



Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 01:19 PM GMT

PDB ID : 3TJP
Title : Crystal Structure of PI3K gamma with N6-(3,4-dimethoxyphenyl)-2-morpholino-[4,5'-bipyrimidine]-2',6-diamine
Authors : Knapp, M.S.; Elling, R.A.; Ornelas, E.
Deposited on : 2011-08-24
Resolution : 2.70 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
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.7 (RC4), CSD as536be (2015)
Xtriage (Phenix) : 1.9-1692
EDS : rb-20026688
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
Refmac : 5.8.0135
CCP4 : 6.5.0
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : trunk26865

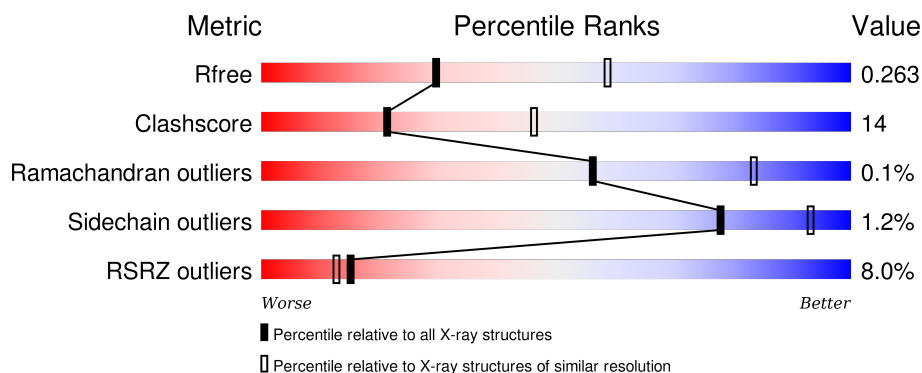
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	91344	2103 (2.70-2.70)
Clashscore	102246	2422 (2.70-2.70)
Ramachandran outliers	100387	2382 (2.70-2.70)
Sidechain outliers	100360	2382 (2.70-2.70)
RSRZ outliers	91569	2107 (2.70-2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	966	

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
3	SO4	A	2	-	-	-	X

2 Entry composition

There are 4 unique types of molecules in this entry. The entry contains 6608 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.

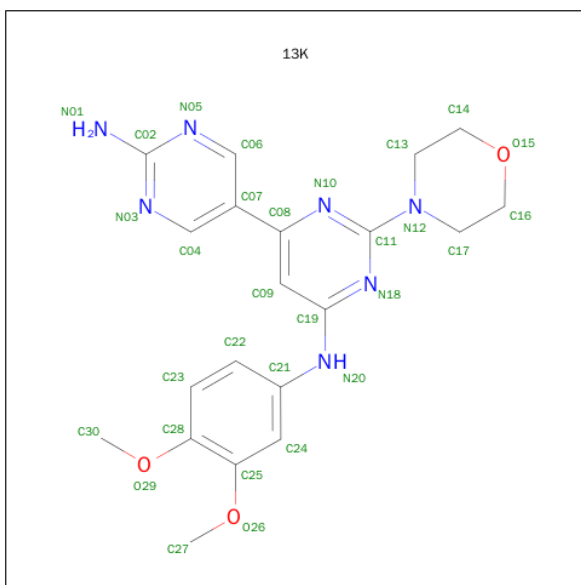
- Molecule 1 is a protein called Phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit gamma isoform.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	840	Total	C	N	O	S	0	0	0
			6542	4194	1105	1208	35			

There are 8 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	143	MET	-	EXPRESSION TAG	UNP P48736
A	459	ARG	GLN	SEE REMARK 999	UNP P48736
A	1103	HIS	-	EXPRESSION TAG	UNP P48736
A	1104	HIS	-	EXPRESSION TAG	UNP P48736
A	1105	HIS	-	EXPRESSION TAG	UNP P48736
A	1106	HIS	-	EXPRESSION TAG	UNP P48736
A	1107	HIS	-	EXPRESSION TAG	UNP P48736
A	1108	HIS	-	EXPRESSION TAG	UNP P48736

- Molecule 2 is N 6 -(3,4-DIMETHOXYPHENYL)-2-(MORPHOLIN-4-YL)-4,5'-BIPYRIMIDINE-2',6-DIAMINE (three-letter code: 13K) (formula: C₂₀H₂₃N₇O₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			30	20	7	3		

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	O S	0	0
			5	4 1		

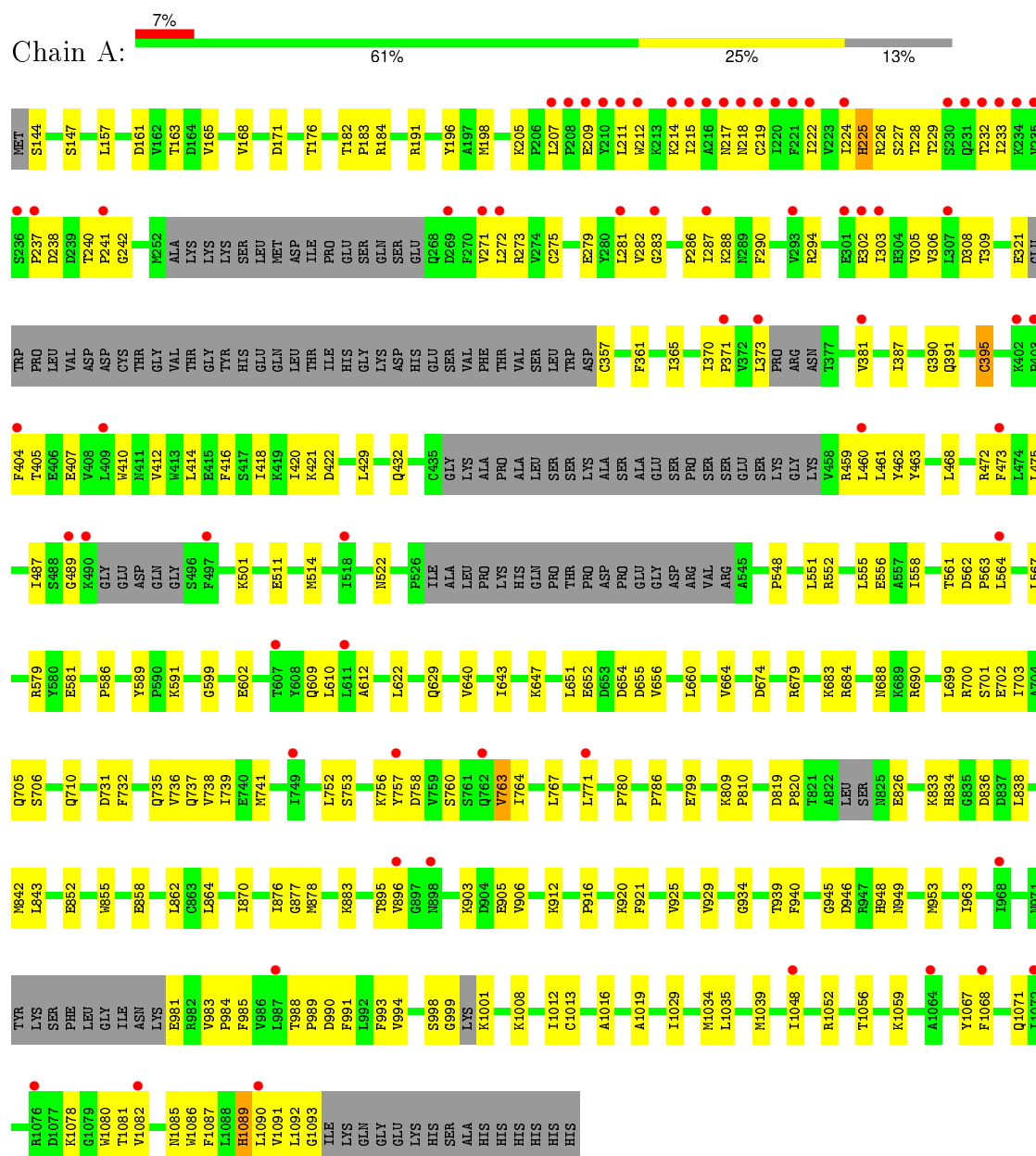
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	31	Total	O	0	0
			31	31		

3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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: Phosphatidylinositol-4,5-bisphosphate 3-kinase catalytic subunit gamma isoform



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	142.15Å 67.39Å 106.18Å 90.00° 96.49° 90.00°	Depositor
Resolution (Å)	51.62 – 2.70 51.62 – 2.70	Depositor EDS
% Data completeness (in resolution range)	98.5 (51.62-2.70) 98.8 (51.62-2.70)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	0.07	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.86 (at 2.69Å)	Xtriage
Refinement program	PHENIX (phenix.refine: 1.7.1_743)	Depositor
R, R_{free}	0.210 , 0.266 0.212 , 0.263	Depositor DCC
R_{free} test set	1379 reflections (5.30%)	DCC
Wilson B-factor (Å ²)	82.2	Xtriage
Anisotropy	0.234	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.30 , 71.4	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Outliers	2 of 27375 reflections (0.007%)	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	6608	wwPDB-VP
Average B, all atoms (Å ²)	104.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.58% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 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: 13K, SO4

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	0.21	0/6678	0.38	0/9076

There are no bond length outliers.

There are no bond angle outliers.

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	6542	0	6334	183	0
2	A	30	0	23	0	0
3	A	5	0	0	0	0
4	A	31	0	0	0	0
All	All	6608	0	6357	183	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 14.

All (183) 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:A:998:SER:H	1:A:1001:LYS:HD3	1.44	0.81
1:A:896:VAL:HG22	1:A:903:LYS:HG3	1.61	0.80
1:A:862:LEU:HD23	1:A:934:GLY:HA2	1.70	0.74
1:A:395:CYS:HB2	1:A:418:ILE:HD11	1.70	0.72
1:A:225:HIS:N	1:A:225:HIS:ND1	2.39	0.70
1:A:429:LEU:HB2	1:A:468:LEU:HD21	1.74	0.69
1:A:1013:CYS:HB3	1:A:1068:PHE:CE2	2.28	0.69
1:A:308:ASP:OD2	1:A:309:THR:N	2.26	0.69
1:A:706:SER:O	1:A:710:GLN:HB3	1.92	0.68
1:A:1091:VAL:O	1:A:1092:LEU:HG	1.93	0.68
1:A:988:THR:HG22	1:A:990:ASP:H	1.59	0.68
1:A:370:ILE:HD12	1:A:371:PRO:HD2	1.76	0.67
1:A:225:HIS:HA	1:A:229:THR:O	1.95	0.67
1:A:209:GLU:OE1	1:A:209:GLU:N	2.24	0.66
1:A:275:CYS:SG	1:A:306:VAL:HG23	2.36	0.66
1:A:760:SER:O	1:A:763:VAL:HG12	1.97	0.64
1:A:1035:LEU:HA	1:A:1039:MET:HG2	1.80	0.64
1:A:843:LEU:HD13	1:A:1034:MET:HG3	1.80	0.63
1:A:459:ARG:HH21	1:A:489:GLY:HA3	1.63	0.63
1:A:602:GLU:H	1:A:602:GLU:CD	2.02	0.63
1:A:833:LYS:HE2	1:A:836:ASP:OD2	1.98	0.62
1:A:237:PRO:HA	1:A:287:ILE:HD11	1.80	0.62
1:A:983:VAL:HB	1:A:1082:VAL:HG21	1.82	0.61
1:A:990:ASP:OD2	1:A:991:PHE:N	2.33	0.61
1:A:622:LEU:HD13	1:A:647:LYS:HB3	1.83	0.61
1:A:651:LEU:O	1:A:652:GLU:HG2	2.00	0.61
1:A:207:LEU:HD11	1:A:288:LYS:HD2	1.82	0.61
1:A:459:ARG:NH2	1:A:489:GLY:HA3	2.16	0.60
1:A:988:THR:HG23	1:A:989:PRO:HD2	1.84	0.59
1:A:286:PRO:HB2	1:A:288:LYS:HG2	1.83	0.59
1:A:640:VAL:O	1:A:643:ILE:HG12	2.03	0.59
1:A:855:TRP:CZ3	1:A:862:LEU:HD22	2.39	0.58
1:A:810:PRO:HG3	1:A:833:LYS:HG3	1.84	0.58
1:A:171:ASP:OD2	1:A:472:ARG:NH2	2.29	0.58
1:A:838:LEU:O	1:A:842:MET:HB2	2.05	0.57
1:A:1091:VAL:HG23	1:A:1092:LEU:H	1.69	0.57
1:A:558:ILE:O	1:A:561:THR:HG22	2.05	0.57
1:A:1089:HIS:ND1	1:A:1089:HIS:O	2.34	0.56
1:A:561:THR:CG2	1:A:591:LYS:HE2	2.36	0.56
1:A:184:ARG:HH21	1:A:321:GLU:HG3	1.70	0.56
1:A:282:VAL:HG12	1:A:283:GLY:N	2.22	0.55
1:A:737:GLN:O	1:A:741:MET:HG3	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:217:ASN:ND2	1:A:219:CYS:HB3	2.22	0.55
1:A:157:LEU:O	1:A:700:ARG:NH1	2.30	0.54
1:A:1013:CYS:HB3	1:A:1068:PHE:HE2	1.72	0.54
1:A:564:LEU:HB2	1:A:1052:ARG:HD2	1.90	0.54
1:A:702:GLU:O	1:A:706:SER:HB3	2.08	0.54
1:A:916:PRO:HG2	1:A:920:LYS:HD2	1.89	0.53
1:A:564:LEU:HD11	1:A:1048:ILE:HG22	1.90	0.53
1:A:1008:LYS:O	1:A:1012:ILE:HG13	2.09	0.53
1:A:903:LYS:HB3	1:A:906:VAL:HG23	1.91	0.52
1:A:161:ASP:OD1	1:A:163:THR:OG1	2.25	0.52
1:A:226:ARG:O	1:A:228:THR:N	2.39	0.52
1:A:579:ARG:HD2	1:A:610:LEU:HD22	1.92	0.52
1:A:809:LYS:N	1:A:810:PRO:HD3	2.25	0.52
1:A:738:VAL:HG22	1:A:780:PRO:HD2	1.92	0.51
1:A:629:GLN:HG3	1:A:1029:ILE:HG21	1.91	0.51
1:A:833:LYS:O	1:A:876:ILE:HD12	2.10	0.51
1:A:981:GLU:N	1:A:981:GLU:OE1	2.44	0.51
1:A:144:SER:HB2	1:A:147:SER:HB2	1.92	0.51
1:A:226:ARG:C	1:A:228:THR:H	2.13	0.51
1:A:240:THR:HG22	1:A:242:GLY:H	1.75	0.50
1:A:144:SER:HB2	1:A:147:SER:CB	2.42	0.50
1:A:555:LEU:HD12	1:A:556:GLU:N	2.25	0.50
1:A:1091:VAL:HG23	1:A:1092:LEU:N	2.26	0.50
1:A:410:TRP:HB3	1:A:412:VAL:HG12	1.93	0.50
1:A:799:GLU:CD	1:A:799:GLU:H	2.14	0.50
1:A:1056:THR:C	1:A:1059:LYS:HD3	2.32	0.50
1:A:567:LEU:HD21	1:A:591:LYS:HD3	1.92	0.50
1:A:1035:LEU:HD22	1:A:1039:MET:HG3	1.92	0.50
1:A:652:GLU:C	1:A:684:ARG:HH22	2.14	0.50
1:A:731:ASP:O	1:A:735:GLN:HG3	2.11	0.50
1:A:287:ILE:HA	1:A:290:PHE:CD1	2.47	0.49
1:A:939:THR:HB	1:A:945:GLY:HA2	1.94	0.49
1:A:862:LEU:HD21	1:A:1016:ALA:CB	2.43	0.49
1:A:461:LEU:HB3	1:A:462:TYR:CD1	2.48	0.49
1:A:555:LEU:HD12	1:A:555:LEU:C	2.32	0.49
1:A:271:VAL:HG22	1:A:272:LEU:N	2.28	0.49
1:A:207:LEU:HD23	1:A:294:ARG:CZ	2.43	0.48
1:A:357:CYS:O	1:A:421:LYS:HG2	2.12	0.48
1:A:211:LEU:O	1:A:214:LYS:HB3	2.13	0.48
1:A:395:CYS:HB2	1:A:418:ILE:CD1	2.41	0.48
1:A:940:PHE:HB2	1:A:985:PHE:HD2	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:373:LEU:N	1:A:373:LEU:HD12	2.28	0.48
1:A:472:ARG:O	1:A:473:PHE:HB2	2.13	0.48
1:A:998:SER:O	1:A:999:GLY:C	2.50	0.48
1:A:561:THR:HG23	1:A:591:LYS:HE2	1.95	0.48
1:A:215:ILE:HG22	1:A:218:ASN:HA	1.95	0.48
1:A:432:GLN:HB3	1:A:460:LEU:CD1	2.44	0.47
1:A:463:TYR:CE2	1:A:501:LYS:HA	2.49	0.47
1:A:855:TRP:CH2	1:A:862:LEU:HD22	2.48	0.47
1:A:701:SER:O	1:A:705:GLN:HG2	2.14	0.47
1:A:826:GLU:OE1	1:A:883:LYS:HG3	2.15	0.47
1:A:232:THR:C	1:A:233:ILE:HD12	2.35	0.47
1:A:238:ASP:HA	1:A:286:PRO:HB3	1.96	0.47
1:A:370:ILE:CD1	1:A:371:PRO:HD2	2.42	0.47
1:A:1087:PHE:O	1:A:1090:LEU:HG	2.14	0.47
1:A:371:PRO:HG3	1:A:511:GLU:O	2.15	0.47
1:A:224:ILE:C	1:A:225:HIS:ND1	2.69	0.46
1:A:422:ASP:HB3	1:A:599:GLY:O	2.15	0.46
1:A:842:MET:HE3	1:A:870:ILE:HA	1.98	0.46
1:A:946:ASP:CG	1:A:983:VAL:HG12	2.36	0.46
1:A:732:PHE:O	1:A:736:VAL:HG23	2.15	0.46
1:A:852:GLU:OE2	1:A:864:LEU:HB2	2.15	0.46
1:A:1085:ASN:O	1:A:1089:HIS:N	2.45	0.46
1:A:191:ARG:HD2	1:A:196:TYR:CG	2.51	0.46
1:A:176:THR:HG23	1:A:674:ASP:HB2	1.97	0.46
1:A:983:VAL:HG22	1:A:984:PRO:HD2	1.98	0.46
1:A:735:GLN:O	1:A:739:ILE:HG12	2.15	0.46
1:A:760:SER:O	1:A:764:ILE:HG13	2.17	0.45
1:A:365:ILE:HD12	1:A:365:ILE:N	2.32	0.45
1:A:205:LYS:HE3	1:A:654:ASP:OD2	2.16	0.45
1:A:548:PRO:HG2	1:A:551:LEU:HD12	1.99	0.45
1:A:1090:LEU:HD12	1:A:1091:VAL:N	2.31	0.45
1:A:858:GLU:HG3	1:A:1019:ALA:HB1	1.98	0.45
1:A:679:ARG:O	1:A:683:LYS:HG3	2.17	0.45
1:A:432:GLN:HB3	1:A:460:LEU:HD11	1.98	0.45
1:A:272:LEU:HB3	1:A:305:VAL:HG11	1.99	0.44
1:A:651:LEU:HD22	1:A:655:ASP:HB3	1.98	0.44
1:A:165:VAL:O	1:A:168:VAL:HG22	2.18	0.44
1:A:182:THR:N	1:A:183:PRO:HD2	2.33	0.44
1:A:287:ILE:HA	1:A:290:PHE:HD1	1.83	0.44
1:A:224:ILE:HA	1:A:305:VAL:O	2.18	0.44
1:A:786:PRO:HG2	1:A:878:MET:SD	2.58	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:834:HIS:HB2	1:A:876:ILE:HD13	1.99	0.44
1:A:303:ILE:HD12	1:A:303:ILE:N	2.33	0.44
1:A:905:GLU:HG3	1:A:993:PHE:CZ	2.53	0.44
1:A:988:THR:HG21	1:A:1080:TRP:CH2	2.53	0.44
1:A:852:GLU:HG3	1:A:864:LEU:HD12	2.00	0.44
1:A:586:PRO:HA	1:A:589:TYR:CD1	2.53	0.43
1:A:1035:LEU:HA	1:A:1039:MET:CG	2.47	0.43
1:A:240:THR:HG23	1:A:241:PRO:HD2	1.99	0.43
1:A:1082:VAL:HG12	1:A:1086:TRP:CD1	2.53	0.43
1:A:282:VAL:HG12	1:A:283:GLY:H	1.82	0.43
1:A:357:CYS:N	1:A:421:LYS:HE2	2.33	0.43
1:A:222:ILE:HG12	1:A:303:ILE:HB	1.98	0.43
1:A:609:GLN:O	1:A:612:ALA:HB3	2.19	0.43
1:A:273:ARG:O	1:A:305:VAL:HG13	2.19	0.43
1:A:487:ILE:HD12	1:A:487:ILE:C	2.39	0.43
1:A:273:ARG:HG3	1:A:279:GLU:O	2.18	0.43
1:A:819:ASP:HA	1:A:820:PRO:HD3	1.87	0.43
1:A:905:GLU:CD	1:A:905:GLU:H	2.20	0.43
1:A:1078:LYS:CB	1:A:1081:THR:HB	2.49	0.43
1:A:912:LYS:HG3	1:A:921:PHE:CE1	2.54	0.43
1:A:157:LEU:O	1:A:700:ARG:HD2	2.19	0.42
1:A:953:MET:SD	1:A:963:ILE:HD13	2.59	0.42
1:A:215:ILE:CG2	1:A:218:ASN:HA	2.49	0.42
1:A:652:GLU:O	1:A:656:VAL:HG23	2.19	0.42
1:A:365:ILE:HD13	1:A:414:LEU:HD12	2.02	0.42
1:A:475:LEU:HD21	1:A:522:ASN:HB2	2.01	0.42
1:A:552:ARG:HH22	1:A:581:GLU:CD	2.22	0.42
1:A:302:GLU:H	1:A:302:GLU:CD	2.22	0.42
1:A:895:THR:HG21	1:A:906:VAL:HG22	2.02	0.42
1:A:862:LEU:N	1:A:862:LEU:HD12	2.35	0.42
1:A:387:ILE:HD12	1:A:418:ILE:HD12	2.00	0.42
1:A:990:ASP:O	1:A:994:VAL:HG23	2.19	0.42
1:A:925:VAL:O	1:A:929:VAL:HG23	2.20	0.42
1:A:688:ASN:OD1	1:A:690:ARG:N	2.52	0.42
1:A:660:LEU:O	1:A:664:VAL:HG23	2.20	0.41
1:A:756:LYS:O	1:A:757:TYR:CB	2.68	0.41
1:A:753:SER:O	1:A:756:LYS:O	2.39	0.41
1:A:184:ARG:NH2	1:A:321:GLU:HG3	2.35	0.41
1:A:1092:LEU:HD22	1:A:1093:GLY:HA3	2.02	0.41
1:A:405:THR:OG1	1:A:407:GLU:O	2.38	0.41
1:A:361:PHE:HB2	1:A:420:ILE:HD13	2.03	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:562:ASP:HB2	1:A:563:PRO:HD2	2.03	0.41
1:A:198:MET:SD	1:A:282:VAL:HG21	2.61	0.41
1:A:767:LEU:O	1:A:771:LEU:HG	2.20	0.41
1:A:838:LEU:HD12	1:A:877:GLY:HA3	2.02	0.41
1:A:212:TRP:CE3	1:A:215:ILE:HD12	2.56	0.41
1:A:390:GLY:O	1:A:391:GLN:HB2	2.20	0.41
1:A:948:HIS:ND1	1:A:949:ASN:N	2.68	0.41
1:A:855:TRP:CE3	1:A:862:LEU:HD13	2.56	0.41
1:A:921:PHE:O	1:A:925:VAL:HG23	2.20	0.41
1:A:370:ILE:HD13	1:A:514:MET:HB2	2.02	0.40
1:A:564:LEU:CD1	1:A:1048:ILE:HG22	2.51	0.40
1:A:903:LYS:HB3	1:A:906:VAL:CG2	2.51	0.40
1:A:656:VAL:O	1:A:660:LEU:N	2.54	0.40
1:A:395:CYS:HB3	1:A:416:PHE:HD2	1.85	0.40
1:A:281:LEU:HA	1:A:290:PHE:CE2	2.56	0.40
1:A:1067:TYR:O	1:A:1071:GLN:HG2	2.21	0.40
1:A:988:THR:CG2	1:A:989:PRO:HD2	2.50	0.40
1:A:699:LEU:O	1:A:703:ILE:HG13	2.22	0.40

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
1	A	820/966 (85%)	795 (97%)	24 (3%)	1 (0%)	56 83

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	227	SER

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	692/864 (80%)	684 (99%)	8 (1%)	78 93

All (8) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	225	HIS
1	A	381	VAL
1	A	395	CYS
1	A	404	PHE
1	A	752	LEU
1	A	758	ASP
1	A	763	VAL
1	A	1089	HIS

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	432	GLN
1	A	646	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates 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	$\# Z > 2$
2	13K	A	1	-	33,33,33	0.78	2 (6%)	42,45,45	1.20	5 (11%)
3	SO4	A	2	-	4,4,4	0.23	0	6,6,6	0.09	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	13K	A	1	-	-	0/16/24/24	0/4/4/4
3	SO4	A	2	-	-	0/0/0/0	0/0/0/0

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1	13K	C11-N12	2.03	1.39	1.35
2	A	1	13K	C02-N01	2.43	1.39	1.34

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1	13K	N18-C11-N10	-3.08	121.17	126.35
2	A	1	13K	C21-N20-C19	2.20	134.76	129.06
2	A	1	13K	N10-C11-N12	2.22	119.57	117.08
2	A	1	13K	C11-N18-C19	2.62	120.11	115.64
2	A	1	13K	C17-N12-C13	2.77	117.41	111.59

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	840/966 (86%)	0.44	67 (7%) 15 13	56, 98, 165, 235	0

All (67) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	215	ILE	7.9
1	A	220	ILE	7.0
1	A	211	LEU	5.7
1	A	216	ALA	5.5
1	A	212	TRP	5.2
1	A	968	ILE	5.1
1	A	403	PRO	5.1
1	A	896	VAL	5.0
1	A	232	THR	4.4
1	A	218	ASN	4.3
1	A	207	LEU	4.2
1	A	489	GLY	4.2
1	A	303	ILE	4.1
1	A	373	LEU	4.1
1	A	210	TYR	4.1
1	A	272	LEU	4.0
1	A	219	CYS	4.0
1	A	230	SER	4.0
1	A	1082	VAL	3.7
1	A	233	ILE	3.7
1	A	235	VAL	3.6
1	A	1068	PHE	3.5
1	A	221	PHE	3.5
1	A	237	PRO	3.4
1	A	224	ILE	3.3
1	A	217	ASN	3.3
1	A	222	ILE	3.2

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Mol	Chain	Res	Type	RSRZ
1	A	214	LYS	3.1
1	A	497	PHE	3.1
1	A	404	PHE	3.1
1	A	271	VAL	3.0
1	A	307	LEU	3.0
1	A	293	VAL	2.9
1	A	231	GLN	2.9
1	A	301	GLU	2.9
1	A	302	GLU	2.9
1	A	209	GLU	2.9
1	A	490	LYS	2.9
1	A	283	GLY	2.9
1	A	371	PRO	2.9
1	A	208	PRO	2.8
1	A	241	PRO	2.8
1	A	234	LYS	2.8
1	A	757	TYR	2.7
1	A	381	VAL	2.7
1	A	1064	ALA	2.6
1	A	269	ASP	2.6
1	A	281	LEU	2.6
1	A	1072	ILE	2.6
1	A	1076	ARG	2.5
1	A	236	SER	2.5
1	A	409	LEU	2.5
1	A	564	LEU	2.4
1	A	607	THR	2.4
1	A	898	ASN	2.4
1	A	473	PHE	2.3
1	A	987	LEU	2.3
1	A	611	LEU	2.3
1	A	1048	ILE	2.3
1	A	287	ILE	2.2
1	A	402	LYS	2.2
1	A	460	LEU	2.2
1	A	762	GLN	2.2
1	A	1090	LEU	2.1
1	A	771	LEU	2.1
1	A	518	ILE	2.1
1	A	749	ILE	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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	LLDF	B-factors(Å ²)	Q<0.9
3	SO4	A	2	5/5	0.90	0.27	3.78	135,135,138,146	0
2	13K	A	1	30/30	0.95	0.19	0.03	74,100,140,148	0

6.5 Other polymers [i](#)

There are no such residues in this entry.