Full wwPDB X-ray Structure Validation Report (i)

Aug 20, 2020 – 09:19 PM BST

PDB ID	:	4TY8
Title	:	An Ligand-observed Mass Spectrometry-based Approach Integrated into the Fragment Based Lead Discovery Pipeline
Authors	:	Shui, W.; Yang, C.; Lin, J.; Chen, X.; Qin, S.; Chen, S.
Deposited on	:	2014-07-08
Resolution	:	2.78 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 following versions of software and data (see references (i)) were used in the production of this report:

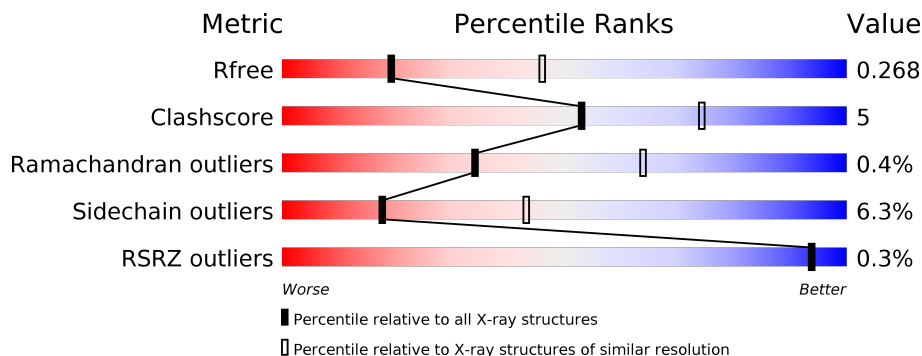|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.13.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.13.1

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 2.78 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	4107 (2.80-2.76)
Clashscore	141614	4575 (2.80-2.76)
Ramachandran outliers	138981	4487 (2.80-2.76)
Sidechain outliers	138945	4489 (2.80-2.76)
RSRZ outliers	127900	4027 (2.80-2.76)

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 on 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	566	80% 14% • •
1	C	566	82% 12% • •
1	D	566	81% 13% • •
2	B	566	83% 12% • •

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 16942 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 Polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	544	Total 4222	C 2664	N 744	O 783	S 31	0	0	0
1	C	545	Total 4229	C 2669	N 745	O 784	S 31	0	0	0
1	D	546	Total 4234	C 2672	N 746	O 785	S 31	0	0	0

- Molecule 2 is a protein called Polyprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	547	Total 4233	C 2669	N 746	O 786	S 32	0	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	550	MET	TRP	engineered mutation	UNP D0PY27

- Molecule 3 is 6-methyl-2H-chromen-2-one (three-letter code: 3AV) (formula: $C_{10}H_8O_2$).

3AV

C03 O01
C02
C
C04
C08
C07
C09
C01
C06 C05

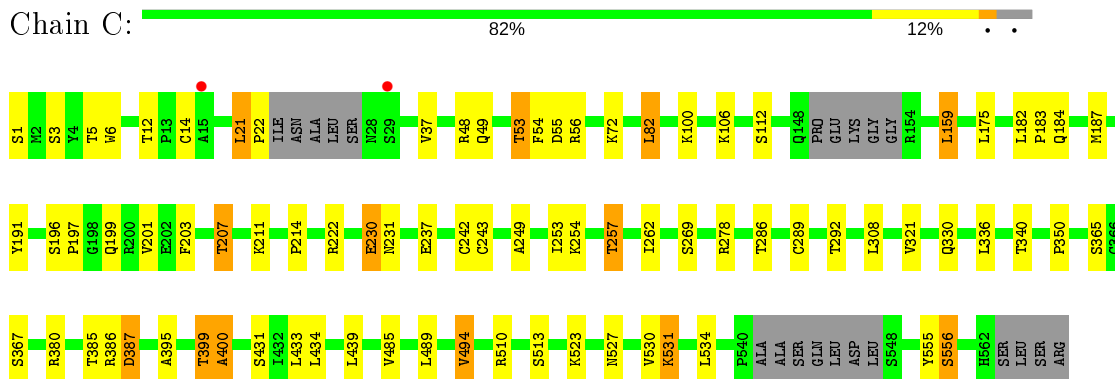| Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total 12	C 10	O 2	0	0
3	B	1	Total 12	C 10	O 2	0	0

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: Polyprotein

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V169 L182 P183 Q184 M187 S196 Q199 R200 V201 E202 F203 T207 R222 E230 N231 R234 V235 E236 E237 C243 D244 L245 A249 I253 T257 E258 R259 I262 G263 R277 A281 T287 T292 A306 K307 L308 L314 V321

L336 P354 S367 S368 N369 R380 L384 R394 A395 A396 T399 L419 R422 M423 S431 L434 C445 Y448 I454 L469 S470 L474 Y477 E481 V485 L489 R490 K491 V494 R508 F526 N527 W528 A529 V530 K531 P540

A541 ALA SER GLN LEU ASP LEU S548 F551 S556 H562 SER LEU SER ARG

• **Molecule 2: Polyprotein**

Chain B:

83%　　12%　• •

S1 W6 C14 E17 L21 P22 ILE ASN ALA LEU SER N28 S29 L30 H33 V37 T40 T41 S42 R43 R48 Q49 T53 R56 L82 K90 A105 K106 R109 S112 V147 Q148 PRO GLU LYS GLY GLY R154 A157 R158 L159 I160

Q184 S196 Q199 R200 V201 E202 F203 L204 V205 N206 T207 F217 R222 E230 I233 R234 E237 A249 I253 T257 Y261 I262 A306 K307 L308 V321 T329 Q330 S335 L336 P356 S365 L384 T385 R386 A396 T399 V405

A416 P417 T418 L419 R422 M426 L434 L439 C445 Y448 S453 I454 Y477 L489 R490 K491 V494 V530 K531 T532 A542 SER GLN LEU ASP LEU S548 F551 S556 H562 SER LEU SER ARG

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	101.94Å 102.07Å 251.93Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.78 49.96 – 2.78	Depositor EDS
% Data completeness (in resolution range)	92.2 (50.00-2.78) 92.2 (49.96-2.78)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.50 (at 2.77Å)	Xtriage
Refinement program	REFMAC 5.8.0049, REFMAC 5.8.0049	Depositor
R, R_{free}	0.207 , 0.268 0.211 , 0.268	Depositor DCC
R_{free} test set	3119 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	34.8	Xtriage
Anisotropy	0.035	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 18.0	EDS
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.069 for k,h,-l	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	16942	wwPDB-VP
Average B, all atoms (Å^2)	31.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 13.77% of the height of the origin peak. No significant pseudotranslation is detected.*

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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: 3AV

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	0.54	0/4313	0.74	1/5852 (0.0%)
1	C	0.54	0/4321	0.75	0/5864
1	D	0.54	0/4326	0.75	0/5871
2	B	0.53	0/4323	0.75	2/5865 (0.0%)
All	All	0.54	0/17283	0.75	3/23452 (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})
2	B	234	ARG	NE-CZ-NH1	7.78	124.19	120.30
1	A	419	LEU	CA-CB-CG	5.31	127.52	115.30
2	B	234	ARG	NE-CZ-NH2	-5.18	117.71	120.30

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	4222	0	4212	39	0
1	C	4229	0	4219	47	0
1	D	4234	0	4224	50	0
2	B	4233	0	4228	46	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	A	12	0	8	1	0
3	B	12	0	8	1	0
All	All	16942	0	16899	182	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 5.

All (182) 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:253:ILE:O	1:C:257:THR:HG23	1.63	0.96
2:B:49:GLN:O	2:B:53:THR:HG23	1.68	0.92
1:A:49:GLN:O	1:A:53:THR:HG22	1.69	0.91
2:B:49:GLN:O	2:B:53:THR:CG2	2.23	0.86
1:A:237:GLU:HG3	1:A:257:THR:HG21	1.59	0.84
1:A:201:VAL:HG22	1:A:384:LEU:HD13	1.60	0.83
1:D:49:GLN:O	1:D:53:THR:HG22	1.79	0.81
1:D:203:PHE:O	1:D:207:THR:HG23	1.84	0.77
2:B:203:PHE:O	2:B:207:THR:HG23	1.84	0.76
1:D:49:GLN:O	1:D:53:THR:CG2	2.33	0.76
1:C:49:GLN:O	1:C:53:THR:CG2	2.34	0.75
2:B:201:VAL:HG22	2:B:384:LEU:HD13	1.70	0.74
1:A:82:LEU:HD13	1:A:249:ALA:HB2	1.70	0.74
1:D:196:SER:H	1:D:199:GLN:HE21	1.34	0.73
2:B:234:ARG:HG3	2:B:262:ILE:HD11	1.70	0.73
1:A:203:PHE:O	1:A:207:THR:HG23	1.90	0.72
1:C:237:GLU:HG3	1:C:257:THR:HG21	1.71	0.71
1:A:92:THR:O	1:A:109:ARG:NH1	2.23	0.71
2:B:396:ALA:O	2:B:399:THR:HG22	1.91	0.70
1:D:82:LEU:HD13	1:D:249:ALA:HB2	1.74	0.69
2:B:200:ARG:HD2	3:B:601:3AV:H2	1.73	0.69
2:B:82:LEU:HD13	2:B:249:ALA:HB2	1.75	0.69
1:C:48:ARG:HG2	1:C:159:LEU:HD13	1.74	0.68
2:B:489:LEU:HA	2:B:494:VAL:HG13	1.77	0.67
2:B:33:HIS:HD2	2:B:491:LYS:O	1.78	0.67
1:C:203:PHE:O	1:C:207:THR:HG23	1.95	0.66
1:A:253:ILE:O	1:A:257:THR:HG23	1.96	0.65
1:C:489:LEU:HA	1:C:494:VAL:HG13	1.78	0.64
2:B:237:GLU:HG3	2:B:257:THR:HG21	1.81	0.63
1:C:6:TRP:HE1	1:C:53:THR:HG21	1.64	0.62
1:D:237:GLU:CG	1:D:257:THR:HG21	2.30	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:253:ILE:O	1:D:257:THR:HG23	2.00	0.61
1:C:49:GLN:O	1:C:53:THR:HG22	1.99	0.61
1:C:395:ALA:O	1:C:399:THR:HG22	2.01	0.61
1:D:48:ARG:HG3	1:D:159:LEU:HD22	1.84	0.60
1:D:3:SER:OG	1:D:53:THR:HA	2.02	0.59
1:A:430:PHE:O	1:A:434:LEU:HB2	2.02	0.59
1:C:321:VAL:CG2	1:C:365:SER:CB	2.81	0.58
1:A:1:SER:OG	1:A:230:GLU:OE1	2.19	0.58
2:B:147:VAL:HG12	2:B:148:GLN:HG2	1.85	0.58
2:B:217:PHE:CD1	2:B:336:LEU:HD21	2.39	0.58
1:D:80:ALA:HB3	1:D:245:LEU:CD2	2.34	0.57
1:A:530:VAL:O	1:A:531:LYS:CB	2.53	0.55
1:C:485:VAL:O	1:C:489:LEU:HG	2.06	0.55
2:B:448:TYR:CE2	2:B:551:PHE:HD1	2.25	0.54
2:B:489:LEU:HA	2:B:494:VAL:CG1	2.37	0.54
1:C:48:ARG:CG	1:C:159:LEU:HD13	2.38	0.54
1:A:419:LEU:HD23	1:A:485:VAL:HG21	1.90	0.54
1:C:1:SER:OG	1:C:230:GLU:OE1	2.25	0.54
1:D:201:VAL:HG22	1:D:384:LEU:HD13	1.90	0.53
2:B:419:LEU:HD13	2:B:477:TYR:CD2	2.43	0.53
1:C:527:ASN:O	1:C:530:VAL:HG23	2.09	0.53
1:C:340:THR:HG23	1:C:350:PRO:HG3	1.90	0.53
2:B:253:ILE:O	2:B:257:THR:HG23	2.09	0.53
1:C:49:GLN:O	1:C:53:THR:HG23	2.05	0.53
1:C:54:PHE:CD1	1:C:55:ASP:O	2.62	0.53
1:C:187:MET:HE1	1:C:292:THR:HG22	1.91	0.52
2:B:217:PHE:CE1	2:B:336:LEU:HD21	2.45	0.52
1:D:530:VAL:O	1:D:531:LYS:HB2	2.10	0.52
2:B:6:TRP:HE1	2:B:53:THR:HG21	1.75	0.52
1:C:203:PHE:O	1:C:207:THR:CG2	2.57	0.52
1:D:6:TRP:HE1	1:D:53:THR:HG21	1.74	0.51
1:D:448:TYR:CE2	1:D:551:PHE:HD1	2.29	0.50
1:A:31:LEU:O	1:A:31:LEU:HD12	2.11	0.50
2:B:306:ALA:HB3	2:B:308:LEU:HD22	1.93	0.50
1:C:82:LEU:HD13	1:C:249:ALA:HB2	1.93	0.50
1:D:3:SER:HG	1:D:53:THR:HA	1.77	0.50
1:D:530:VAL:O	1:D:531:LYS:CB	2.60	0.50
1:D:48:ARG:CG	1:D:159:LEU:HD22	2.41	0.49
2:B:237:GLU:CG	2:B:257:THR:HG21	2.41	0.49
2:B:196:SER:H	2:B:199:GLN:HE21	1.61	0.49
1:C:187:MET:HE3	1:C:191:TYR:CD1	2.48	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:182:LEU:HD13	1:C:243:CYS:SG	2.53	0.49
1:A:253:ILE:O	1:A:257:THR:CG2	2.61	0.49
1:D:419:LEU:HD13	1:D:477:TYR:CD2	2.47	0.49
1:D:396:ALA:O	1:D:399:THR:HG22	2.13	0.49
1:A:508:ARG:HG3	1:A:526:PHE:HB2	1.95	0.48
1:C:433:LEU:HB3	1:C:439:LEU:HD23	1.96	0.48
1:D:508:ARG:HG3	1:D:526:PHE:HB2	1.95	0.48
1:C:321:VAL:CG2	1:C:365:SER:HB3	2.43	0.48
1:D:231:ASN:O	1:D:235:VAL:HG23	2.14	0.48
1:C:434:LEU:HD21	1:C:510:ARG:HB2	1.96	0.47
1:A:241:GLN:OE1	1:A:250:ARG:HG3	2.14	0.47
1:D:306:ALA:HB3	1:D:308:LEU:HD22	1.94	0.47
2:B:48:ARG:HG2	2:B:159:LEU:HD13	1.95	0.47
2:B:489:LEU:CA	2:B:494:VAL:HG13	2.44	0.47
2:B:321:VAL:CG2	2:B:365:SER:CB	2.93	0.47
1:C:197:PRO:O	1:C:201:VAL:HG23	2.14	0.47
2:B:105:ALA:O	2:B:109:ARG:HG3	2.14	0.47
1:A:385:THR:OG1	1:A:386:ARG:N	2.47	0.47
1:D:80:ALA:HB3	1:D:245:LEU:HD21	1.97	0.46
1:A:61:ASP:O	1:A:65:ARG:HG3	2.15	0.46
2:B:49:GLN:O	2:B:53:THR:HG22	2.14	0.46
1:C:530:VAL:O	1:C:531:LYS:CB	2.64	0.46
1:D:281:ALA:O	1:D:287:THR:OG1	2.31	0.46
1:D:314:LEU:HB3	1:D:321:VAL:HG23	1.96	0.46
1:D:182:LEU:HD13	1:D:243:CYS:SG	2.56	0.46
1:A:213:ASN:ND2	1:A:326:SER:HB3	2.31	0.46
1:A:241:GLN:OE1	1:A:250:ARG:CG	2.64	0.46
2:B:196:SER:H	2:B:199:GLN:NE2	2.13	0.46
1:D:80:ALA:HB3	1:D:245:LEU:HD23	1.98	0.45
1:A:489:LEU:HA	1:A:494:VAL:HG13	1.99	0.45
1:C:523:LYS:HG3	1:C:534:LEU:HD12	1.99	0.45
2:B:200:ARG:HD3	2:B:384:LEU:HD21	1.98	0.45
1:D:187:MET:CE	1:D:292:THR:HG22	2.46	0.45
2:B:237:GLU:HG3	2:B:257:THR:CG2	2.45	0.45
1:C:321:VAL:HG22	1:C:365:SER:HB3	1.99	0.45
1:A:3:SER:OG	1:A:53:THR:HA	2.16	0.45
2:B:336:LEU:HD12	2:B:356:PRO:HG3	1.99	0.45
2:B:40:THR:HB	2:B:157:ALA:HB2	1.98	0.45
1:D:119:ILE:HD13	1:D:169:VAL:HG11	1.99	0.45
1:D:11:ILE:HD12	1:D:45:ALA:HB1	1.98	0.45
1:C:22:PRO:HD2	1:C:400:ALA:HB1	1.99	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:48:ARG:HG2	1:A:159:LEU:HD13	2.00	0.44
2:B:530:VAL:O	2:B:531:LYS:CB	2.65	0.44
1:D:146:CYS:SG	1:D:147:VAL:N	2.91	0.44
1:D:230:GLU:O	1:D:234:ARG:HG3	2.17	0.44
1:D:314:LEU:HA	1:D:314:LEU:HD12	1.86	0.44
1:C:387:ASP:C	1:C:387:ASP:OD2	2.56	0.44
1:A:212:LYS:N	1:A:325:GLU:OE1	2.50	0.44
1:C:196:SER:H	1:C:199:GLN:HE21	1.63	0.44
1:C:434:LEU:HD21	1:C:510:ARG:CB	2.48	0.43
1:C:3:SER:OG	1:C:53:THR:HA	2.17	0.43
1:C:72:LYS:HG2	1:C:242:CYS:SG	2.57	0.43
2:B:445:CYS:SG	2:B:454:ILE:HD12	2.59	0.43
1:D:200:ARG:HD3	1:D:384:LEU:HD21	2.01	0.43
1:D:445:CYS:SG	1:D:454:ILE:HD12	2.58	0.43
1:A:40:THR:HB	1:A:157:ALA:HB2	2.00	0.43
1:D:263:GLY:HA2	1:D:277:ARG:NH1	2.34	0.43
1:A:233:ILE:CG2	1:A:262:ILE:HD12	2.48	0.43
1:C:54:PHE:HD1	1:C:55:ASP:O	1.99	0.43
1:D:196:SER:OG	1:D:199:GLN:HG3	2.17	0.43
2:B:385:THR:OG1	2:B:386:ARG:N	2.52	0.43
1:D:489:LEU:HA	1:D:494:VAL:HG13	2.01	0.43
1:A:408:TRP:HE3	1:A:412:ILE:HD12	1.84	0.43
1:D:129:ASP:O	1:D:259:ARG:HD2	2.19	0.43
1:A:219:TYR:HB3	1:A:320:LEU:HD23	2.01	0.42
1:A:321:VAL:HG22	1:A:365:SER:CB	2.48	0.42
1:A:408:TRP:CE3	1:A:412:ILE:HD12	2.54	0.42
1:D:445:CYS:SG	1:D:454:ILE:CD1	3.07	0.42
2:B:321:VAL:CG2	2:B:365:SER:HB2	2.49	0.42
1:D:33:HIS:HD2	1:D:491:LYS:O	2.02	0.42
1:A:216:GLY:HA2	1:A:322:VAL:O	2.18	0.42
1:A:374:HIS:HA	1:A:379:LYS:O	2.20	0.42
1:A:527:ASN:HD21	1:A:533:LYS:HB3	1.84	0.42
2:B:201:VAL:O	2:B:205:VAL:HG23	2.18	0.42
1:D:49:GLN:O	1:D:53:THR:HG23	2.17	0.42
2:B:17:GLU:OE1	2:B:42:SER:OG	2.38	0.42
1:A:182:LEU:N	1:A:183:PRO:CD	2.83	0.42
1:A:423:MET:HA	1:A:528:TRP:CZ2	2.55	0.42
1:C:21:LEU:HD22	1:C:37:VAL:HB	2.02	0.42
1:C:5:THR:HG23	1:C:278:ARG:NH2	2.34	0.42
1:C:175:LEU:HD13	1:C:286:THR:CG2	2.49	0.41
1:D:481:GLU:O	1:D:485:VAL:HG23	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:200:ARG:HD3	1:A:384:LEU:HD21	2.02	0.41
1:A:5:THR:O	1:A:275:GLY:HA3	2.20	0.41
1:C:183:PRO:HG3	1:C:289:CYS:SG	2.61	0.41
1:C:385:THR:OG1	1:C:386:ARG:N	2.52	0.41
1:A:237:GLU:OE2	1:A:254:LYS:HD2	2.19	0.41
1:C:3:SER:HG	1:C:53:THR:HA	1.86	0.41
1:D:422:ARG:NH2	1:D:528:TRP:HB3	2.35	0.41
2:B:321:VAL:HG22	2:B:365:SER:CB	2.51	0.41
1:C:211:LYS:HB2	1:C:214:PRO:HB3	2.02	0.41
1:A:366:CYS:O	3:A:601:3AV:H4	2.20	0.41
1:C:555:TYR:O	1:C:556:SER:C	2.59	0.41
1:D:104:GLY:N	1:D:107:ASP:OD2	2.47	0.41
2:B:21:LEU:CD2	2:B:37:VAL:HB	2.51	0.41
2:B:416:ALA:N	2:B:417:PRO:CD	2.84	0.41
1:A:28:ASN:O	1:A:28:ASN:ND2	2.54	0.40
2:B:106:LYS:CD	2:B:106:LYS:H	2.34	0.40
2:B:233:ILE:HD13	2:B:261:TYR:O	2.21	0.40
2:B:434:LEU:HD13	2:B:439:LEU:HD11	2.02	0.40
1:D:470:SER:O	1:D:474:LEU:HG	2.21	0.40
1:D:423:MET:HA	1:D:528:TRP:CZ2	2.56	0.40
2:B:422:ARG:HA	2:B:426:MET:SD	2.61	0.40
1:C:253:ILE:O	1:C:257:THR:CG2	2.52	0.40
1:C:187:MET:HE3	1:C:191:TYR:HD1	1.86	0.40
1:D:336:LEU:HD12	1:D:354:PRO:HB2	2.04	0.40
1:C:12:THR:OG1	1:C:269:SER:OG	2.16	0.40
1:D:113:SER:O	1:D:117:ASN:HB3	2.21	0.40
1:D:203:PHE:CE2	1:D:314:LEU:HD13	2.56	0.40
2:B:30:LEU:HA	2:B:30:LEU:HD12	1.91	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	536/566 (95%)	502 (94%)	32 (6%)	2 (0%)	34	64
1	C	537/566 (95%)	505 (94%)	30 (6%)	2 (0%)	34	64
1	D	538/566 (95%)	504 (94%)	31 (6%)	3 (1%)	25	54
2	B	539/566 (95%)	511 (95%)	27 (5%)	1 (0%)	47	76
All	All	2150/2264 (95%)	2022 (94%)	120 (6%)	8 (0%)	34	64

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	531	LYS
2	B	531	LYS
1	C	531	LYS
1	D	531	LYS
1	D	367	SER
1	D	540	PRO
1	C	400	ALA
1	A	549	GLY

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	460/482 (95%)	426 (93%)	34 (7%)	13	34
1	C	461/482 (96%)	433 (94%)	28 (6%)	18	45
1	D	461/482 (96%)	436 (95%)	25 (5%)	22	50
2	B	461/482 (96%)	432 (94%)	29 (6%)	18	43
All	All	1843/1928 (96%)	1727 (94%)	116 (6%)	18	43

All (116) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	19	SER
1	A	34	HIS
1	A	51	LYS

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Mol	Chain	Res	Type
1	A	76	SER
1	A	79	LYS
1	A	82	LEU
1	A	100	LYS
1	A	106	LYS
1	A	113	SER
1	A	139	MET
1	A	148	GLN
1	A	159	LEU
1	A	184	GLN
1	A	190	SER
1	A	222	ARG
1	A	230	GLU
1	A	254	LYS
1	A	257	THR
1	A	262	ILE
1	A	321	VAL
1	A	330	GLN
1	A	336	LEU
1	A	352	ASP
1	A	368	SER
1	A	380	ARG
1	A	384	LEU
1	A	403	THR
1	A	434	LEU
1	A	437	GLU
1	A	473	SER
1	A	478	SER
1	A	494	VAL
1	A	539	ILE
1	A	556	SER
2	B	14	CYS
2	B	42	SER
2	B	43	ARG
2	B	53	THR
2	B	56	ARG
2	B	82	LEU
2	B	90	LYS
2	B	106	LYS
2	B	112	SER
2	B	159	LEU
2	B	160	ILE

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Mol	Chain	Res	Type
2	B	184	GLN
2	B	207	THR
2	B	222	ARG
2	B	230	GLU
2	B	257	THR
2	B	262	ILE
2	B	308	LEU
2	B	329	THR
2	B	330	GLN
2	B	335	SER
2	B	405	VAL
2	B	434	LEU
2	B	453	SER
2	B	494	VAL
2	B	530	VAL
2	B	532	THR
2	B	548	SER
2	B	556	SER
1	C	14	CYS
1	C	21	LEU
1	C	53	THR
1	C	56	ARG
1	C	82	LEU
1	C	100	LYS
1	C	106	LYS
1	C	112	SER
1	C	159	LEU
1	C	184	GLN
1	C	207	THR
1	C	222	ARG
1	C	230	GLU
1	C	231	ASN
1	C	254	LYS
1	C	257	THR
1	C	262	ILE
1	C	308	LEU
1	C	330	GLN
1	C	336	LEU
1	C	367	SER
1	C	380	ARG
1	C	387	ASP
1	C	399	THR

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Mol	Chain	Res	Type
1	C	431	SER
1	C	494	VAL
1	C	513	SER
1	C	556	SER
1	D	29	SER
1	D	53	THR
1	D	106	LYS
1	D	113	SER
1	D	117	ASN
1	D	135	ASP
1	D	147	VAL
1	D	159	LEU
1	D	184	GLN
1	D	222	ARG
1	D	230	GLU
1	D	257	THR
1	D	262	ILE
1	D	308	LEU
1	D	321	VAL
1	D	369	ASN
1	D	380	ARG
1	D	384	LEU
1	D	394	ARG
1	D	431	SER
1	D	434	LEU
1	D	469	LEU
1	D	494	VAL
1	D	530	VAL
1	D	556	SER

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

Mol	Chain	Res	Type
1	A	28	ASN
1	A	34	HIS
1	A	58	GLN
1	A	120	HIS
1	A	199	GLN
1	A	213	ASN
1	A	406	ASN
1	A	527	ASN
2	B	33	HIS

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Mol	Chain	Res	Type
2	B	58	GLN
2	B	199	GLN
2	B	273	ASN
1	C	28	ASN
1	C	33	HIS
1	C	58	GLN
1	C	199	GLN
1	C	330	GLN
1	C	406	ASN
1	C	562	HIS
1	D	33	HIS
1	D	58	GLN
1	D	199	GLN
1	D	562	HIS

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	3AV	A	601	-	9,13,13	2.04	1 (11%)	10,18,18	1.59	3 (30%)
3	3AV	B	601	-	9,13,13	2.14	1 (11%)	10,18,18	1.75	3 (30%)

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	3AV	A	601	-	-	-	0/2/2/2
3	3AV	B	601	-	-	-	0/2/2/2

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	601	3AV	C07-C04	5.73	1.48	1.37
3	A	601	3AV	C07-C04	5.51	1.48	1.37

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	601	3AV	C05-C07-C04	3.06	122.25	118.45
3	B	601	3AV	C05-C09-C02	2.59	119.61	116.61
3	A	601	3AV	C05-C07-C04	2.55	121.62	118.45
3	A	601	3AV	O01-C02-C09	2.54	123.68	121.10
3	A	601	3AV	C05-C09-C02	2.33	119.31	116.61
3	B	601	3AV	O01-C02-C09	2.30	123.44	121.10

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	A	601	3AV	1	0
3	B	601	3AV	1	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(Å²)	Q<0.9
1	A	544/566 (96%)	-0.22	1 (0%)	95	95	16, 30, 50, 71	0
1	C	545/566 (96%)	-0.27	2 (0%)	92	92	17, 30, 47, 71	0
1	D	546/566 (96%)	-0.23	2 (0%)	92	92	18, 30, 52, 81	0
2	B	547/566 (96%)	-0.26	2 (0%)	92	92	18, 29, 48, 91	0
All	All	2182/2264 (96%)	-0.24	7 (0%)	94	94	16, 30, 50, 91	0

All (7) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	29	SER	2.7
2	B	530	VAL	2.3
1	D	16	ALA	2.2
1	C	15	ALA	2.2
2	B	454	ILE	2.1
1	D	43	ARG	2.1
1	A	34	HIS	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
3	3AV	A	601	12/12	0.87	0.23	57,63,66,68	0
3	3AV	B	601	12/12	0.89	0.33	69,73,77,77	0

6.5 Other polymers (i)

There are no such residues in this entry.