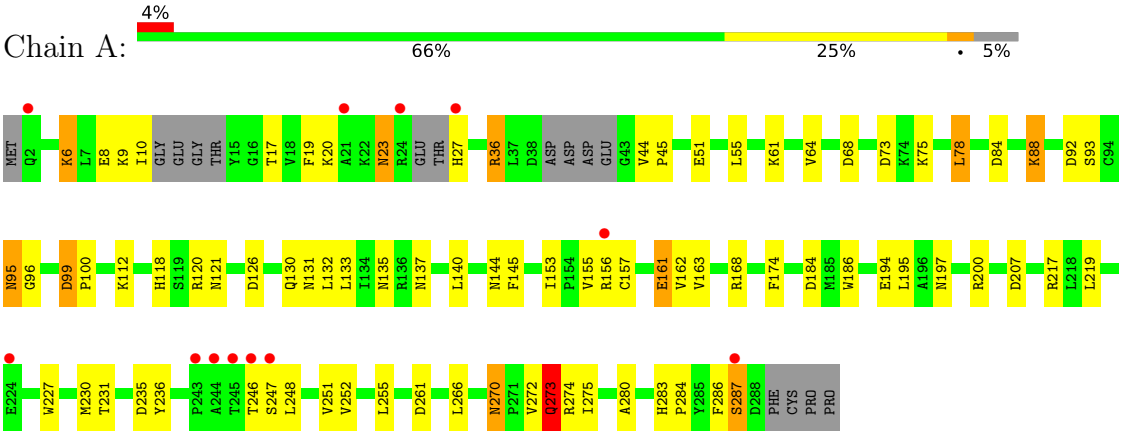
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	73	Total O 73 73	0	0
4	B	73	Total O 73 73	0	0
4	D	37	Total O 37 37	0	0
4	E	27	Total O 27 27	0	0

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 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.

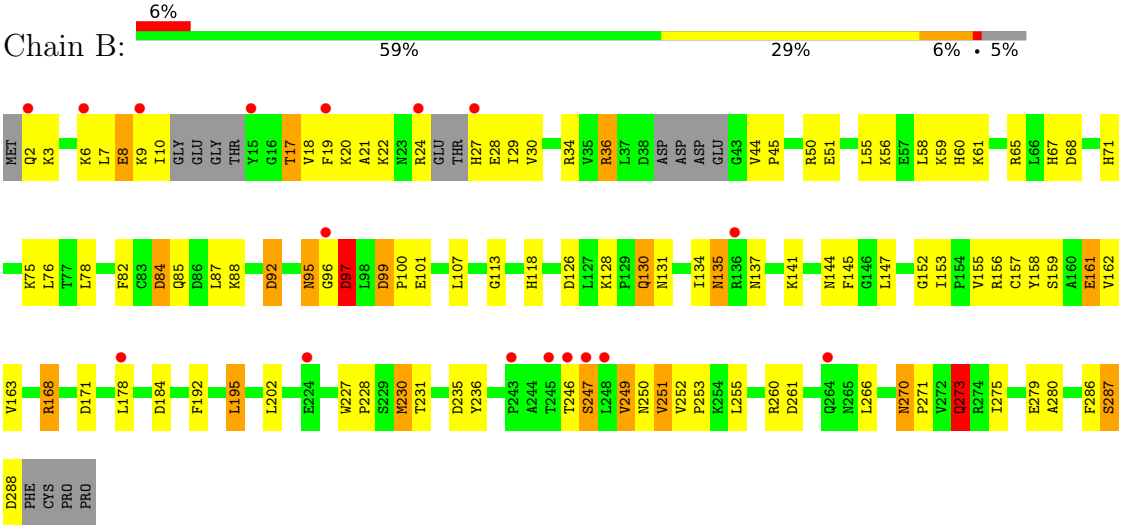
• Molecule 1: CYCLIN-DEPENDENT KINASE 5

Chain A:



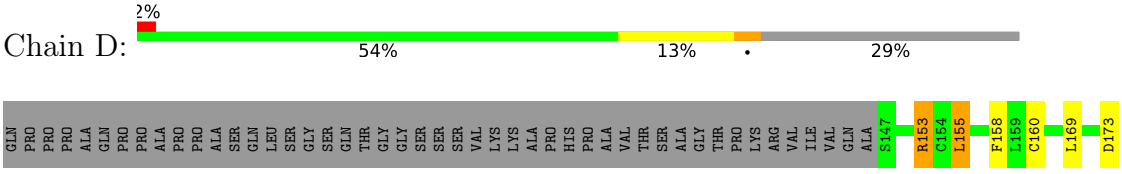
• Molecule 1: CYCLIN-DEPENDENT KINASE 5

Chain B:



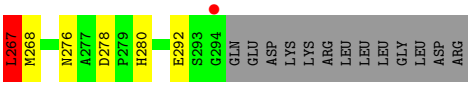
• Molecule 2: CYCLIN-DEPENDENT KINASE 5 ACTIVATOR 1

Chain D:



• Molecule 2: CYCLIN-DEPENDENT KINASE 5 ACTIVATOR 1

Chain E:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	149.54Å 90.12Å 83.16Å 90.00° 93.29° 90.00°	Depositor
Resolution (Å)	19.88 – 2.35 19.88 – 2.35	Depositor EDS
% Data completeness (in resolution range)	99.3 (19.88-2.35) 99.3 (19.88-2.35)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.41 (at 2.35Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.229 , 0.230 0.226 , 0.227	Depositor DCC
R_{free} test set	2303 reflections (5.05%)	wwPDB-VP
Wilson B-factor (Å^2)	55.7	Xtriage
Anisotropy	0.055	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 40.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	7086	wwPDB-VP
Average B, all atoms (Å^2)	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.56% of the height of the origin peak. No significant pseudotranslation is detected.*

[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

5.1 Standard geometry

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

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	1/2276 (0.0%)	0.91	8/3076 (0.3%)
1	B	0.75	1/2276 (0.0%)	0.92	11/3076 (0.4%)
2	D	0.72	1/1219 (0.1%)	0.86	6/1654 (0.4%)
2	E	0.89	1/1219 (0.1%)	1.02	10/1654 (0.6%)
All	All	0.78	4/6990 (0.1%)	0.92	35/9460 (0.4%)

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
2	E	0	1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	E	189	GLY	N-CA	19.21	1.74	1.46
2	D	187	LEU	C-O	7.91	1.38	1.23
1	A	273	GLN	CG-CD	5.75	1.64	1.51
1	B	273	GLN	CG-CD	5.56	1.63	1.51

All (35) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	84	ASP	CB-CG-OD2	9.55	126.89	118.30
2	E	210	ASP	CB-CG-OD2	9.44	126.79	118.30
1	B	92	ASP	CB-CG-OD2	9.35	126.71	118.30
2	E	187	LEU	CA-C-N	-9.03	97.34	117.20
1	B	84	ASP	CB-CG-OD2	8.40	125.86	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	126	ASP	CB-CG-OD2	8.19	125.67	118.30
2	D	278	ASP	CB-CG-OD2	6.96	124.56	118.30
2	D	192	ASP	CB-CG-OD2	6.95	124.56	118.30
2	E	182	ASP	CB-CG-OD2	6.88	124.49	118.30
1	A	99	ASP	CB-CG-OD2	6.63	124.26	118.30
1	A	261	ASP	CB-CG-OD2	6.58	124.22	118.30
1	B	126	ASP	CB-CG-OD2	6.54	124.18	118.30
2	E	278	ASP	CB-CG-OD2	6.28	123.95	118.30
1	A	92	ASP	CB-CG-OD2	6.24	123.92	118.30
2	E	187	LEU	O-C-N	6.15	132.54	122.70
2	E	187	LEU	N-CA-C	-6.01	94.77	111.00
1	A	207	ASP	CB-CG-OD2	5.99	123.69	118.30
1	B	261	ASP	CB-CG-OD2	5.92	123.63	118.30
1	B	68	ASP	CB-CG-OD2	5.91	123.62	118.30
1	A	68	ASP	CB-CG-OD2	5.86	123.57	118.30
2	D	155	LEU	CB-CG-CD2	5.71	120.72	111.00
1	B	195	LEU	CA-CB-CG	5.66	128.33	115.30
2	E	187	LEU	C-N-CA	5.61	135.73	121.70
2	E	190	TRP	CB-CA-C	5.58	121.56	110.40
1	B	171	ASP	CB-CG-OD2	5.48	123.23	118.30
1	B	235	ASP	CB-CG-OD2	5.43	123.19	118.30
1	B	168	ARG	NE-CZ-NH1	5.36	122.98	120.30
2	D	173	ASP	CB-CG-OD2	5.31	123.08	118.30
1	B	99	ASP	CB-CG-OD2	5.31	123.08	118.30
2	E	259	ASP	CB-CG-OD2	5.24	123.02	118.30
1	B	97	ASP	CB-CG-OD2	5.19	122.97	118.30
1	A	235	ASP	CB-CG-OD2	5.15	122.94	118.30
2	D	182	ASP	CB-CG-OD2	5.13	122.92	118.30
2	D	293	SER	O-C-N	-5.05	114.62	123.20
2	E	267	LEU	CA-CB-CG	5.04	126.90	115.30

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	E	188	GLN	Peptide

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	2226	0	2268	68	0
1	B	2226	0	2268	112	0
2	D	1191	0	1177	37	0
2	E	1191	0	1177	73	0
3	A	21	0	11	2	0
3	B	21	0	11	2	0
4	A	73	0	0	26	0
4	B	73	0	0	52	0
4	D	37	0	0	18	0
4	E	27	0	0	23	0
All	All	7086	0	6912	286	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 21.

All (286) 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:E:189:GLY:N	2:E:189:GLY:CA	1.74	1.49
2:E:188:GLN:HE21	2:E:192:ASP:CA	1.44	1.31
1:B:275:ILE:HB	4:B:2072:HOH:O	1.35	1.26
2:D:190:TRP:CZ3	4:D:2002:HOH:O	1.84	1.26
1:A:186:TRP:HE3	4:A:2063:HOH:O	1.00	1.26
2:E:186:LEU:HD22	2:E:188:GLN:OE1	1.35	1.25
2:E:186:LEU:CD2	2:E:188:GLN:OE1	1.87	1.22
2:E:188:GLN:HG3	2:E:191:GLN:O	1.02	1.19
2:E:188:GLN:NE2	2:E:192:ASP:C	1.95	1.18
2:E:188:GLN:HE21	2:E:192:ASP:C	1.45	1.17
2:E:188:GLN:CG	2:E:191:GLN:O	1.93	1.15
1:B:22:LYS:HA	4:B:2007:HOH:O	1.47	1.13
1:B:113:GLY:HA2	4:B:2031:HOH:O	1.45	1.13
2:E:188:GLN:HE21	2:E:192:ASP:HA	1.18	1.08
1:B:135:ASN:CB	4:B:2038:HOH:O	2.01	1.07
2:D:190:TRP:HZ3	4:D:2002:HOH:O	1.21	1.05
2:E:188:GLN:NE2	2:E:192:ASP:CA	2.20	1.04
1:B:34:ARG:CD	4:B:2009:HOH:O	2.04	1.03
2:E:188:GLN:NE2	2:E:192:ASP:HA	1.73	1.02
2:E:211:VAL:HG12	4:E:2013:HOH:O	1.61	1.00
2:E:225:VAL:HG21	4:E:2013:HOH:O	1.60	1.00

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:158:PHE:HB2	2:D:292:GLU:HG2	1.40	0.99
1:B:34:ARG:HD2	4:B:2009:HOH:O	1.56	0.99
1:B:10:ILE:HG22	1:B:10:ILE:O	1.63	0.98
2:D:190:TRP:CZ3	4:D:2011:HOH:O	2.15	0.98
2:D:185:LEU:HD12	2:D:190:TRP:CE3	2.01	0.95
1:B:135:ASN:HB3	4:B:2038:HOH:O	1.60	0.93
2:E:188:GLN:NE2	2:E:192:ASP:O	1.99	0.93
2:D:190:TRP:HZ3	4:D:2011:HOH:O	1.47	0.93
2:E:239:ASN:HA	4:E:2017:HOH:O	1.72	0.89
2:E:188:GLN:HG3	2:E:191:GLN:C	1.91	0.89
1:B:19:PHE:HB3	4:B:2006:HOH:O	1.74	0.88
1:B:3:LYS:HA	4:B:2001:HOH:O	1.72	0.88
1:B:135:ASN:HB2	4:B:2038:HOH:O	1.67	0.88
2:E:188:GLN:CG	2:E:192:ASP:HA	2.03	0.88
1:A:286:PHE:O	1:A:287:SER:OG	1.91	0.87
2:D:185:LEU:HD12	2:D:190:TRP:HE3	1.35	0.87
2:E:153:ARG:HG3	2:E:153:ARG:HH11	1.36	0.87
1:A:168:ARG:NH1	4:A:2041:HOH:O	1.64	0.87
1:A:270:ASN:HB3	1:A:273:GLN:HG3	1.55	0.86
1:B:27:HIS:CD2	1:B:28:GLU:HB2	2.11	0.86
1:A:270:ASN:HB3	1:A:273:GLN:CG	2.06	0.86
1:A:23:ASN:HA	4:A:2004:HOH:O	1.75	0.85
1:B:266:LEU:HD23	1:B:275:ILE:HD11	1.58	0.85
1:A:6:LYS:HB2	4:A:2002:HOH:O	1.77	0.84
1:B:34:ARG:CG	4:B:2009:HOH:O	2.22	0.83
1:B:266:LEU:CD2	1:B:275:ILE:HD11	2.09	0.83
2:E:244:PRO:HB2	4:E:2019:HOH:O	1.78	0.81
1:B:270:ASN:HB3	1:B:273:GLN:HG3	1.63	0.80
1:B:155:VAL:HG12	1:B:157:CYS:H	1.47	0.79
2:E:158:PHE:HB2	2:E:292:GLU:HG2	1.64	0.79
1:B:270:ASN:HB3	1:B:273:GLN:CG	2.13	0.79
1:A:64:VAL:HB	4:A:2033:HOH:O	1.82	0.78
1:A:99:ASP:OD2	1:A:100:PRO:HD2	1.82	0.78
2:E:188:GLN:CD	2:E:192:ASP:HA	2.03	0.78
1:A:9:LYS:HE2	1:A:19:PHE:HE2	1.50	0.77
1:A:64:VAL:HA	4:A:2018:HOH:O	1.84	0.76
2:E:186:LEU:CD2	2:E:188:GLN:CD	2.54	0.76
1:B:10:ILE:O	1:B:10:ILE:CG2	2.34	0.76
1:B:27:HIS:HD2	1:B:28:GLU:HB2	1.51	0.76
2:D:189:GLY:HA2	4:D:2012:HOH:O	1.86	0.75
1:B:19:PHE:C	4:B:2005:HOH:O	2.24	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:E:153:ARG:HG3	2:E:153:ARG:NH1	2.00	0.74
1:A:135:ASN:CB	4:A:2031:HOH:O	2.35	0.74
1:B:36:ARG:HD3	1:B:75:LYS:HD3	1.70	0.74
1:B:34:ARG:NH1	4:B:2009:HOH:O	1.90	0.73
2:D:226:LEU:HA	4:D:2021:HOH:O	1.87	0.73
1:B:252:VAL:HG22	1:B:255:LEU:HB2	1.71	0.73
1:A:137:ASN:HB2	4:A:2031:HOH:O	1.88	0.72
1:A:135:ASN:HB3	4:A:2031:HOH:O	1.91	0.71
1:B:96:GLY:N	4:B:2029:HOH:O	2.23	0.71
1:B:252:VAL:HG21	1:B:255:LEU:HD22	1.71	0.71
1:B:288:ASP:N	4:B:2073:HOH:O	2.22	0.71
2:D:153:ARG:CD	4:D:2004:HOH:O	2.38	0.71
2:D:160:CYS:SG	4:D:2009:HOH:O	2.49	0.71
2:E:186:LEU:HA	2:E:188:GLN:HB2	1.72	0.70
2:E:161:ARG:HD3	4:E:2005:HOH:O	1.90	0.70
1:B:21:ALA:O	4:B:2007:HOH:O	2.10	0.70
2:D:242:SER:O	4:D:2026:HOH:O	2.09	0.70
1:B:18:VAL:HG12	4:B:2005:HOH:O	1.92	0.70
1:B:6:LYS:HB2	4:B:2002:HOH:O	1.91	0.70
1:B:228:PRO:HD2	4:B:2060:HOH:O	1.90	0.69
2:E:186:LEU:O	4:E:2010:HOH:O	2.11	0.69
2:E:186:LEU:C	4:E:2010:HOH:O	2.30	0.69
2:E:186:LEU:HD23	2:E:188:GLN:OE1	1.87	0.69
1:A:161:GLU:O	1:A:161:GLU:HG3	1.91	0.69
1:B:161:GLU:O	1:B:161:GLU:HG3	1.93	0.68
2:D:212:ILE:HD11	4:D:2021:HOH:O	1.95	0.67
1:A:140:LEU:HG	4:A:2027:HOH:O	1.95	0.67
1:B:141:LYS:NZ	4:B:2039:HOH:O	2.28	0.66
1:B:75:LYS:O	4:B:2023:HOH:O	2.11	0.66
1:B:29:ILE:HA	4:B:2007:HOH:O	1.95	0.66
2:E:186:LEU:C	2:E:188:GLN:H	1.86	0.65
4:B:2014:HOH:O	2:E:241:ILE:O	2.14	0.65
2:E:153:ARG:HD3	4:E:2002:HOH:O	1.96	0.65
1:B:250:ASN:HB2	4:B:2066:HOH:O	1.97	0.65
1:A:120:ARG:HD3	4:A:2025:HOH:O	1.97	0.64
2:E:247:PRO:HD2	4:E:2019:HOH:O	1.96	0.64
2:E:153:ARG:HH11	2:E:153:ARG:CG	2.10	0.64
1:A:272:VAL:O	4:A:2067:HOH:O	2.15	0.64
1:A:274:ARG:O	4:A:2067:HOH:O	2.14	0.64
2:D:153:ARG:HD3	4:D:2004:HOH:O	1.97	0.64
2:E:186:LEU:HD23	2:E:188:GLN:CD	2.17	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:D:190:TRP:CH2	4:D:2002:HOH:O	2.26	0.63
2:D:240:GLU:HB3	4:D:2026:HOH:O	1.98	0.63
1:B:20:LYS:O	4:B:2006:HOH:O	2.16	0.63
2:E:158:PHE:HB2	2:E:292:GLU:CG	2.29	0.63
1:B:50:ARG:NH1	4:B:2014:HOH:O	2.03	0.62
2:D:169:LEU:HG	4:D:2009:HOH:O	1.99	0.62
2:E:160:CYS:N	4:E:2004:HOH:O	2.31	0.62
1:B:59:LYS:HG2	4:B:2019:HOH:O	2.00	0.62
1:B:275:ILE:HD13	1:B:280:ALA:HB2	1.80	0.62
2:D:169:LEU:HD23	4:D:2006:HOH:O	1.99	0.62
1:A:275:ILE:HD13	1:A:280:ALA:HB2	1.82	0.61
2:E:187:LEU:C	2:E:189:GLY:N	2.54	0.61
2:E:225:VAL:CG2	4:E:2013:HOH:O	2.31	0.61
1:B:96:GLY:O	1:B:97:ASP:HB2	2.00	0.61
1:B:95:ASN:HB3	4:B:2027:HOH:O	1.99	0.61
1:A:266:LEU:CD2	1:A:275:ILE:HD11	2.30	0.60
2:E:165:ARG:HG3	4:E:2015:HOH:O	2.00	0.60
1:A:133:LEU:N	4:A:2027:HOH:O	2.33	0.60
1:B:22:LYS:CA	4:B:2007:HOH:O	2.24	0.59
2:E:161:ARG:CD	4:E:2005:HOH:O	2.48	0.59
1:A:155:VAL:HG12	4:A:2037:HOH:O	2.03	0.59
1:B:270:ASN:HD22	1:B:271:PRO:HD2	1.67	0.59
2:E:184:SER:C	2:E:186:LEU:H	2.05	0.59
2:E:153:ARG:CD	4:E:2002:HOH:O	2.50	0.59
2:D:197:THR:HB	2:D:198:PRO:CD	2.33	0.58
1:A:36:ARG:HG2	1:A:36:ARG:HH11	1.68	0.58
1:A:9:LYS:HE2	1:A:19:PHE:CE2	2.35	0.58
1:A:36:ARG:HH11	1:A:36:ARG:CG	2.17	0.58
1:A:186:TRP:CE3	4:A:2063:HOH:O	1.91	0.58
1:B:266:LEU:HD23	1:B:275:ILE:CD1	2.32	0.57
1:A:286:PHE:O	1:A:287:SER:CB	2.52	0.57
3:A:1288:IXM:N24	3:A:1288:IXM:H22	2.20	0.57
1:B:141:LYS:HD3	4:B:2021:HOH:O	2.05	0.56
2:E:183:ARG:O	2:E:186:LEU:HB2	2.05	0.56
2:E:246:LYS:N	4:E:2019:HOH:O	2.38	0.56
1:B:27:HIS:CD2	1:B:28:GLU:N	2.73	0.56
2:D:153:ARG:HG3	2:D:153:ARG:HH11	1.71	0.56
1:A:17:THR:HG23	1:A:19:PHE:HE1	1.70	0.56
1:A:155:VAL:CG1	4:A:2037:HOH:O	2.54	0.56
1:A:252:VAL:HG22	1:A:255:LEU:HB2	1.87	0.56
2:D:153:ARG:HG3	2:D:153:ARG:NH1	2.20	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:161:GLU:O	1:A:161:GLU:CG	2.52	0.56
1:A:155:VAL:HG12	1:A:157:CYS:H	1.70	0.55
1:B:247:SER:C	1:B:249:VAL:H	2.08	0.55
1:B:270:ASN:HD22	1:B:271:PRO:CD	2.20	0.55
2:D:240:GLU:CB	4:D:2026:HOH:O	2.54	0.55
1:A:227:TRP:CE3	1:A:230:MET:HE3	2.41	0.55
1:B:161:GLU:O	1:B:161:GLU:CG	2.55	0.55
1:B:59:LYS:HD3	4:B:2019:HOH:O	2.07	0.55
2:D:158:PHE:HB2	2:D:292:GLU:CG	2.28	0.54
1:A:118:HIS:HE1	1:A:184:ASP:OD2	1.90	0.54
2:E:187:LEU:C	2:E:189:GLY:H	2.11	0.54
1:A:197:ASN:HB3	4:A:2048:HOH:O	2.07	0.53
1:B:27:HIS:CD2	1:B:28:GLU:H	2.27	0.53
1:B:65:ARG:HD3	1:B:67:HIS:CD2	2.43	0.53
1:B:51:GLU:HG3	1:B:145:PHE:HB2	1.90	0.53
1:A:153:ILE:O	1:A:155:VAL:HG23	2.08	0.53
2:D:153:ARG:NE	4:D:2004:HOH:O	2.39	0.52
2:E:188:GLN:HG2	2:E:192:ASP:HA	1.88	0.52
1:B:44:VAL:N	1:B:45:PRO:CD	2.72	0.52
2:D:281:TYR:O	2:D:285:VAL:HG23	2.10	0.52
1:B:58:LEU:N	4:B:2019:HOH:O	2.42	0.52
3:B:1288:IXM:H22	3:B:1288:IXM:N24	2.25	0.52
2:E:197:THR:O	2:E:201:VAL:HG23	2.10	0.52
1:B:7:LEU:O	1:B:8:GLU:O	2.28	0.52
1:B:22:LYS:NZ	4:B:2008:HOH:O	2.37	0.51
1:B:71:HIS:HD2	4:B:2023:HOH:O	1.92	0.51
1:B:17:THR:HG23	1:B:19:PHE:CE1	2.46	0.51
1:B:59:LYS:CD	4:B:2019:HOH:O	2.59	0.51
1:B:71:HIS:HA	4:B:2023:HOH:O	2.10	0.51
2:E:187:LEU:O	2:E:189:GLY:N	2.43	0.50
1:B:131:ASN:ND2	1:B:144:ASN:HD22	2.10	0.50
1:A:44:VAL:N	1:A:45:PRO:CD	2.75	0.50
1:A:135:ASN:HB2	4:A:2031:HOH:O	2.06	0.50
1:B:153:ILE:O	1:B:155:VAL:HG23	2.12	0.50
1:B:82:PHE:HD1	4:B:2024:HOH:O	1.94	0.49
2:E:212:ILE:HA	4:E:2013:HOH:O	2.11	0.49
1:B:34:ARG:HG3	4:B:2009:HOH:O	2.00	0.49
2:D:153:ARG:HH11	2:D:153:ARG:CG	2.25	0.49
2:E:148:THR:CG2	2:E:196:ILE:HG22	2.43	0.49
1:B:252:VAL:HG13	1:B:252:VAL:O	2.13	0.49
1:A:266:LEU:HD23	1:A:275:ILE:HD11	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:286:PHE:O	1:B:287:SER:OG	2.23	0.49
1:B:76:LEU:HA	4:B:2023:HOH:O	2.12	0.49
2:D:197:THR:HB	2:D:198:PRO:HD2	1.95	0.48
2:E:267:LEU:HD13	2:E:268:MET:SD	2.53	0.48
2:E:206:MET:HE2	2:E:207:LEU:HD23	1.96	0.48
1:B:118:HIS:HE1	1:B:184:ASP:OD2	1.97	0.47
1:A:131:ASN:ND2	1:A:144:ASN:HD22	2.11	0.47
1:A:132:LEU:HB3	4:A:2027:HOH:O	2.15	0.47
1:A:283:HIS:CG	1:A:284:PRO:HD2	2.50	0.47
2:E:223:GLN:O	2:E:227:LEU:HB2	2.15	0.47
1:A:88:LYS:NZ	1:B:92:ASP:OD1	2.46	0.47
1:B:19:PHE:N	4:B:2005:HOH:O	2.48	0.47
1:B:279:GLU:HB2	4:B:2072:HOH:O	2.14	0.47
1:B:156:ARG:O	1:B:157:CYS:HB3	2.14	0.47
1:B:56:LYS:HE2	2:E:266:ASN:HA	1.96	0.47
1:B:56:LYS:NZ	4:B:2017:HOH:O	2.47	0.47
2:E:157:GLU:HB2	4:E:2003:HOH:O	2.15	0.47
1:B:9:LYS:O	1:B:10:ILE:C	2.53	0.46
1:B:153:ILE:HG21	2:E:199:ALA:HB1	1.97	0.46
1:A:78:LEU:HD23	1:A:78:LEU:N	2.30	0.46
1:A:153:ILE:HG21	2:D:199:ALA:HB1	1.96	0.46
1:B:71:HIS:CD2	4:B:2023:HOH:O	2.67	0.46
1:B:152:GLY:HA3	2:E:276:ASN:O	2.14	0.46
2:E:191:GLN:HG3	2:E:193:GLN:O	2.15	0.46
1:A:9:LYS:O	1:A:10:ILE:C	2.52	0.46
1:B:253:PRO:HD2	4:B:2068:HOH:O	2.15	0.46
2:D:185:LEU:O	2:D:187:LEU:N	2.44	0.46
1:A:231:THR:HG22	1:A:236:TYR:CE1	2.50	0.46
1:B:107:LEU:HD22	1:B:192:PHE:CD1	2.51	0.46
2:E:171:PRO:HB3	4:E:2003:HOH:O	2.16	0.46
1:B:21:ALA:C	4:B:2007:HOH:O	2.52	0.45
1:B:249:VAL:HG13	1:B:260:ARG:CZ	2.46	0.45
2:E:184:SER:C	2:E:186:LEU:N	2.69	0.45
1:B:9:LYS:HB3	1:B:19:PHE:CE2	2.51	0.45
2:E:211:VAL:C	4:E:2013:HOH:O	2.54	0.45
1:A:36:ARG:NH1	4:A:2007:HOH:O	2.48	0.45
1:B:141:LYS:CD	4:B:2021:HOH:O	2.62	0.45
1:B:159:SER:HB2	2:E:239:ASN:O	2.17	0.45
2:D:186:LEU:HD23	2:D:191:GLN:O	2.16	0.45
1:A:51:GLU:HG3	1:A:145:PHE:HB2	1.99	0.45
1:A:99:ASP:OD2	1:A:100:PRO:CD	2.61	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:1288:IXM:O23	3:A:1288:IXM:N4	2.50	0.45
1:B:249:VAL:HG13	1:B:260:ARG:NE	2.32	0.45
1:A:270:ASN:HD22	1:A:270:ASN:C	2.20	0.44
2:E:186:LEU:HD23	2:E:188:GLN:HB2	1.99	0.44
2:E:161:ARG:NE	4:E:2005:HOH:O	2.51	0.44
1:B:9:LYS:HB3	1:B:19:PHE:CD2	2.53	0.44
1:B:270:ASN:HD22	1:B:270:ASN:C	2.20	0.44
2:E:147:SER:N	4:E:2001:HOH:O	2.50	0.44
1:A:75:LYS:HD3	4:A:2007:HOH:O	2.17	0.44
1:A:120:ARG:O	1:A:121:ASN:HB2	2.18	0.44
1:A:275:ILE:O	1:A:275:ILE:HD12	2.18	0.44
1:B:128:LYS:HE3	1:B:130:GLN:HG2	1.98	0.44
1:A:96:GLY:N	4:A:2021:HOH:O	2.51	0.44
1:B:270:ASN:HD22	1:B:271:PRO:N	2.16	0.44
1:A:217:ARG:HE	1:A:217:ARG:HB3	1.71	0.44
1:B:155:VAL:HG12	1:B:156:ARG:N	2.33	0.44
2:D:160:CYS:SG	4:D:2006:HOH:O	2.61	0.44
2:D:227:LEU:HD12	2:D:227:LEU:HA	1.87	0.43
1:B:7:LEU:O	1:B:8:GLU:C	2.55	0.43
2:E:189:GLY:O	2:E:190:TRP:HD1	2.01	0.43
1:B:85:GLN:HA	3:B:1288:IXM:C5	2.48	0.43
2:D:185:LEU:CD1	2:D:190:TRP:CE3	2.89	0.43
1:A:162:VAL:O	1:A:168:ARG:HD2	2.19	0.43
1:B:231:THR:HG22	1:B:236:TYR:CE1	2.54	0.43
1:B:50:ARG:HD3	2:E:235:SER:O	2.19	0.43
1:A:248:LEU:HA	4:A:2061:HOH:O	2.17	0.42
1:A:252:VAL:HG21	1:A:255:LEU:HD22	2.01	0.42
2:D:198:PRO:O	2:D:202:VAL:HG23	2.18	0.42
2:E:216:VAL:HG11	2:E:222:LEU:HB2	2.00	0.42
1:B:158:TYR:HA	4:E:2017:HOH:O	2.18	0.42
1:B:227:TRP:CE3	1:B:230:MET:HE3	2.54	0.42
2:E:188:GLN:C	2:E:189:GLY:CA	2.73	0.42
2:D:185:LEU:O	2:D:190:TRP:HB2	2.19	0.42
1:B:17:THR:HG23	1:B:19:PHE:HE1	1.85	0.42
1:B:202:LEU:HD11	1:B:251:VAL:HG11	2.02	0.42
1:B:60:HIS:CE1	4:B:2031:HOH:O	2.72	0.42
1:A:155:VAL:HG12	1:A:156:ARG:N	2.35	0.42
1:B:252:VAL:CG2	1:B:255:LEU:HD22	2.45	0.42
1:B:99:ASP:OD2	1:B:100:PRO:HD2	2.19	0.42
1:A:174:PHE:HE1	1:A:230:MET:CE	2.33	0.41
1:A:95:ASN:N	4:A:2022:HOH:O	2.52	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:59:LYS:CG	4:B:2019:HOH:O	2.62	0.41
1:B:30:VAL:N	4:B:2007:HOH:O	2.54	0.41
1:B:162:VAL:O	1:B:168:ARG:HD2	2.20	0.41
2:E:246:LYS:HB2	4:E:2019:HOH:O	2.20	0.41
1:A:10:ILE:O	1:A:10:ILE:HG22	2.19	0.41
1:B:95:ASN:ND2	4:B:2028:HOH:O	2.53	0.41
2:E:185:LEU:HD12	2:E:185:LEU:HA	1.95	0.41
1:A:118:HIS:HD2	4:A:2068:HOH:O	2.03	0.41
2:D:153:ARG:NH1	2:D:153:ARG:CG	2.84	0.41
1:B:275:ILE:H	1:B:275:ILE:HG13	1.67	0.41
1:B:87:LEU:HD13	1:B:134:ILE:HD11	2.03	0.40
2:E:159:LEU:HD22	2:E:222:LEU:HD11	2.02	0.40
1:A:8:GLU:OE1	1:A:20:LYS:HD3	2.21	0.40
2:E:190:TRP:CD2	2:E:244:PRO:HG3	2.56	0.40
1:A:9:LYS:HB3	1:A:19:PHE:CE2	2.56	0.40
1:B:95:ASN:CB	4:B:2027:HOH:O	2.64	0.40
1:B:141:LYS:CG	4:B:2021:HOH:O	2.69	0.40
1:A:194:GLU:HG2	1:A:200:ARG:O	2.21	0.40
2:D:197:THR:O	2:D:201:VAL:HG23	2.21	0.40

There are no symmetry-related clashes.

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	269/292 (92%)	247 (92%)	20 (7%)	2 (1%)	22	23
1	B	269/292 (92%)	244 (91%)	20 (7%)	5 (2%)	8	6
2	D	146/208 (70%)	139 (95%)	6 (4%)	1 (1%)	22	23
2	E	146/208 (70%)	136 (93%)	9 (6%)	1 (1%)	22	23
All	All	830/1000 (83%)	766 (92%)	55 (7%)	9 (1%)	14	13

All (9) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	287	SER
1	B	287	SER
2	E	188	GLN
1	B	8	GLU
1	B	97	ASP
1	B	247	SER
2	D	186	LEU
1	A	163	VAL
1	B	163	VAL

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	246/260 (95%)	225 (92%)	21 (8%)	10 10
1	B	246/260 (95%)	222 (90%)	24 (10%)	8 7
2	D	137/186 (74%)	125 (91%)	12 (9%)	10 8
2	E	137/186 (74%)	125 (91%)	12 (9%)	10 8
All	All	766/892 (86%)	697 (91%)	69 (9%)	9 8

All (69) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	6	LYS
1	A	23	ASN
1	A	27	HIS
1	A	36	ARG
1	A	55	LEU
1	A	61	LYS
1	A	73	ASP
1	A	78	LEU
1	A	88	LYS
1	A	93	SER
1	A	95	ASN

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Mol	Chain	Res	Type
1	A	112	LYS
1	A	130	GLN
1	A	161	GLU
1	A	195	LEU
1	A	219	LEU
1	A	246	THR
1	A	247	SER
1	A	251	VAL
1	A	270	ASN
1	A	273	GLN
1	B	2	GLN
1	B	17	THR
1	B	24	ARG
1	B	36	ARG
1	B	55	LEU
1	B	61	LYS
1	B	78	LEU
1	B	84	ASP
1	B	88	LYS
1	B	95	ASN
1	B	101	GLU
1	B	130	GLN
1	B	135	ASN
1	B	137	ASN
1	B	147	LEU
1	B	161	GLU
1	B	178	LEU
1	B	195	LEU
1	B	230	MET
1	B	246	THR
1	B	249	VAL
1	B	251	VAL
1	B	270	ASN
1	B	273	GLN
2	D	153	ARG
2	D	155	LEU
2	D	181	VAL
2	D	183	ARG
2	D	185	LEU
2	D	187	LEU
2	D	192	ASP
2	D	209	ARG

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Mol	Chain	Res	Type
2	D	227	LEU
2	D	246	LYS
2	D	267	LEU
2	D	280	HIS
2	E	150	GLU
2	E	153	ARG
2	E	155	LEU
2	E	157	GLU
2	E	181	VAL
2	E	185	LEU
2	E	187	LEU
2	E	209	ARG
2	E	227	LEU
2	E	246	LYS
2	E	267	LEU
2	E	280	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	2	GLN
1	A	62	ASN
1	A	118	HIS
1	A	131	ASN
1	A	135	ASN
1	A	270	ASN
1	B	27	HIS
1	B	62	ASN
1	B	67	HIS
1	B	118	HIS
1	B	131	ASN
1	B	135	ASN
1	B	226	GLN
1	B	270	ASN
2	D	200	ASN
2	D	223	GLN
2	E	188	GLN
2	E	200	ASN

5.3.3 RNA

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates

There are no monosaccharides in this entry.

5.6 Ligand geometry

2 ligands are modelled in this entry.

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

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
3	IXM	A	1288	-	24,24,24	2.68	10 (41%)	33,35,35	4.13	18 (54%)
3	IXM	B	1288	-	24,24,24	2.44	9 (37%)	33,35,35	4.07	18 (54%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	IXM	A	1288	-	-	0/5/30/30	0/4/4/4
3	IXM	B	1288	-	-	0/5/30/30	0/4/4/4

All (19) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1288	IXM	C14-C15	-5.53	1.38	1.50

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	1288	IXM	C22-C18	5.51	1.48	1.39
3	B	1288	IXM	C14-C15	-5.10	1.39	1.50
3	A	1288	IXM	C19-C17	-4.68	1.31	1.39
3	A	1288	IXM	C22-C18	4.43	1.47	1.39
3	B	1288	IXM	C21-C20	3.91	1.48	1.38
3	A	1288	IXM	C5-C3	3.85	1.46	1.39
3	A	1288	IXM	C20-C19	-3.78	1.31	1.38
3	A	1288	IXM	C21-C20	3.65	1.47	1.38
3	A	1288	IXM	C1-C3	-3.40	1.37	1.41
3	B	1288	IXM	C1-C3	-3.39	1.37	1.41
3	A	1288	IXM	C11-C1	3.38	1.45	1.39
3	B	1288	IXM	C11-C1	3.33	1.45	1.39
3	B	1288	IXM	C5-C3	3.11	1.44	1.39
3	B	1288	IXM	C2-N24	3.01	1.36	1.29
3	A	1288	IXM	C2-N24	2.38	1.35	1.29
3	A	1288	IXM	C13-C2	-2.38	1.40	1.48
3	B	1288	IXM	C13-C2	-2.32	1.40	1.48
3	B	1288	IXM	C18-C17	-2.04	1.38	1.41

All (36) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1288	IXM	C17-N16-C15	-13.43	102.95	111.38
3	B	1288	IXM	C17-N16-C15	-13.18	103.11	111.38
3	B	1288	IXM	C14-C15-N16	11.89	114.80	106.91
3	A	1288	IXM	C14-C15-N16	11.70	114.67	106.91
3	A	1288	IXM	O23-C15-C14	-6.84	118.88	128.17
3	B	1288	IXM	C18-C17-N16	6.47	115.63	108.22
3	A	1288	IXM	C18-C17-N16	6.01	115.10	108.22
3	B	1288	IXM	O23-C15-C14	-5.04	121.33	128.17
3	B	1288	IXM	C11-C1-C3	4.54	123.70	118.83
3	A	1288	IXM	C1-C3-N4	4.48	113.36	108.22
3	A	1288	IXM	C11-C1-C3	4.46	123.61	118.83
3	B	1288	IXM	C17-C18-C14	-4.35	102.98	106.56
3	B	1288	IXM	C1-C3-N4	4.23	113.07	108.22
3	A	1288	IXM	C17-C18-C14	-4.15	103.14	106.56
3	B	1288	IXM	C19-C17-C18	-3.92	118.26	122.19
3	B	1288	IXM	C1-C2-N24	-3.63	124.70	132.59
3	A	1288	IXM	C19-C17-C18	-3.46	118.72	122.19
3	A	1288	IXM	C3-N4-C13	-3.26	105.61	109.03
3	A	1288	IXM	C22-C18-C17	3.10	122.16	118.83
3	A	1288	IXM	C5-C3-C1	-3.08	119.11	122.19

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	A	1288	IXM	C1-C2-N24	-3.02	126.02	132.59
3	B	1288	IXM	C5-C3-C1	-2.92	119.26	122.19
3	A	1288	IXM	C20-C19-C17	2.91	124.67	118.62
3	B	1288	IXM	O39-N24-C2	2.87	120.55	113.65
3	A	1288	IXM	C21-C22-C18	-2.85	114.42	119.81
3	A	1288	IXM	C2-C13-N4	2.74	111.30	106.87
3	B	1288	IXM	C3-N4-C13	-2.62	106.28	109.03
3	B	1288	IXM	C22-C18-C17	2.48	121.49	118.83
3	B	1288	IXM	C2-C13-N4	2.40	110.75	106.87
3	B	1288	IXM	C19-C17-N16	-2.34	126.10	130.87
3	B	1288	IXM	C18-C14-C15	-2.34	103.48	105.23
3	A	1288	IXM	C19-C17-N16	-2.30	126.18	130.87
3	B	1288	IXM	C20-C19-C17	2.30	123.40	118.62
3	A	1288	IXM	C3-C1-C2	-2.12	104.13	106.25
3	A	1288	IXM	O39-N24-C2	2.08	118.66	113.65
3	B	1288	IXM	C9-C11-C1	-2.07	115.89	119.81

There are no chirality outliers.

There are no torsion outliers.

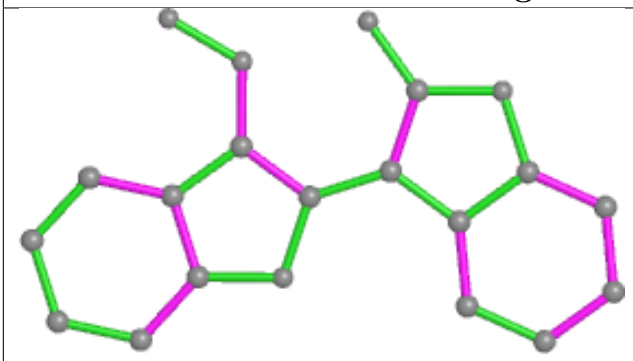
There are no ring outliers.

2 monomers are involved in 4 short contacts:

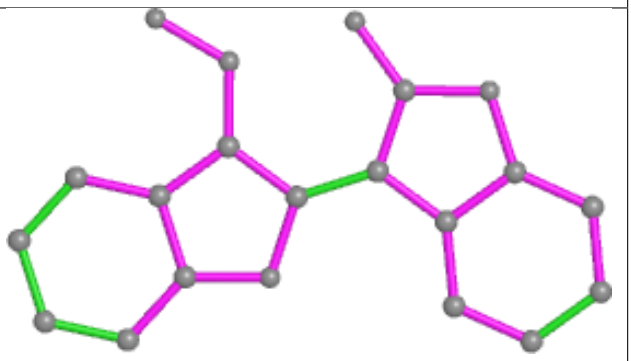
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	1288	IXM	2	0
3	B	1288	IXM	2	0

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.

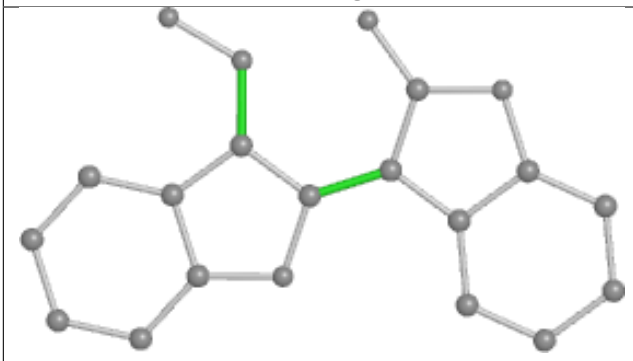
Ligand IXM A 1288



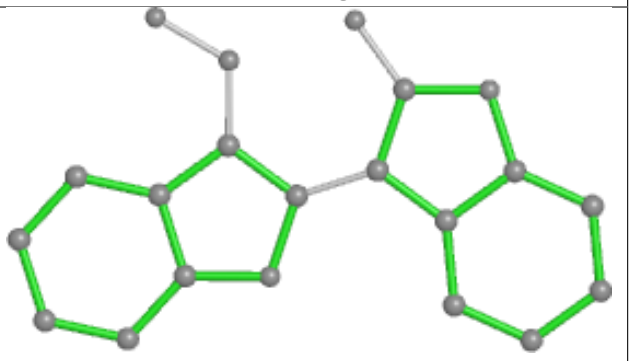
Bond lengths



Bond angles

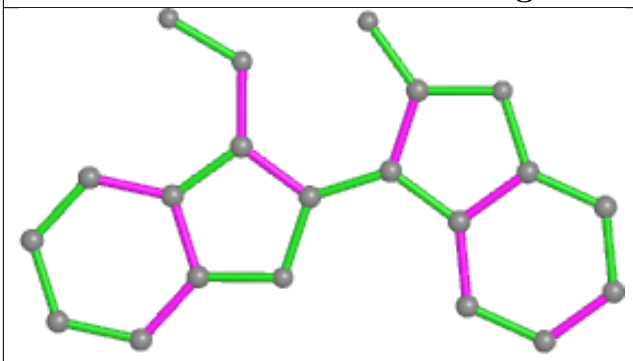


Torsions

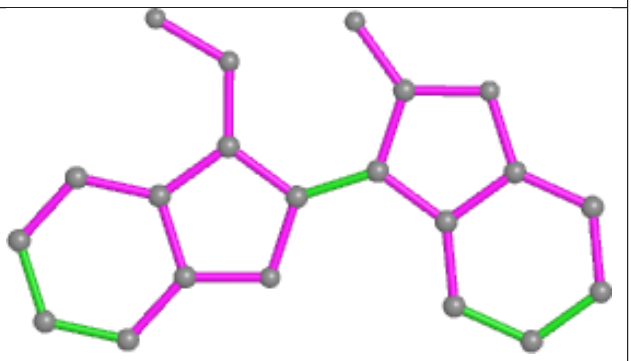


Rings

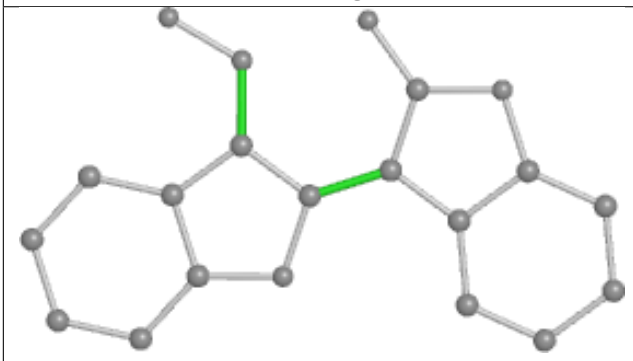
Ligand IXM B 1288



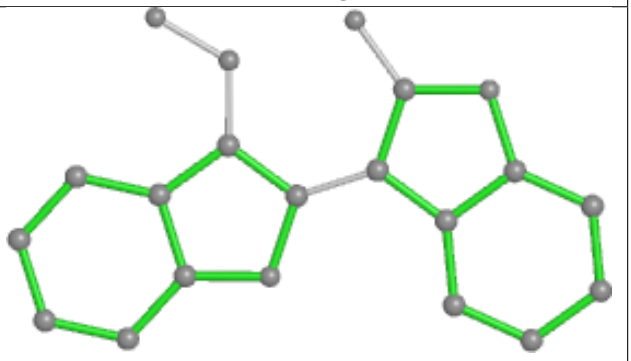
Bond lengths



Bond angles



Torsions



Rings

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled '#RSRZ> 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95^{th} 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	277/292 (94%)	0.23	12 (4%)	35	47	32, 39, 54, 60	0
1	B	277/292 (94%)	0.27	17 (6%)	21	31	31, 39, 54, 59	0
2	D	148/208 (71%)	0.29	4 (2%)	54	64	33, 40, 48, 54	0
2	E	148/208 (71%)	0.32	8 (5%)	25	37	33, 40, 50, 52	0
All	All	850/1000 (85%)	0.27	41 (4%)	30	43	31, 40, 52, 60	0

All (41) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	D	189	GLY	8.5
2	D	188	GLN	8.2
2	E	189	GLY	6.4
2	E	190	TRP	5.3
2	D	190	TRP	4.4
2	E	188	GLN	4.3
1	B	96	GLY	4.2
1	B	2	GLN	3.6
1	B	24	ARG	3.6
1	A	27	HIS	3.5
1	A	247	SER	3.4
1	B	9	LYS	3.3
1	B	245	THR	3.3
1	A	246	THR	3.3
2	E	241	ILE	3.2
1	A	287	SER	3.1
1	B	15	TYR	3.1
1	B	27	HIS	3.0
1	A	2	GLN	2.9
2	E	294	GLY	2.8
2	E	250	VAL	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	245	THR	2.6
1	B	247	SER	2.6
1	B	243	PRO	2.6
1	A	156	ARG	2.6
1	B	19	PHE	2.5
1	B	224	GLU	2.4
1	B	248	LEU	2.4
1	A	243	PRO	2.4
2	E	187	LEU	2.3
1	A	24	ARG	2.3
1	B	178	LEU	2.3
1	B	136	ARG	2.2
1	A	21	ALA	2.2
2	D	246	LYS	2.2
1	A	244	ALA	2.2
1	B	246	THR	2.2
1	A	224	GLU	2.1
1	B	6	LYS	2.1
1	B	264	GLN	2.1
2	E	239	ASN	2.0

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

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

6.3 Carbohydrates (i)

There are no monosaccharides in this entry.

6.4 Ligands (i)

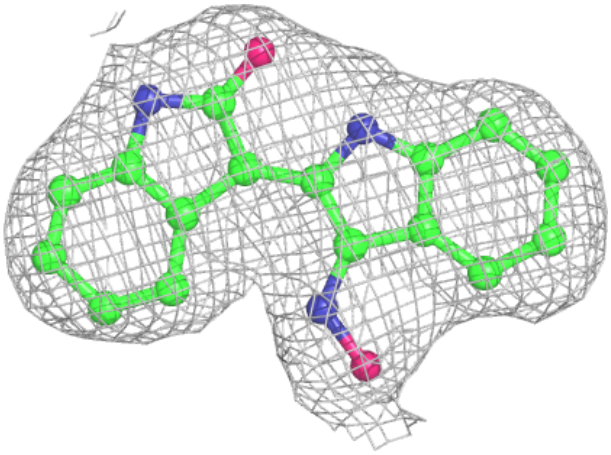
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9'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

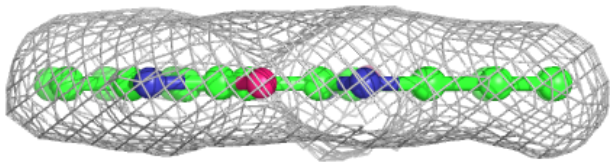
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	IXM	A	1288	21/21	0.93	0.14	36,42,44,53	0
3	IXM	B	1288	21/21	0.93	0.15	36,40,42,47	0

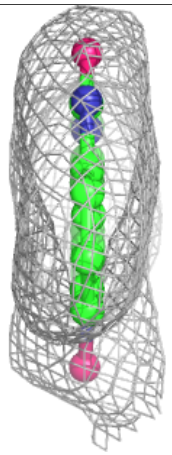
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation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

Electron density around IXM A 1288:

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

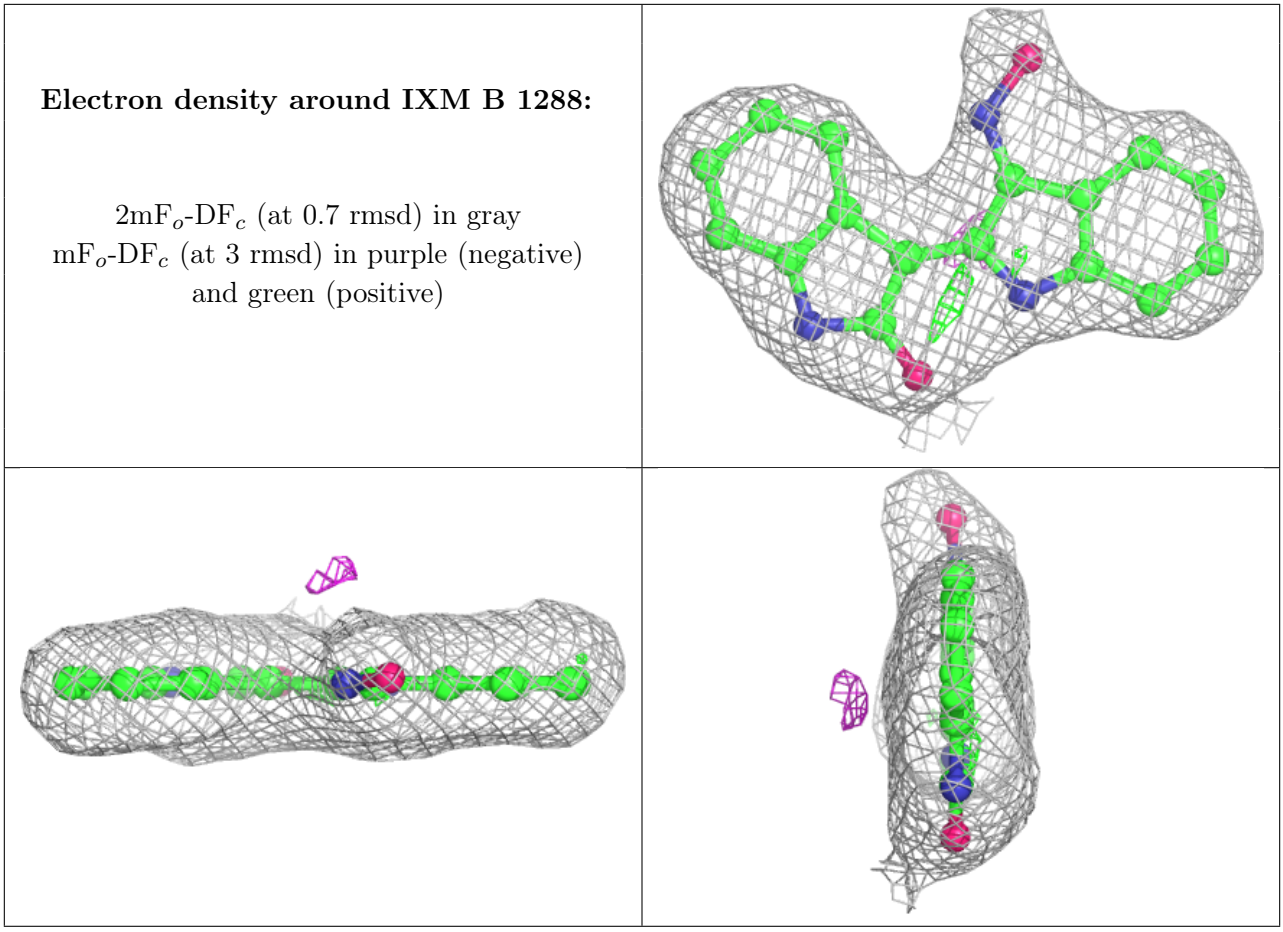






Electron density around IXM B 1288:

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



6.5 Other polymers

There are no such residues in this entry.