Full wwPDB X-ray Structure Validation Report (i)

Mar 5, 2024 – 05:26 AM EST

PDB ID	:	1ZZ3
Title	:	Crystal structure of a HDAC-like protein with CypX bound
Authors	:	Nielsen, T.K.; Hildmann, C.; Dickmanns, A.; Schwienhorst, A.; Ficner, R.
Deposited on	:	2005-06-13
Resolution	:	1.76 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 (i) 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 (i)) were used in the production of this report:

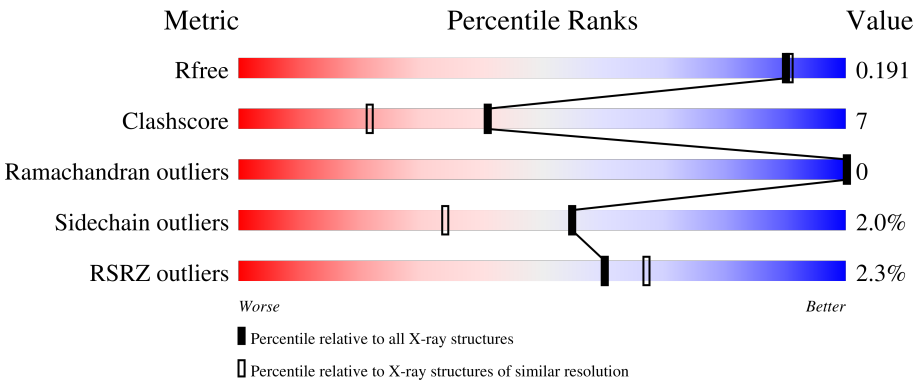
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 1.76 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	2340 (1.76-1.76)
Clashscore	141614	2466 (1.76-1.76)
Ramachandran outliers	138981	2437 (1.76-1.76)
Sidechain outliers	138945	2437 (1.76-1.76)
RSRZ outliers	127900	2298 (1.76-1.76)

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	369	5% 87% 11% ••
1	B	369	86% 14% •
1	C	369	% 87% 12% •
1	D	369	3% 90% 9% ••

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
2	3YP	B	1552	-	-	X	-
2	3YP	C	1652	-	-	X	-
2	3YP	D	1752	-	-	X	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 12370 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.

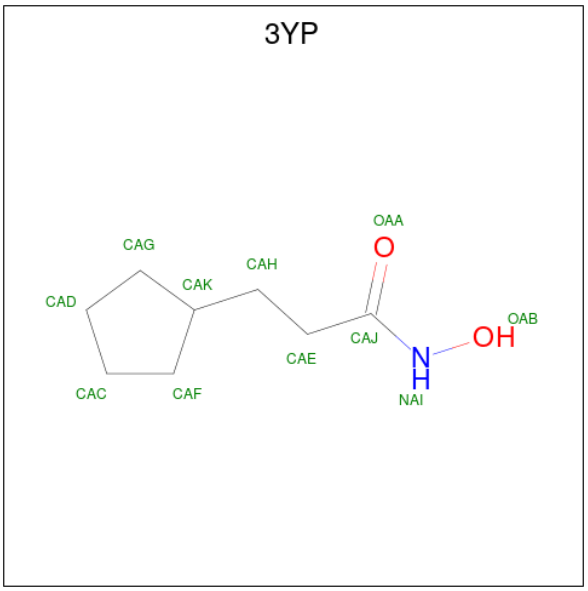
- Molecule 1 is a protein called Histone deacetylase-like amidohydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	367	2761	1734	494	515	18	0	4	0
1	B	367	2753	1728	496	511	18	0	1	0
1	C	367	2757	1728	500	511	18	0	2	0
1	D	367	2755	1730	494	512	19	0	3	0

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP Q70I53
A	251	PRO	HIS	SEE REMARK 999	UNP Q70I53
B	1	MET	-	initiating methionine	UNP Q70I53
B	251	PRO	HIS	SEE REMARK 999	UNP Q70I53
C	1	MET	-	initiating methionine	UNP Q70I53
C	251	PRO	HIS	SEE REMARK 999	UNP Q70I53
D	1	MET	-	initiating methionine	UNP Q70I53
D	251	PRO	HIS	SEE REMARK 999	UNP Q70I53

- Molecule 2 is 3-CYCLOPENTYL-N-HYDROXYPROPANAMIDE (three-letter code: 3YP) (formula: $C_8H_{15}NO_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C N O 11 8 1 2	0	0
2	B	1	Total C N O 11 8 1 2	0	0
2	C	1	Total C N O 11 8 1 2	0	0
2	D	1	Total C N O 11 8 1 2	0	0

- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Zn 1 1	0	0
3	B	1	Total Zn 1 1	0	0
3	C	1	Total Zn 1 1	0	0
3	D	1	Total Zn 1 1	0	0

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	2	Total K 2 2	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	K		
4	B	2	2	2	0	0
			Total	K		
4	C	2	2	2	0	0
			Total	K		
4	D	2	2	2	0	0

- Molecule 5 is water.

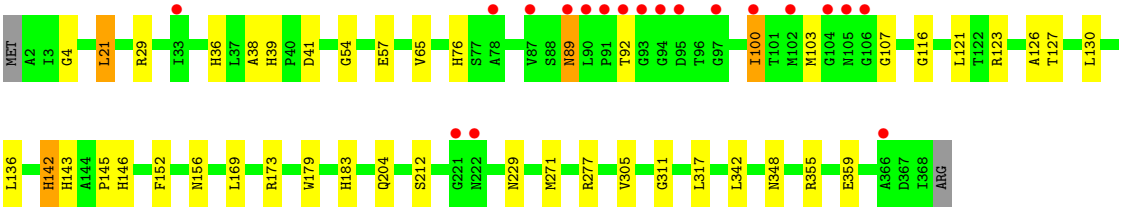
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
5	A	303	303	303	0	0
			Total	O		
5	B	342	342	342	0	0
			Total	O		
5	C	321	321	321	0	0
			Total	O		
5	D	322	322	322	0	0

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.

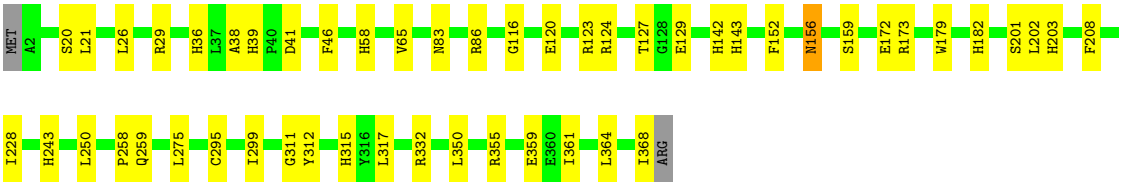
• Molecule 1: Histone deacetylase-like amidohydrolase

Chain A:



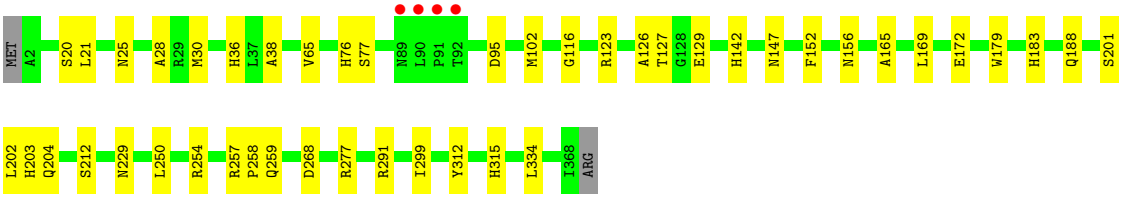
• Molecule 1: Histone deacetylase-like amidohydrolase

Chain B:



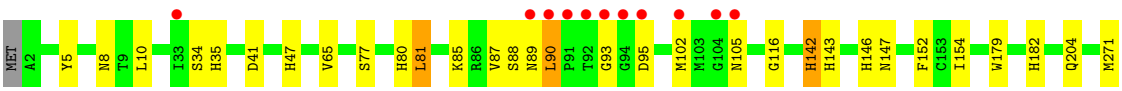
• Molecule 1: Histone deacetylase-like amidohydrolase

Chain C:



• Molecule 1: Histone deacetylase-like amidohydrolase

Chain D:



R277
G311
L317
F341
L342
I368
ARG

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	68.10Å 94.49Å 122.63Å 90.00° 104.27° 90.00°	Depositor
Resolution (Å)	44.77 – 1.76 45.87 – 1.76	Depositor EDS
% Data completeness (in resolution range)	98.0 (44.77-1.76) 97.9 (45.87-1.76)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.41 (at 1.76Å)	Xtriage
Refinement program	REFMAC 5.2.0005	Depositor
R, R_{free}	0.156 , 0.191 0.155 , 0.191	Depositor DCC
R_{free} test set	7351 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	16.9	Xtriage
Anisotropy	0.417	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 61.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.022 for h,-k,-h-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	12370	wwPDB-VP
Average B, all atoms (Å^2)	18.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.40% 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 (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: 3YP, K, ZN

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| >5$	RMSZ	$\#\|Z\| >5$
1	A	0.65	0/2845	0.71	0/3881
1	B	0.71	0/2826	0.71	0/3855
1	C	0.69	0/2837	0.75	3/3869 (0.1%)
1	D	0.69	0/2837	0.72	0/3869
All	All	0.69	0/11345	0.72	3/15474 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	30	MET	CG-SD-CE	-8.63	86.39	100.20
1	C	268	ASP	CB-CG-OD1	5.34	123.11	118.30
1	C	334	LEU	CA-CB-CG	5.27	127.43	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2761	0	2675	41	0
1	B	2753	0	2665	44	1
1	C	2757	0	2672	42	0
1	D	2755	0	2669	29	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	A	11	0	13	4	0
2	B	11	0	13	10	0
2	C	11	0	13	12	0
2	D	11	0	13	7	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
4	A	2	0	0	0	0
4	B	2	0	0	0	0
4	C	2	0	0	0	0
4	D	2	0	0	0	0
5	A	303	0	0	3	0
5	B	342	0	0	3	0
5	C	321	0	0	3	1
5	D	322	0	0	3	0
All	All	12370	0	10733	155	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 7.

All (155) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:312:TYR:OH	2:C:1652:3YP:HAE1	1.31	1.25
1:A:100:ILE:HG21	1:A:152:PHE:CE2	1.77	1.17
1:A:36:HIS:HD2	1:A:38:ALA:H	1.10	0.99
1:A:100:ILE:HG21	1:A:152:PHE:HE2	1.26	0.98
1:C:36:HIS:HD2	1:C:38:ALA:H	1.08	0.98
1:B:36:HIS:HD2	1:B:38:ALA:H	1.11	0.96
1:A:204:GLN:HE22	1:A:277:ARG:H	1.10	0.96
1:C:312:TYR:OH	2:C:1652:3YP:CAE	2.13	0.96
1:A:100:ILE:HG21	1:A:152:PHE:CD2	2.04	0.93
1:D:87:VAL:O	1:D:93:GLY:HA2	1.69	0.92
1:C:312:TYR:HH	2:C:1652:3YP:HAE1	1.14	0.92
1:C:76:HIS:HE1	1:C:156:ASN:H	1.18	0.91
1:B:172:GLU:H	1:B:259:GLN:HE22	0.93	0.90
1:C:204:GLN:HE22	1:C:277:ARG:H	1.20	0.88
1:B:172:GLU:N	1:B:259:GLN:HE22	1.70	0.88
1:D:204:GLN:HE22	1:D:277:ARG:H	1.18	0.86
1:C:152:PHE:CE1	2:C:1652:3YP:HAH2	2.11	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:36:HIS:CD2	1:A:38:ALA:H	1.94	0.85
1:B:36:HIS:CD2	1:B:38:ALA:H	1.94	0.85
1:A:76:HIS:HE1	1:A:156:ASN:H	1.22	0.84
1:B:83:ASN:HD21	1:B:86:ARG:HH21	1.22	0.83
1:C:36:HIS:CD2	1:C:38:ALA:H	1.96	0.83
1:B:172:GLU:H	1:B:259:GLN:NE2	1.74	0.83
1:C:25:ASN:HD22	1:C:28:ALA:H	1.28	0.80
1:B:39:HIS:HD2	1:B:41:ASP:H	1.30	0.79
1:C:76:HIS:CE1	1:C:156:ASN:H	2.00	0.79
1:A:76:HIS:CE1	1:A:156:ASN:H	2.02	0.78
1:B:143:HIS:CD2	2:B:1552:3YP:HAH2	2.19	0.78
1:A:142:HIS:NE2	2:A:1452:3YP:OAB	2.14	0.77
1:A:204:GLN:NE2	1:A:277:ARG:H	1.82	0.76
1:A:100:ILE:CG2	1:A:152:PHE:CE2	2.65	0.76
1:C:188:GLN:HE22	1:C:229:ASN:HD21	1.36	0.74
1:B:243[B]:HIS:CD2	1:B:350:LEU:HD22	2.23	0.73
1:A:100:ILE:CG2	1:A:152:PHE:HE2	1.99	0.73
1:B:173:ARG:H	1:B:259:GLN:HE21	1.38	0.71
1:A:39:HIS:HD2	1:A:41:ASP:H	1.38	0.71
1:A:143:HIS:NE2	2:A:1452:3YP:NAI	2.38	0.70
1:D:143:HIS:CD2	2:D:1752:3YP:HAE2	2.27	0.70
1:B:123:ARG:O	1:B:127:THR:HG23	1.91	0.69
1:B:65:VAL:O	1:B:116:GLY:HA3	1.92	0.69
1:C:123:ARG:O	1:C:127:THR:HG23	1.91	0.69
1:D:105:ASN:HB3	5:D:1881:HOH:O	1.91	0.69
1:D:8:ASN:HD22	1:D:10:LEU:H	1.41	0.68
1:B:124:ARG:HD3	1:B:129:GLU:OE2	1.93	0.68
1:C:129:GLU:OE1	5:C:1972:HOH:O	2.11	0.68
1:D:152:PHE:CD2	2:D:1752:3YP:HAH2	2.29	0.67
1:D:204:GLN:NE2	1:D:277:ARG:H	1.93	0.66
1:A:204:GLN:HE22	1:A:277:ARG:N	1.90	0.65
1:D:65:VAL:O	1:D:116:GLY:HA3	1.96	0.64
1:D:143:HIS:NE2	2:D:1752:3YP:NAI	2.46	0.63
1:C:183:HIS:HD2	1:C:212:SER:OG	1.81	0.63
1:C:204:GLN:NE2	1:C:277:ARG:H	1.95	0.63
1:D:5:TYR:OH	1:D:47:HIS:HD2	1.83	0.62
1:D:80:HIS:HE1	1:D:154:ILE:O	1.84	0.61
1:D:80:HIS:HD2	5:D:1868:HOH:O	1.82	0.61
1:A:39:HIS:CD2	1:A:41:ASP:H	2.19	0.61
1:C:152:PHE:CD1	2:C:1652:3YP:CAE	2.83	0.61
1:B:182:HIS:CE1	2:B:1552:3YP:HAG1	2.37	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:183:HIS:HD2	1:A:212:SER:OG	1.85	0.60
1:B:39:HIS:CD2	1:B:41:ASP:H	2.18	0.60
1:A:100:ILE:CG2	1:A:152:PHE:CD2	2.84	0.59
1:B:173:ARG:H	1:B:259:GLN:NE2	1.99	0.59
1:B:258:PRO:HD2	1:B:299:ILE:HD12	1.84	0.59
1:C:65:VAL:O	1:C:116:GLY:HA3	2.02	0.59
1:B:83:ASN:ND2	1:B:86:ARG:HH21	1.98	0.59
1:D:143:HIS:HD2	2:D:1752:3YP:HAE2	1.68	0.59
1:A:123:ARG:O	1:A:127:THR:HG23	2.03	0.58
1:B:58:HIS:HD2	5:B:1841:HOH:O	1.86	0.58
1:B:152:PHE:CD1	2:B:1552:3YP:HAE1	2.37	0.58
1:A:54:GLY:O	1:A:57[A]:GLU:HG2	2.04	0.58
1:C:201:SER:OG	1:C:203:HIS:HD2	1.87	0.58
1:D:146:HIS:HE1	5:D:1901:HOH:O	1.86	0.57
1:A:65:VAL:O	1:A:116:GLY:HA3	2.04	0.57
1:B:275:LEU:HD22	2:B:1552:3YP:HAD2	1.86	0.57
1:A:36:HIS:HD2	1:A:38:ALA:N	1.93	0.57
1:B:152:PHE:CD1	2:B:1552:3YP:CAE	2.88	0.57
1:A:92:THR:HA	5:A:1668:HOH:O	2.04	0.56
1:B:36:HIS:HD2	1:B:38:ALA:N	1.93	0.56
1:D:77:SER:OG	1:D:147:ASN:ND2	2.36	0.56
1:A:146:HIS:HE1	5:A:1706:HOH:O	1.89	0.55
1:C:25:ASN:ND2	1:C:28:ALA:H	1.99	0.55
1:A:311:GLY:HA3	1:A:317:LEU:HD12	1.89	0.55
1:D:88:SER:O	1:D:105:ASN:HA	2.07	0.55
1:C:152:PHE:CE1	2:C:1652:3YP:CAH	2.89	0.55
1:D:152:PHE:CD2	2:D:1752:3YP:CAH	2.90	0.54
1:D:204:GLN:HE22	1:D:277:ARG:N	1.98	0.54
1:A:21:LEU:O	1:A:36:HIS:HE1	1.91	0.54
1:D:87:VAL:HA	1:D:90:LEU:HD22	1.91	0.53
1:C:36:HIS:HD2	1:C:38:ALA:N	1.92	0.52
1:C:312:TYR:OH	2:C:1652:3YP:CAJ	2.57	0.52
1:C:258:PRO:HD2	1:C:299:ILE:HD12	1.93	0.51
1:B:20:SER:OG	1:C:315:HIS:HD2	1.94	0.51
1:B:152:PHE:CE1	2:B:1552:3YP:HAE1	2.46	0.51
1:B:228:ILE:HD11	1:B:368:ILE:HD11	1.93	0.50
1:D:8:ASN:ND2	1:D:10:LEU:H	2.08	0.50
1:D:35:HIS:HE1	1:D:41:ASP:OD2	1.94	0.50
1:C:165:ALA:HA	1:C:169:LEU:HD12	1.94	0.50
1:B:143:HIS:NE2	2:B:1552:3YP:HAH2	2.25	0.50
1:C:152:PHE:CD1	2:C:1652:3YP:HAE1	2.47	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:348:ASN:ND2	5:A:1675:HOH:O	2.38	0.49
1:D:182:HIS:HB2	2:D:1752:3YP:OAB	2.11	0.49
1:B:172:GLU:N	1:B:259:GLN:NE2	2.45	0.49
1:A:121:LEU:HD23	1:A:305:VAL:HG13	1.94	0.49
1:B:368:ILE:O	5:B:1823:HOH:O	2.20	0.49
1:D:81:LEU:HD22	1:D:85:LYS:HE3	1.95	0.49
1:B:201:SER:OG	1:B:203:HIS:HD2	1.95	0.48
1:A:126:ALA:CB	1:A:169:LEU:HD13	2.43	0.48
1:B:143:HIS:NE2	2:B:1552:3YP:NAI	2.62	0.47
1:A:183:HIS:HE1	1:A:229:ASN:HD21	1.62	0.47
1:B:315:HIS:HD2	1:C:20:SER:OG	1.97	0.47
2:C:1652:3YP:HAK	2:C:1652:3YP:NAI	2.30	0.47
1:B:361:ILE:HA	1:B:364:LEU:HD13	1.97	0.46
1:C:77:SER:OG	1:C:147:ASN:ND2	2.46	0.46
1:C:152:PHE:CD1	2:C:1652:3YP:HAE2	2.51	0.45
1:A:143:HIS:O	1:A:145:PRO:HD3	2.16	0.45
1:A:311:GLY:HA3	1:A:317:LEU:CD1	2.45	0.45
5:B:1724:HOH:O	1:C:315:HIS:HE1	1.99	0.45
1:D:95:ASP:N	1:D:102[A]:MET:HG3	2.32	0.45
1:B:156:ASN:HD22	1:B:159:SER:H	1.64	0.44
1:A:173:ARG:HH11	1:A:173:ARG:HG3	1.82	0.44
1:D:311:GLY:HA3	1:D:317:LEU:HD12	2.00	0.43
1:B:21:LEU:O	1:B:36:HIS:HE1	2.01	0.43
1:C:254:ARG:O	1:C:257[A]:ARG:NE	2.48	0.43
1:C:126:ALA:CB	1:C:169:LEU:HD13	2.48	0.43
1:C:291:ARG:HG3	5:C:1857:HOH:O	2.19	0.43
1:C:204:GLN:HE22	1:C:277:ARG:N	2.02	0.43
1:C:257[A]:ARG:NH1	1:C:299:ILE:HG22	2.33	0.43
1:B:355:ARG:O	1:B:359:GLU:HG2	2.19	0.43
1:C:21:LEU:O	1:C:36:HIS:HE1	2.01	0.43
1:C:172:GLU:N	1:C:259:GLN:OE1	2.49	0.43
1:A:143:HIS:CD2	2:A:1452:3YP:HAE2	2.54	0.43
1:C:152:PHE:CE1	2:C:1652:3YP:CAE	3.02	0.43
2:A:1452:3YP:HAD1	1:D:341:PHE:CZ	2.53	0.42
1:B:315:HIS:HE1	5:C:1823:HOH:O	2.01	0.42
1:B:26:LEU:O	1:B:29:ARG:HD3	2.19	0.42
1:B:65:VAL:HG23	1:B:120:GLU:HG3	2.02	0.41
1:D:34[A]:SER:OG	1:D:35:HIS:HD2	2.03	0.41
1:A:355:ARG:O	1:A:359:GLU:HG2	2.20	0.41
1:D:142:HIS:NE2	2:D:1752:3YP:NAI	2.69	0.41
1:A:183:HIS:CE1	1:A:229:ASN:HD21	2.38	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:208:PHE:CD2	2:B:1552:3YP:HAK	2.55	0.41
1:C:152:PHE:HE1	2:C:1652:3YP:HAH2	1.75	0.41
1:C:183:HIS:CD2	1:C:212:SER:OG	2.66	0.41
1:B:312:TYR:OH	2:B:1552:3YP:HAE1	2.21	0.41
1:A:4:GLY:HA3	1:A:130:LEU:HD13	2.03	0.41
1:B:83:ASN:HD22	1:B:86:ARG:HE	1.69	0.41
1:B:311:GLY:HA3	1:B:317:LEU:HD12	2.03	0.41
1:C:250:LEU:HD11	1:C:291:ARG:HB3	2.03	0.41
1:A:271:MET:HG2	1:A:342:LEU:HD22	2.02	0.41
1:D:271:MET:HG2	1:D:342:LEU:HD22	2.03	0.40
1:A:89:ASN:HD22	1:A:89:ASN:HA	1.61	0.40
1:B:250:LEU:HD22	1:B:295:CYS:HB2	2.03	0.40
1:A:103:MET:HG2	1:A:107:GLY:HA3	2.04	0.40
1:C:188:GLN:NE2	1:C:229:ASN:HD21	2.12	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)
1:B:243[B]:HIS:NE2	5:C:1820:HOH:O[2_545]	1.71	0.49

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	369/369 (100%)	357 (97%)	12 (3%)	0	100	100
1	B	366/369 (99%)	355 (97%)	11 (3%)	0	100	100
1	C	367/369 (100%)	356 (97%)	11 (3%)	0	100	100
1	D	368/369 (100%)	359 (98%)	9 (2%)	0	100	100
All	All	1470/1476 (100%)	1427 (97%)	43 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	284/282 (101%)	278 (98%)	6 (2%)	53	31
1	B	281/282 (100%)	275 (98%)	6 (2%)	53	31
1	C	282/282 (100%)	277 (98%)	5 (2%)	59	40
1	D	283/282 (100%)	278 (98%)	5 (2%)	59	40
All	All	1130/1128 (100%)	1108 (98%)	22 (2%)	55	37

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	21	LEU
1	A	89	ASN
1	A	100	ILE
1	A	136	LEU
1	A	142	HIS
1	A	179	TRP
1	B	46	PHE
1	B	142	HIS
1	B	156	ASN
1	B	179	TRP
1	B	202	LEU
1	B	332	ARG
1	C	95	ASP
1	C	102	MET
1	C	142	HIS
1	C	179	TRP
1	C	202	LEU
1	D	81	LEU
1	D	89	ASN
1	D	90	LEU
1	D	142	HIS
1	D	179	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (53) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	36	HIS
1	A	39	HIS
1	A	76	HIS
1	A	89	ASN
1	A	105	ASN
1	A	147	ASN
1	A	183	HIS
1	A	204	GLN
1	A	227	ASN
1	A	229	ASN
1	A	308	GLN
1	B	36	HIS
1	B	39	HIS
1	B	58	HIS
1	B	83	ASN
1	B	138	ASN
1	B	147	ASN
1	B	156	ASN
1	B	188	GLN
1	B	193	ASN
1	B	203	HIS
1	B	222	ASN
1	B	229	ASN
1	B	247	GLN
1	B	259	GLN
1	B	287	GLN
1	B	308	GLN
1	B	315	HIS
1	B	348	ASN
1	C	25	ASN
1	C	36	HIS
1	C	55	GLN
1	C	76	HIS
1	C	147	ASN
1	C	183	HIS
1	C	188	GLN
1	C	203	HIS
1	C	204	GLN
1	C	227	ASN
1	C	308	GLN
1	C	315	HIS

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Mol	Chain	Res	Type
1	C	339	HIS
1	D	8	ASN
1	D	35	HIS
1	D	47	HIS
1	D	80	HIS
1	D	89	ASN
1	D	138	ASN
1	D	146	HIS
1	D	147	ASN
1	D	204	GLN
1	D	224	HIS
1	D	229	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no monosaccharides in this entry.

5.6 Ligand geometry (i)

Of 16 ligands modelled in this entry, 12 are monoatomic - leaving 4 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	$\#\|Z\| > 2$
2	3YP	C	1652	3	11,11,11	4.38	2 (18%)	12,13,13	1.63	2 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
2	3YP	D	1752	3	11,11,11	3.39	3 (27%)	12,13,13	1.35	1 (8%)
2	3YP	A	1452	3	11,11,11	5.03	2 (18%)	12,13,13	1.76	4 (33%)
2	3YP	B	1552	3	11,11,11	10.65	1 (9%)	12,13,13	1.18	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
2	3YP	C	1652	3	-	3/7/14/14	0/1/1/1
2	3YP	D	1752	3	-	2/7/14/14	0/1/1/1
2	3YP	A	1452	3	-	1/7/14/14	0/1/1/1
2	3YP	B	1552	3	-	4/7/14/14	0/1/1/1

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1552	3YP	CAJ-NAI	-35.24	0.93	1.32
2	A	1452	3YP	CAJ-NAI	-16.32	1.14	1.32
2	C	1652	3YP	CAJ-NAI	-13.83	1.17	1.32
2	D	1752	3YP	CAJ-NAI	-9.29	1.22	1.32
2	D	1752	3YP	CAE-CAJ	-5.37	1.41	1.51
2	C	1652	3YP	OAB-NAI	-4.07	1.29	1.40
2	A	1452	3YP	OAB-NAI	-3.05	1.32	1.40
2	D	1752	3YP	OAB-NAI	-2.87	1.32	1.40

All (7) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	1652	3YP	CAH-CAE-CAJ	-3.37	105.52	113.04
2	A	1452	3YP	CAH-CAE-CAJ	-3.31	105.64	113.04
2	C	1652	3YP	OAA-CAJ-CAE	2.99	127.49	122.02
2	A	1452	3YP	OAA-CAJ-NAI	-2.92	119.68	123.27
2	D	1752	3YP	CAH-CAE-CAJ	-2.85	106.68	113.04
2	A	1452	3YP	OAB-NAI-CAJ	2.16	122.99	119.79
2	A	1452	3YP	CAH-CAK-CAG	-2.13	107.28	115.32

There are no chirality outliers.

All (10) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	1552	3YP	CAE-CAH-CAK-CAG
2	C	1652	3YP	CAE-CAH-CAK-CAG
2	D	1752	3YP	CAE-CAH-CAK-CAF
2	D	1752	3YP	CAE-CAH-CAK-CAG
2	A	1452	3YP	CAJ-CAE-CAH-CAK
2	B	1552	3YP	CAH-CAE-CAJ-NAI
2	B	1552	3YP	CAH-CAE-CAJ-OAA
2	B	1552	3YP	CAE-CAH-CAK-CAF
2	C	1652	3YP	CAE-CAH-CAK-CAF
2	C	1652	3YP	CAH-CAE-CAJ-NAI

There are no ring outliers.

4 monomers are involved in 33 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	1652	3YP	12	0
2	D	1752	3YP	7	0
2	A	1452	3YP	4	0
2	B	1552	3YP	10	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

6 Fit of model and data (i)

6.1 Protein, DNA and RNA chains (i)

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	367/369 (99%)	-0.01	19 (5%) 27 33	11, 17, 29, 36	0
1	B	367/369 (99%)	-0.29	0 100 100	9, 15, 25, 30	0
1	C	367/369 (99%)	-0.39	4 (1%) 80 86	10, 15, 27, 33	0
1	D	367/369 (99%)	-0.17	11 (2%) 50 56	11, 17, 29, 37	0
All	All	1468/1476 (99%)	-0.22	34 (2%) 60 67	9, 16, 28, 37	0

All (34) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	90	LEU	7.0
1	A	90	LEU	6.2
1	D	91	PRO	5.2
1	D	93	GLY	5.2
1	A	93	GLY	5.1
1	A	100	ILE	4.6
1	D	104	GLY	4.4
1	A	94	GLY	4.2
1	C	92	THR	4.0
1	D	92	THR	3.9
1	D	102[A]	MET	3.9
1	A	89	ASN	3.7
1	D	89	ASN	3.7
1	C	91	PRO	3.5
1	A	104	GLY	3.4
1	A	92	THR	3.3
1	A	87	VAL	3.3
1	A	91	PRO	3.1
1	D	33	ILE	3.0
1	D	94	GLY	2.9
1	D	105	ASN	2.8

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Mol	Chain	Res	Type	RSRZ
1	A	97	GLY	2.6
1	A	366	ALA	2.6
1	A	221	GLY	2.5
1	A	78	ALA	2.4
1	A	95	ASP	2.4
1	C	89	ASN	2.4
1	A	222	ASN	2.4
1	A	102	MET	2.3
1	D	95	ASP	2.2
1	A	33	ILE	2.2
1	A	106	GLY	2.1
1	C	90	LEU	2.0
1	A	105	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, 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
2	3YP	D	1752	11/11	0.91	0.31	2,27,38,38	0
2	3YP	A	1452	11/11	0.92	0.36	2,25,40,41	0
2	3YP	C	1652	11/11	0.94	0.36	2,32,45,45	0
2	3YP	B	1552	11/11	0.95	0.37	2,24,41,42	0
4	K	B	1549	1/1	0.97	0.04	22,22,22,22	0
4	K	D	1749	1/1	0.98	0.05	23,23,23,23	0
3	ZN	C	1651	1/1	0.99	0.04	19,19,19,19	1
3	ZN	D	1751	1/1	0.99	0.06	20,20,20,20	1
4	K	A	1449	1/1	0.99	0.04	22,22,22,22	0
3	ZN	A	1451	1/1	0.99	0.03	22,22,22,22	1

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	K	C	1649	1/1	0.99	0.03	19,19,19,19	0
3	ZN	B	1551	1/1	0.99	0.03	19,19,19,19	1
4	K	C	1650	1/1	1.00	0.03	18,18,18,18	0
4	K	B	1550	1/1	1.00	0.04	14,14,14,14	0
4	K	D	1750	1/1	1.00	0.03	16,16,16,16	0
4	K	A	1450	1/1	1.00	0.04	20,20,20,20	0

6.5 Other polymers (i)

There are no such residues in this entry.