WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Oct 31, 2023 – 06:15 PM JST

PDB ID	:	5GQR
Title	:	Crystal structure of PXY-CLE41-SERK2
Authors	:	Chai, J.J.; Zhang, H.Q.
Deposited on	:	2016-08-08
Resolution	:	3.50 Å(reported)

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

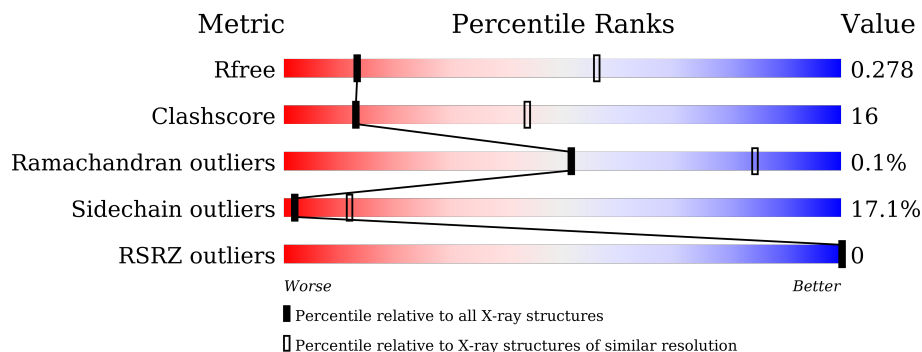|		
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry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

1 Overall quality at a glance ⓘ

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

The reported resolution of this entry is 3.50 Å.

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

Metric	Percentile Ranks	Value
Rfree		0.278
Clashscore		16
Ramachandran outliers		0.1%
Sidechain outliers		17.1%
RSRZ outliers		0

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1659 (3.60-3.40)
Clashscore	141614	1036 (3.58-3.42)
Ramachandran outliers	138981	1005 (3.58-3.42)
Sidechain outliers	138945	1006 (3.58-3.42)
RSRZ outliers	127900	1559 (3.60-3.40)

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	B	598	54% 37% 8% ·
2	C	12	42% 50% 8%
3	K	185	65% 29% 5%

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 6160 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 Leucine-rich repeat receptor-like protein kinase TDR.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	B	593	4613	2963	765	872	13	0	0	0

- Molecule 2 is a protein called TDIF.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	C	12	89	53	16	20	0	0	0

- Molecule 3 is a protein called Somatic embryogenesis receptor kinase 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	K	185	1402	883	240	272	7	0	0	0

- Molecule 4 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).
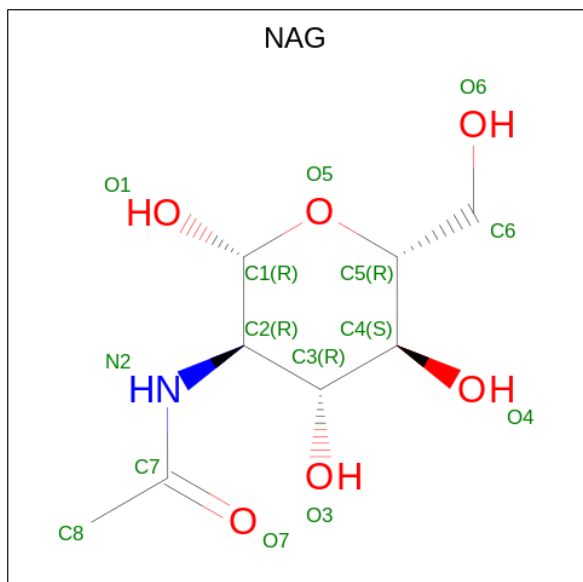
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	B	1	Total	C	N	O	0	0
			14	8	1	5		
4	B	1	Total	C	N	O	0	0
			14	8	1	5		
4	K	1	Total	C	N	O	0	0
			14	8	1	5		
4	K	1	Total	C	N	O	0	0
			14	8	1	5		

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 d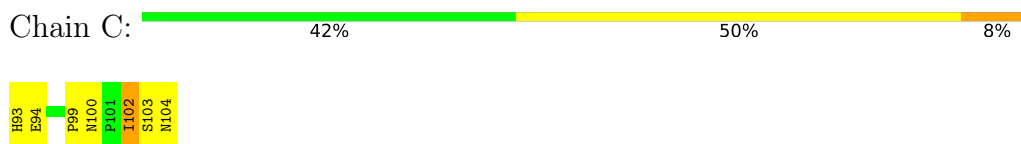isplayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or 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: Leucine-rich repeat receptor-like protein kinase TDR

Chain B:

- Molecule 2: TDIF

Chain C:
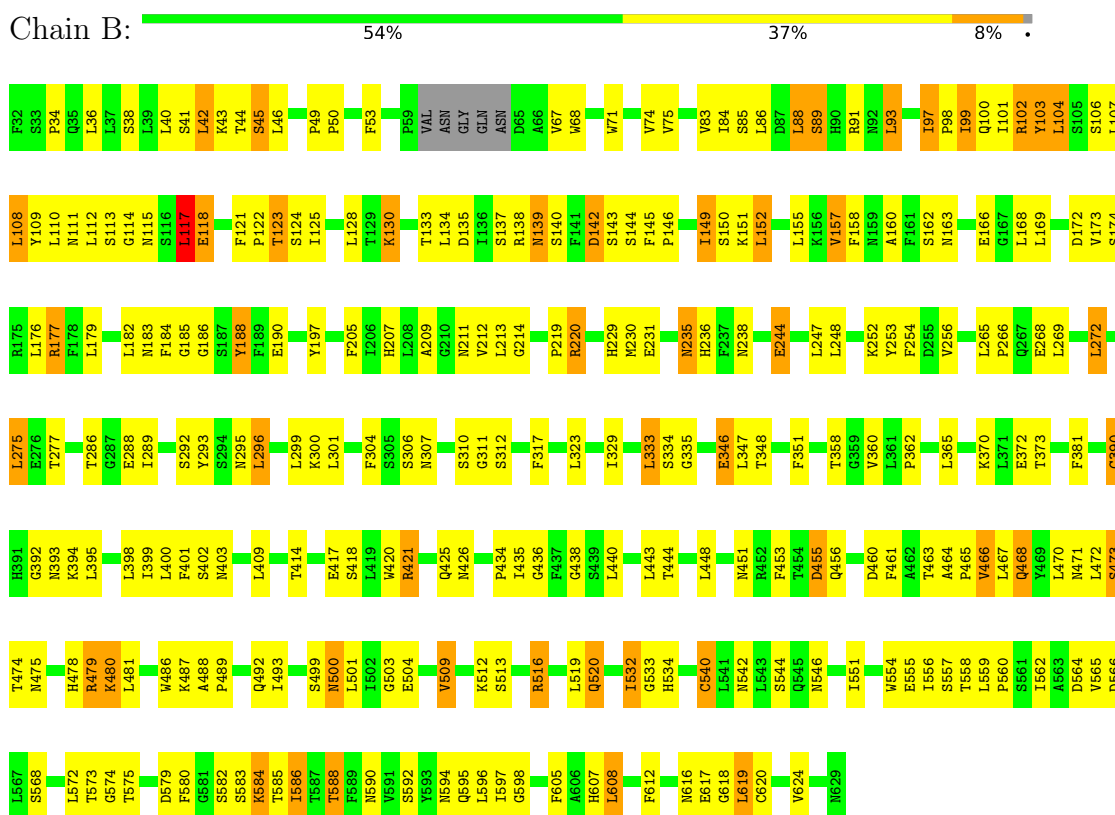
- Molecule 3: Somatic embryogenesis receptor kinase 2

Chain K:

N27 L33 H34 S35 L36 R37 A38 N39 D42 N45 V46 L47 Q48 P52 T53 L54 T59 T64 I72 R73 A79 D80 L81 Q84 L85 V86 P87 Q88 Q96 L100 Y101 S102 T106 G107 P108 V109 P110 S111 D112 L113 G114 N115 L119 V120 S121 L122 D123

L124 Y125 T130 D135 L140 F141 K142 L143 R144 R147 P156 I157 P158 M165 Q168 D171 R176 L177 S178 G179 S180 V181 P182 D183 F187 S188 L189 L199 D200 L201 C202 T206 S207 R208 P209 C210 P211
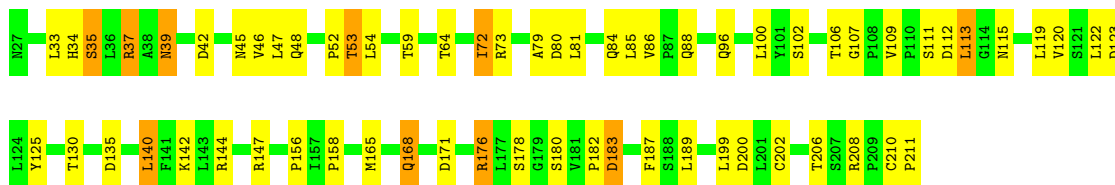
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 62 2 2	Depositor
Cell constants a, b, c, α, β, γ	162.42Å 162.42Å 187.23Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	40.47 – 3.50 40.47 – 3.50	Depositor EDS
% Data completeness (in resolution range)	95.0 (40.47-3.50) 94.4 (40.47-3.50)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.14	Depositor
$< I/\sigma(I) >$ [1]	1.45 (at 3.48Å)	Xtriage
Refinement program	PHENIX 1.8_1069	Depositor
R, R_{free}	0.219 , 0.276 0.227 , 0.278	Depositor DCC
R_{free} test set	926 reflections (5.13%)	wwPDB-VP
Wilson B-factor (Å²)	91.3	Xtriage
Anisotropy	0.263	Xtriage
Bulk solvent k_{sol}(e/Å³), B_{sol}(Å²)	0.28 , 27.5	EDS
L-test for twinning[2]	$< |L| > = 0.46$, $< L^2 > = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	6160	wwPDB-VP
Average B, all atoms (Å²)	78.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.32% 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 ⓘ

5.1 Standard geometry ⓘ

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

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	B	0.47	0/4729	0.75	1/6428 (0.0%)
2	C	0.65	0/82	0.95	0/109
3	K	0.48	0/1432	0.72	0/1963
All	All	0.48	0/6243	0.75	1/8500 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	117	LEU	CA-CB-CG	5.68	128.37	115.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	4613	0	4546	167	0
2	C	89	0	78	4	0
3	K	1402	0	1366	35	0
4	B	28	0	26	0	0
4	K	28	0	26	0	0
All	All	6160	0	6042	201	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 16.

All (201) 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)
3:K:64:THR:HB	3:K:73:ARG:HB2	1.60	0.81
1:B:438:GLY:HA2	1:B:464:ALA:HB2	1.63	0.81
1:B:219:PRO:HB3	1:B:244:GLU:HG3	1.62	0.80
1:B:213:LEU:HB2	1:B:235:ASN:HD22	1.46	0.78
1:B:421:ARG:HH12	3:K:54:LEU:HD11	1.47	0.78
1:B:565:VAL:H	1:B:588:THR:HG22	1.48	0.77
1:B:448:LEU:O	1:B:451:ASN:ND2	2.21	0.72
1:B:409:LEU:HD23	1:B:434:PRO:HD2	1.72	0.72
1:B:455:ASP:OD1	1:B:479:ARG:NH2	2.24	0.71
1:B:420:TRP:HA	1:B:443:LEU:HA	1.73	0.71
1:B:573:THR:HB	1:B:595:GLN:HB2	1.73	0.70
1:B:292:SER:O	1:B:295:ASN:ND2	2.25	0.69
3:K:183:ASP:OD1	3:K:183:ASP:N	2.25	0.68
1:B:583:SER:HB3	1:B:586:ILE:HD11	1.75	0.68
1:B:346:GLU:OE2	1:B:370:LYS:NZ	2.26	0.67
1:B:444:THR:HG22	1:B:466:VAL:HB	1.76	0.66
1:B:89:SER:HB3	1:B:113:SER:H	1.61	0.65
1:B:555:GLU:O	1:B:558:THR:OG1	2.14	0.65
1:B:390:CYS:O	1:B:393:ASN:N	2.27	0.65
1:B:40:LEU:O	1:B:44:THR:HG23	1.96	0.65
1:B:139:ASN:N	1:B:139:ASN:HD22	1.95	0.64
3:K:39:ASN:O	3:K:39:ASN:ND2	2.28	0.64
1:B:75:VAL:HB	1:B:85:SER:HB3	1.79	0.64
3:K:72:ILE:HG12	3:K:73:ARG:HG3	1.80	0.64
1:B:150:SER:N	1:B:172:ASP:OD2	2.31	0.64
1:B:185:GLY:HA2	1:B:211:ASN:HD21	1.62	0.64
1:B:493:ILE:HG23	1:B:516:ARG:HB3	1.80	0.63
1:B:166:GLU:HA	1:B:188:TYR:O	2.00	0.62
1:B:334:SER:OG	1:B:335:GLY:N	2.30	0.62
1:B:289:ILE:HD11	1:B:333:LEU:HD11	1.80	0.62
1:B:584:LYS:HD2	1:B:585:THR:HG23	1.80	0.62
1:B:137:SER:O	1:B:139:ASN:ND2	2.33	0.62
1:B:214:GLY:HA2	1:B:236:HIS:O	2.00	0.61
3:K:210:CYS:HB2	3:K:211:PRO:HD2	1.83	0.60
1:B:597:ILE:HG22	1:B:618:GLY:HA3	1.85	0.59
3:K:42:ASP:HB2	3:K:47:LEU:HD12	1.83	0.59
1:B:42:LEU:HA	1:B:98:PRO:HG2	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:110:LEU:HB3	1:B:134:LEU:HD12	1.84	0.58
1:B:107:LEU:HD21	1:B:110:LEU:HD13	1.85	0.58
1:B:185:GLY:HA2	1:B:211:ASN:ND2	2.18	0.58
1:B:584:LYS:HE3	1:B:584:LYS:H	1.67	0.58
1:B:499:SER:O	1:B:501:LEU:N	2.36	0.58
1:B:533:GLY:HA2	1:B:559:LEU:HD21	1.86	0.58
1:B:551:ILE:HG22	1:B:574:GLY:HA3	1.86	0.57
3:K:34:HIS:ND1	3:K:52:PRO:HG3	2.19	0.57
1:B:596:LEU:HB2	1:B:616:ASN:ND2	2.19	0.57
1:B:296:LEU:HD13	1:B:299:LEU:HD22	1.87	0.56
1:B:138:ARG:C	1:B:139:ASN:HD22	2.08	0.56
1:B:162:SER:HA	1:B:186:GLY:O	2.06	0.56
1:B:456:GLN:HG3	1:B:479:ARG:HG2	1.87	0.56
1:B:97:ILE:HD12	1:B:122:PRO:HG3	1.87	0.56
3:K:119:LEU:HD23	3:K:140:LEU:HD13	1.86	0.56
3:K:176:ARG:NH1	3:K:199:LEU:HD13	2.21	0.56
1:B:121:PHE:CD1	1:B:122:PRO:HD2	2.40	0.55
1:B:123:THR:HG23	1:B:146:PRO:HB2	1.88	0.55
3:K:79:ALA:HB3	3:K:81:LEU:HG	1.88	0.55
1:B:230:MET:HE1	1:B:254:PHE:HE1	1.72	0.55
3:K:37:ARG:HG2	3:K:47:LEU:HB3	1.88	0.55
1:B:540:CYS:HB2	1:B:564:ASP:HB2	1.88	0.55
1:B:544:SER:O	1:B:546:ASN:ND2	2.39	0.55
1:B:401:PHE:HB2	1:B:425:GLN:HG2	1.89	0.55
1:B:133:THR:HG23	1:B:157:VAL:HB	1.89	0.55
3:K:144:ARG:NH1	3:K:168:GLN:OE1	2.21	0.54
1:B:101:ILE:C	1:B:103:TYR:H	2.10	0.54
1:B:414:THR:HG21	1:B:436:GLY:H	1.73	0.54
1:B:516:ARG:CZ	1:B:540:CYS:HB3	2.37	0.54
3:K:119:LEU:HD21	3:K:122:LEU:HB2	1.89	0.54
1:B:84:ILE:HA	1:B:107:LEU:HA	1.90	0.54
1:B:101:ILE:HG22	1:B:102:ARG:H	1.72	0.54
1:B:460:ASP:O	1:B:463:THR:OG1	2.17	0.54
3:K:34:HIS:CG	3:K:52:PRO:HG3	2.44	0.53
1:B:594:ASN:N	1:B:616:ASN:OD1	2.38	0.52
1:B:370:LYS:HA	1:B:394:LYS:HE2	1.90	0.52
1:B:186:GLY:O	2:C:93:HIS:HB3	2.09	0.52
1:B:312:SER:HA	1:B:334:SER:O	2.10	0.52
1:B:43:LYS:HA	1:B:53:PHE:CE2	2.45	0.52
1:B:598:GLY:O	1:B:619:LEU:HD12	2.10	0.52
3:K:182:PRO:HG2	3:K:187:PHE:CD2	2.45	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:440:LEU:HD12	1:B:443:LEU:HD22	1.92	0.51
1:B:329:ILE:HD11	1:B:351:PHE:HD2	1.76	0.51
1:B:362:PRO:O	1:B:365:LEU:HB2	2.11	0.51
1:B:475:ASN:H	1:B:499:SER:HB3	1.75	0.51
1:B:329:ILE:HD11	1:B:351:PHE:CD2	2.46	0.50
1:B:420:TRP:CE3	1:B:421:ARG:HB2	2.46	0.50
1:B:68:TRP:HA	1:B:71:TRP:CE2	2.47	0.50
1:B:605:PHE:HA	1:B:608:LEU:HG	1.94	0.50
1:B:100:GLN:O	1:B:103:TYR:HB2	2.11	0.50
3:K:106:THR:OG1	3:K:107:GLY:N	2.45	0.50
1:B:421:ARG:NH1	2:C:104:ASN:O	2.45	0.50
1:B:487:LYS:HG2	1:B:509:VAL:HG13	1.93	0.50
1:B:566:ASP:OD1	1:B:590:ASN:HB3	2.12	0.49
1:B:135:ASP:OD1	1:B:137:SER:OG	2.27	0.49
1:B:465:PRO:HA	1:B:489:PRO:HG2	1.93	0.49
2:C:100:ASN:OD1	2:C:102:ILE:HG23	2.13	0.49
1:B:253:TYR:CE2	1:B:277:THR:HG21	2.46	0.49
3:K:178:SER:HA	3:K:200:ASP:O	2.11	0.49
1:B:46:LEU:HD13	1:B:93:LEU:HD11	1.95	0.49
1:B:177:ARG:H	1:B:177:ARG:HG2	1.48	0.49
1:B:34:PRO:O	1:B:38:SER:HB2	2.13	0.48
1:B:304:PHE:O	1:B:307:ASN:ND2	2.37	0.48
1:B:470:LEU:HD11	1:B:472:LEU:HD21	1.94	0.48
1:B:41:SER:O	1:B:45:SER:HB3	2.13	0.48
1:B:168:LEU:HA	1:B:190:GLU:O	2.14	0.48
1:B:293:TYR:C	1:B:295:ASN:H	2.16	0.48
1:B:480:LYS:HD3	1:B:503:GLY:HA3	1.95	0.48
1:B:486:TRP:HH2	1:B:519:LEU:HD11	1.79	0.48
1:B:86:LEU:HG	1:B:88:LEU:HD21	1.96	0.48
1:B:266:PRO:HD2	1:B:269:LEU:HD12	1.96	0.48
3:K:45:ASN:HB3	3:K:48:GLN:HB2	1.96	0.48
1:B:142:ASP:CG	1:B:143:SER:N	2.66	0.47
1:B:390:CYS:O	1:B:392:GLY:N	2.47	0.47
1:B:499:SER:O	1:B:499:SER:OG	2.25	0.47
3:K:176:ARG:HH11	3:K:199:LEU:HD13	1.80	0.47
1:B:468:GLN:HG2	1:B:492:GLN:HE21	1.79	0.47
1:B:109:TYR:CE1	1:B:111:ASN:HB2	2.49	0.47
1:B:398:LEU:HD11	1:B:400:LEU:HG	1.96	0.47
1:B:99:ILE:H	1:B:99:ILE:HD12	1.80	0.46
1:B:572:LEU:HB2	1:B:594:ASN:OD1	2.14	0.46
1:B:471:ASN:OD1	1:B:473:SER:HB3	2.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:84:GLN:HG2	3:K:107:GLY:HA3	1.97	0.46
1:B:235:ASN:N	1:B:235:ASN:OD1	2.47	0.46
1:B:596:LEU:HB2	1:B:616:ASN:HD22	1.79	0.46
1:B:179:LEU:HD21	1:B:182:LEU:HB2	1.98	0.46
1:B:138:ARG:HA	1:B:162:SER:HB3	1.96	0.46
1:B:149:ILE:HD12	1:B:152:LEU:HD23	1.98	0.45
3:K:53:THR:O	3:K:53:THR:OG1	2.34	0.45
1:B:118:GLU:HB2	1:B:140:SER:HB3	1.99	0.45
1:B:448:LEU:HD22	1:B:453:PHE:CE2	2.51	0.45
1:B:158:PHE:CZ	1:B:160:ALA:HB2	2.52	0.45
1:B:288:GLU:HG2	1:B:311:GLY:HA3	1.98	0.45
1:B:213:LEU:HD12	1:B:235:ASN:ND2	2.32	0.45
1:B:300:LYS:O	1:B:323:LEU:HD12	2.16	0.45
3:K:135:ASP:OD1	3:K:158:PRO:HB3	2.16	0.45
1:B:520:GLN:H	1:B:520:GLN:HG3	1.10	0.44
3:K:147:ARG:HG2	3:K:171:ASP:HB3	1.99	0.44
1:B:532:ILE:HG21	1:B:556:ILE:HG12	2.00	0.44
1:B:289:ILE:H	1:B:289:ILE:HD12	1.81	0.44
1:B:444:THR:HA	1:B:467:LEU:HA	2.00	0.44
1:B:145:PHE:HA	1:B:146:PRO:HD2	1.72	0.44
3:K:112:ASP:O	3:K:115:ASN:HB2	2.18	0.44
1:B:93:LEU:O	1:B:115:ASN:HB3	2.18	0.44
1:B:151:LYS:HB2	1:B:151:LYS:HE2	1.78	0.44
1:B:174:SER:HB2	1:B:197:TYR:HD1	1.83	0.44
1:B:565:VAL:N	1:B:588:THR:HG22	2.24	0.43
1:B:130:LYS:HD2	1:B:130:LYS:HA	1.65	0.43
1:B:532:ILE:C	1:B:534:HIS:H	2.21	0.43
1:B:584:LYS:H	1:B:584:LYS:CE	2.31	0.43
1:B:139:ASN:N	1:B:139:ASN:ND2	2.65	0.43
1:B:138:ARG:HH12	2:C:94:GLU:CD	2.21	0.43
1:B:478:HIS:CD2	1:B:500:ASN:HB3	2.53	0.43
1:B:46:LEU:HD22	1:B:93:LEU:HG	1.98	0.43
1:B:488:ALA:HA	1:B:489:PRO:HD3	1.80	0.43
1:B:512:LYS:HG2	1:B:513:SER:OG	2.18	0.43
1:B:272:LEU:HD13	1:B:275:LEU:HD13	1.99	0.43
1:B:347:LEU:HD12	1:B:348:THR:H	1.83	0.43
1:B:74:VAL:HG13	1:B:83:VAL:HG13	2.01	0.43
1:B:152:LEU:HB3	1:B:155:LEU:HB2	2.00	0.42
1:B:381:PHE:HB2	1:B:403:ASN:OD1	2.19	0.42
1:B:252:LYS:HA	1:B:275:LEU:HA	2.01	0.42
1:B:608:LEU:HD13	1:B:612:PHE:CD2	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:114:GLY:H	1:B:139:ASN:HD21	1.67	0.42
1:B:481:LEU:H	1:B:481:LEU:HD12	1.85	0.42
1:B:616:ASN:HB3	1:B:619:LEU:HD22	2.01	0.42
1:B:89:SER:HA	1:B:115:ASN:HD21	1.84	0.42
1:B:117:LEU:O	1:B:117:LEU:HD23	2.20	0.42
1:B:139:ASN:O	1:B:163:ASN:HA	2.19	0.42
1:B:205:PHE:CE2	1:B:229:HIS:CD2	3.08	0.42
1:B:220:ARG:O	1:B:220:ARG:HG3	2.19	0.42
1:B:293:TYR:C	1:B:295:ASN:N	2.72	0.42
3:K:113:LEU:HD12	3:K:113:LEU:HA	1.86	0.42
3:K:35:SER:HB2	3:K:86:VAL:HG21	2.01	0.42
1:B:207:HIS:CE1	1:B:209:ALA:HB3	2.54	0.42
1:B:207:HIS:HA	1:B:231:GLU:O	2.20	0.41
1:B:149:ILE:HG23	1:B:172:ASP:OD2	2.20	0.41
1:B:562:ILE:HG23	1:B:562:ILE:O	2.20	0.41
1:B:88:LEU:HB2	1:B:91:ARG:HD2	2.02	0.41
1:B:114:GLY:H	1:B:139:ASN:ND2	2.19	0.41
1:B:481:LEU:HD11	1:B:501:LEU:HD13	2.02	0.41
1:B:607:HIS:ND1	3:K:168:GLN:HG2	2.35	0.41
1:B:104:LEU:HD12	1:B:104:LEU:H	1.86	0.41
1:B:253:TYR:HA	1:B:277:THR:HB	2.01	0.41
1:B:448:LEU:HD23	1:B:448:LEU:HA	1.91	0.41
1:B:520:GLN:HG2	1:B:542:ASN:CG	2.40	0.41
3:K:33:LEU:HD23	3:K:33:LEU:HA	1.94	0.41
3:K:96:GLN:O	3:K:119:LEU:HD12	2.20	0.41
1:B:40:LEU:O	1:B:43:LYS:HB3	2.20	0.41
1:B:584:LYS:CD	1:B:585:THR:HG23	2.50	0.41
1:B:453:PHE:HB2	1:B:475:ASN:OD1	2.21	0.41
3:K:180:SER:HA	3:K:202:CYS:O	2.21	0.41
3:K:156:PRO:HA	3:K:178:SER:O	2.21	0.40
1:B:93:LEU:HD23	1:B:115:ASN:HB3	2.03	0.40
1:B:108:LEU:H	1:B:108:LEU:HG	1.66	0.40
1:B:372:GLU:O	1:B:395:LEU:HA	2.20	0.40
3:K:39:ASN:HD22	3:K:39:ASN:C	2.19	0.40
3:K:85:LEU:HD21	3:K:100:LEU:CD1	2.51	0.40
3:K:123:ASP:HB3	3:K:125:TYR:CE1	2.57	0.40
1:B:253:TYR:CD2	1:B:277:THR:HG21	2.56	0.40
1:B:520:GLN:HE21	1:B:542:ASN:HB3	1.86	0.40
1:B:559:LEU:HA	1:B:560:PRO:HD3	1.69	0.40
1:B:49:PRO:HA	1:B:50:PRO:HD3	1.87	0.40
1:B:402:SER:HA	1:B:426:ASN:HB2	2.03	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	B	589/598 (98%)	555 (94%)	33 (6%)	1 (0%)	47	81
2	C	9/12 (75%)	9 (100%)	0	0	100	100
3	K	183/185 (99%)	170 (93%)	13 (7%)	0	100	100
All	All	781/795 (98%)	734 (94%)	46 (6%)	1 (0%)	51	84

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	500	ASN

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	529/533 (99%)	435 (82%)	94 (18%)	2	10
2	C	10/10 (100%)	8 (80%)	2 (20%)	1	7
3	K	164/169 (97%)	140 (85%)	24 (15%)	3	18
All	All	703/712 (99%)	583 (83%)	120 (17%)	2	12

All (120) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	36	LEU
1	B	42	LEU
1	B	45	SER
1	B	67	VAL
1	B	88	LEU
1	B	89	SER
1	B	93	LEU
1	B	97	ILE
1	B	99	ILE
1	B	102	ARG
1	B	103	TYR
1	B	104	LEU
1	B	106	SER
1	B	108	LEU
1	B	112	LEU
1	B	117	LEU
1	B	118	GLU
1	B	123	THR
1	B	124	SER
1	B	125	ILE
1	B	128	LEU
1	B	130	LYS
1	B	139	ASN
1	B	142	ASP
1	B	144	SER
1	B	149	ILE
1	B	152	LEU
1	B	157	VAL
1	B	169	LEU
1	B	173	VAL
1	B	176	LEU
1	B	177	ARG
1	B	183	ASN
1	B	184	PHE
1	B	188	TYR
1	B	212	VAL
1	B	220	ARG
1	B	235	ASN
1	B	238	ASN
1	B	244	GLU
1	B	247	LEU
1	B	248	LEU
1	B	256	VAL

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Mol	Chain	Res	Type
1	B	265	LEU
1	B	268	GLU
1	B	272	LEU
1	B	275	LEU
1	B	286	THR
1	B	296	LEU
1	B	301	LEU
1	B	306	SER
1	B	310	SER
1	B	317	PHE
1	B	333	LEU
1	B	346	GLU
1	B	358	THR
1	B	360	VAL
1	B	373	THR
1	B	390	CYS
1	B	399	ILE
1	B	417	GLU
1	B	418	SER
1	B	421	ARG
1	B	435	ILE
1	B	455	ASP
1	B	461	PHE
1	B	466	VAL
1	B	468	GLN
1	B	473	SER
1	B	474	THR
1	B	479	ARG
1	B	480	LYS
1	B	504	GLU
1	B	509	VAL
1	B	516	ARG
1	B	520	GLN
1	B	532	ILE
1	B	540	CYS
1	B	554	TRP
1	B	557	SER
1	B	568	SER
1	B	575	THR
1	B	579	ASP
1	B	580	PHE
1	B	582	SER

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Mol	Chain	Res	Type
1	B	584	LYS
1	B	586	ILE
1	B	588	THR
1	B	592	SER
1	B	608	LEU
1	B	617	GLU
1	B	619	LEU
1	B	620	CYS
1	B	624	VAL
2	C	102	ILE
2	C	103	SER
3	K	35	SER
3	K	37	ARG
3	K	39	ASN
3	K	46	VAL
3	K	53	THR
3	K	59	THR
3	K	72	ILE
3	K	80	ASP
3	K	88	GLN
3	K	102	SER
3	K	109	VAL
3	K	111	SER
3	K	113	LEU
3	K	120	VAL
3	K	130	THR
3	K	140	LEU
3	K	142	LYS
3	K	165	MET
3	K	168	GLN
3	K	176	ARG
3	K	183	ASP
3	K	189	LEU
3	K	206	THR
3	K	208	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	139	ASN
1	B	229	HIS
1	B	378	ASN

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Mol	Chain	Res	Type
1	B	492	GLN
3	K	62	HIS

5.3.3   RNA ⓘ

There are no RNA molecules in this entry.

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

1 non-standard protein/DNA/RNA residue is 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	HYP	C	99	2	6,8,9	1.82	3 (50%)	5,10,12	2.18	2 (40%)

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	HYP	C	99	2	-	0/0/11/13	0/1/1/1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	99	HYP	CB-CA	-2.53	1.48	1.54
2	C	99	HYP	CB-CG	-2.45	1.47	1.52
2	C	99	HYP	O-C	2.18	1.28	1.19

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	C	99	HYP	CB-CG-CD	3.52	107.58	103.27
2	C	99	HYP	O-C-CA	-2.63	117.89	124.78

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

4 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	#$|Z| > 2$
4	NAG	B	702	1	14,14,15	0.57	0	17,19,21	1.42	2 (11%)
4	NAG	K	302	3	14,14,15	1.13	1 (7%)	17,19,21	2.27	3 (17%)
4	NAG	B	701	1	14,14,15	0.58	0	17,19,21	1.22	1 (5%)
4	NAG	K	301	3	14,14,15	0.47	0	17,19,21	1.24	2 (11%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	B	702	1	-	4/6/23/26	0/1/1/1
4	NAG	K	302	3	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	B	701	1	-	2/6/23/26	0/1/1/1
4	NAG	K	301	3	-	4/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	K	302	NAG	O7-C7	2.32	1.28	1.23

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	K	302	NAG	C1-O5-C5	7.13	121.86	112.19
4	B	702	NAG	C1-O5-C5	4.30	118.02	112.19
4	K	302	NAG	C3-C4-C5	-3.93	103.22	110.24
4	K	301	NAG	C2-N2-C7	3.17	127.41	122.90
4	B	701	NAG	C1-O5-C5	3.09	116.38	112.19
4	K	302	NAG	O4-C4-C3	2.28	115.61	110.35
4	B	702	NAG	O4-C4-C3	2.14	115.29	110.35
4	K	301	NAG	O5-C5-C6	2.00	110.35	107.20

There are no chirality outliers.

All (12) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
4	K	301	NAG	C1-C2-N2-C7
4	B	702	NAG	O5-C5-C6-O6
4	B	702	NAG	C8-C7-N2-C2
4	B	702	NAG	O7-C7-N2-C2
4	B	701	NAG	C8-C7-N2-C2
4	K	301	NAG	C8-C7-N2-C2
4	B	702	NAG	C4-C5-C6-O6
4	B	701	NAG	O7-C7-N2-C2
4	K	301	NAG	O7-C7-N2-C2
4	K	302	NAG	C8-C7-N2-C2
4	K	302	NAG	O7-C7-N2-C2
4	K	301	NAG	C4-C5-C6-O6

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	B	593/598 (99%)	-0.45	0	100	100	50, 78, 108, 135	0
2	C	11/12 (91%)	-0.62	0	100	100	55, 67, 75, 78	0
3	K	185/185 (100%)	-0.34	0	100	100	54, 68, 99, 129	0
All	All	789/795 (99%)	-0.43	0	100	100	50, 75, 106, 135	0

There are no RSRZ outliers to report.

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

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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	HYP	C	99	8/9	0.97	0.16	76,78,79,80	0

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

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

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
4	NAG	K	301	14/15	0.70	0.32	89,90,91,91	0
4	NAG	B	702	14/15	0.85	0.32	70,70,71,71	0
4	NAG	K	302	14/15	0.87	0.22	79,81,84,85	0
4	NAG	B	701	14/15	0.89	0.23	96,100,102,103	0

6.5 Other polymers ⓘ

There are no such residues in this entry.