



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 18, 2026 – 01:33 AM UTC

PDB ID : 2I60 / pdb_00002i60
Title : Crystal structure of [Phe23]M47, a scorpion-toxin mimic of CD4, in complex with HIV-1 YU2 GP120 envelope glycoprotein and anti-HIV-1 antibody 17B
Authors : Huang, C.-C.; Kwong, P.D.
Deposited on : 2006-08-26
Resolution : 2.40 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at validation@mail.wwpdb.org

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

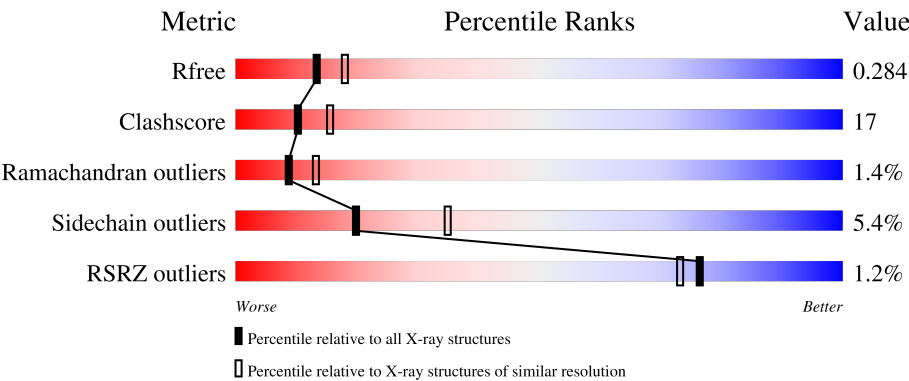
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

1 Overall quality at a glance i

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

The reported resolution of this entry is 2.40 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}	180053	4912 (2.40-2.40)
Clashscore	190562	5391 (2.40-2.40)
Ramachandran outliers	187476	5320 (2.40-2.40)
Sidechain outliers	187428	5321 (2.40-2.40)
RSRZ outliers	180081	4916 (2.40-2.40)

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 $\leq 5\%$. 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	G	313	% 64% 29% . .
1	P	313	4% 53% 40% .. .
2	L	214	70% 29% .
2	Q	214	64% 29% 7%
3	H	229	68% 24% 5% .

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Mol	Chain	Length	Quality of chain
3	R	229	
4	M	27	
4	S	27	

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
5	NAG	G	886	X	-	-	-
5	NAG	P	734	X	-	-	-
5	NAG	P	741	X	-	-	-
5	NAG	P	789	X	-	-	-

2 Entry composition

There are 7 unique types of molecules in this entry. The entry contains 12434 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 EXTERIOR MEMBRANE GLYCOPROTEIN(GP120).

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	G	301	Total	C	N	O	S	0	0	0
			2342	1468	407	447	20			
1	P	300	Total	C	N	O	S	0	0	0
			2332	1463	405	444	20			

There are 20 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
G	79	GLY	-	cloning artifact	UNP P35961
G	80	ALA	-	cloning artifact	UNP P35961
G	81	ARG	-	cloning artifact	UNP P35961
G	82	SER	-	cloning artifact	UNP P35961
G	128	GLY	-	linker	UNP P35961
G	129	ALA	-	linker	UNP P35961
G	194	GLY	-	linker	UNP P35961
G	298	GLY	-	linker	UNP P35961
G	299	ALA	-	linker	UNP P35961
G	329	GLY	-	linker	UNP P35961
P	79	GLY	-	cloning artifact	UNP P35961
P	80	ALA	-	cloning artifact	UNP P35961
P	81	ARG	-	cloning artifact	UNP P35961
P	82	SER	-	cloning artifact	UNP P35961
P	128	GLY	-	linker	UNP P35961
P	129	ALA	-	linker	UNP P35961
P	194	GLY	-	linker	UNP P35961
P	298	GLY	-	linker	UNP P35961
P	299	ALA	-	linker	UNP P35961
P	329	GLY	-	linker	UNP P35961

- Molecule 2 is a protein called ANTIBODY 17B LIGHT CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	L	214	Total	C	N	O	S	0	0	0
			1647	1028	282	332	5			
2	Q	214	Total	C	N	O	S	0	0	0
			1647	1028	282	332	5			

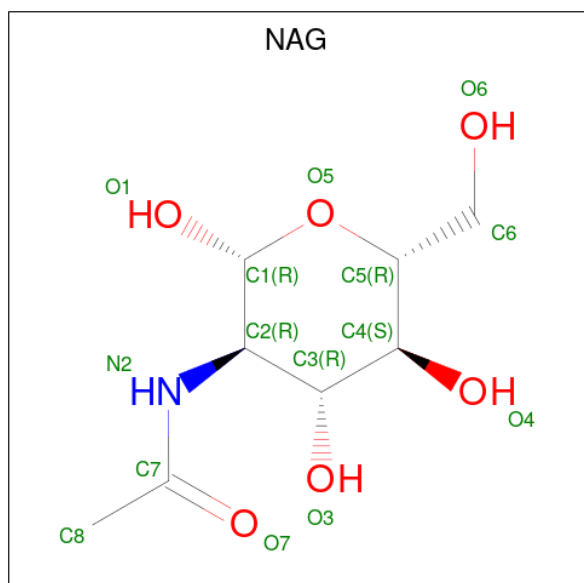
- Molecule 3 is a protein called ANTIBODY 17B HEAVY CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	H	221	Total	C	N	O	S	0	0	0
			1669	1057	280	327	5			
3	R	222	Total	C	N	O	S	0	0	0
			1678	1062	281	330	5			

- Molecule 4 is a protein called [PHE23]M47, SCORPION-TOXIN MIMIC OF CD4.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	M	27	Total	C	N	O	S	0	0	0
			201	126	38	31	6			
4	S	27	Total	C	N	O	S	0	0	0
			201	126	38	31	6			

- Molecule 5 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	G	1	Total	C	N	O	0	0
			14	8	1	5		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
5	G	1	Total	C	N	O	0	0
			14	8	1	5		
5	G	1	Total	C	N	O	0	0
			14	8	1	5		
5	G	1	Total	C	N	O	0	0
			14	8	1	5		
5	G	1	Total	C	N	O	0	0
			14	8	1	5		
5	G	1	Total	C	N	O	0	0
			14	8	1	5		
5	G	1	Total	C	N	O	0	0
			14	8	1	5		
5	G	1	Total	C	N	O	0	0
			14	8	1	5		
5	P	1	Total	C	N	O	0	0
			14	8	1	5		
5	P	1	Total	C	N	O	0	0
			14	8	1	5		
5	P	1	Total	C	N	O	0	0
			14	8	1	5		
5	P	1	Total	C	N	O	0	0
			14	8	1	5		
5	P	1	Total	C	N	O	0	0
			14	8	1	5		
5	P	1	Total	C	N	O	0	0
			14	8	1	5		
5	P	1	Total	C	N	O	0	0
			14	8	1	5		

- Molecule 6 is ISOPROPYL ALCOHOL (CCD ID: IPA) (formula: C₃H₈O).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
6	G	1	Total	C	O	0	0
			4	3	1		
6	P	1	Total	C	O	0	0
			4	3	1		

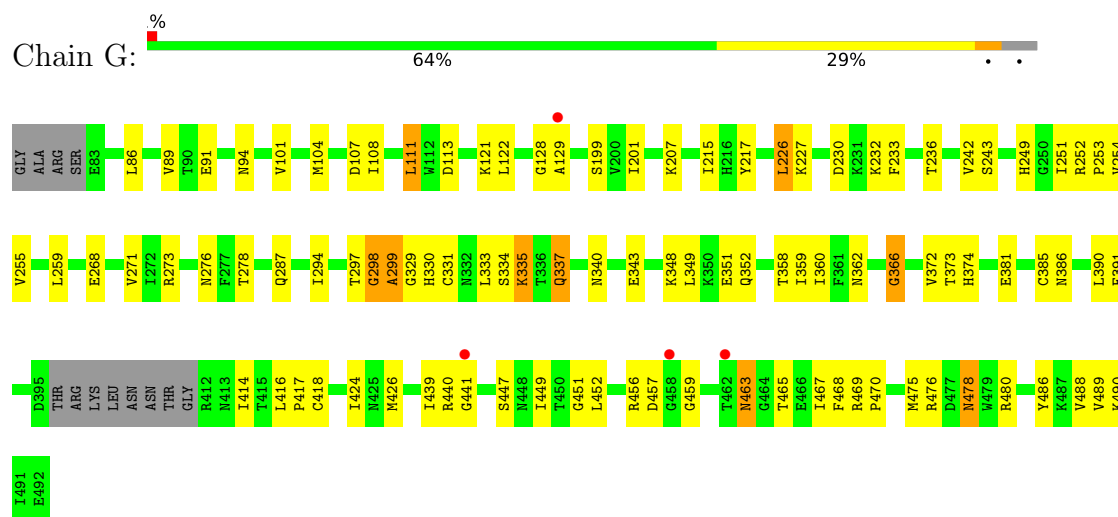
- Molecule 7 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	G	83	Total	O	0	0
			83	83		
7	L	85	Total	O	0	0
			85	85		
7	H	112	Total	O	0	0
			112	112		
7	M	7	Total	O	0	0
			7	7		
7	P	59	Total	O	0	0
			59	59		
7	Q	70	Total	O	0	0
			70	70		
7	R	61	Total	O	0	0
			61	61		
7	S	8	Total	O	0	0
			8	8		

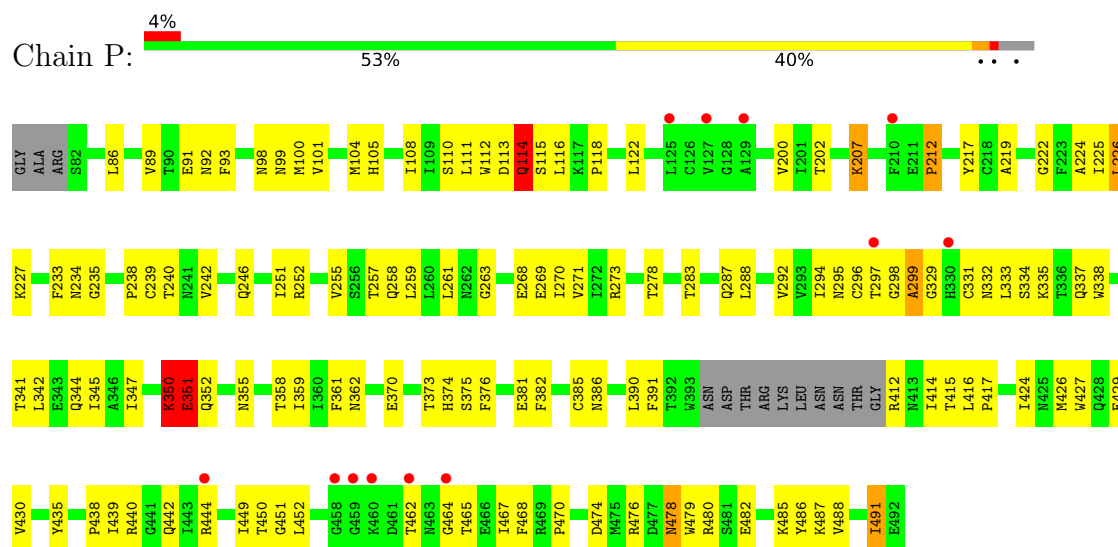
3 Residue-property plots

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: EXTERIOR MEMBRANE GLYCOPROTEIN(GP120)

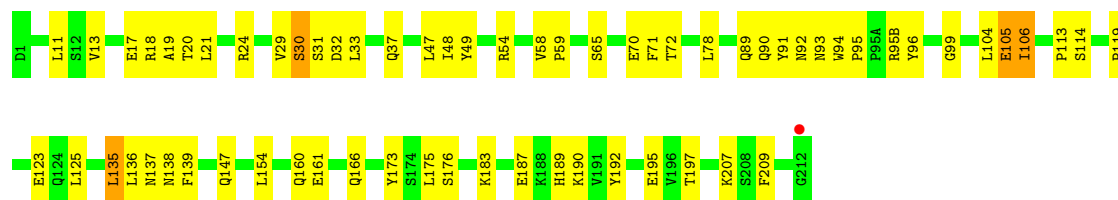


• Molecule 1: EXTERIOR MEMBRANE GLYCOPROTEIN(GP120)

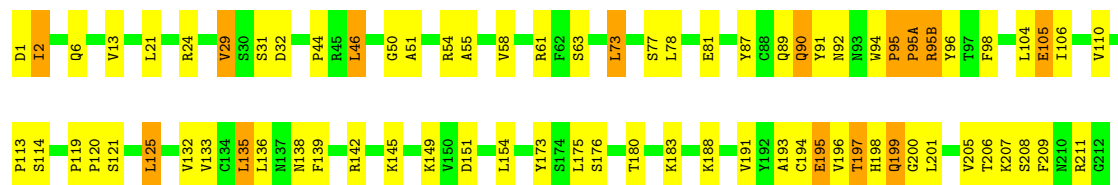


• Molecule 2: ANTIBODY 17B LIGHT CHAIN

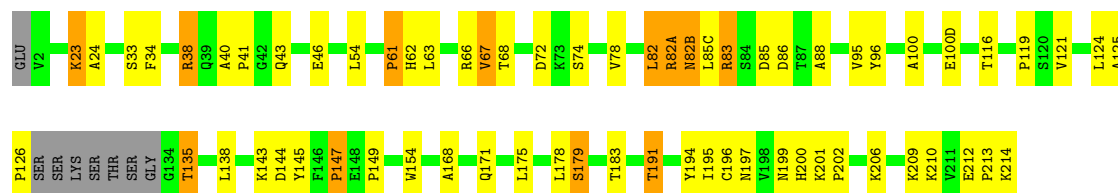




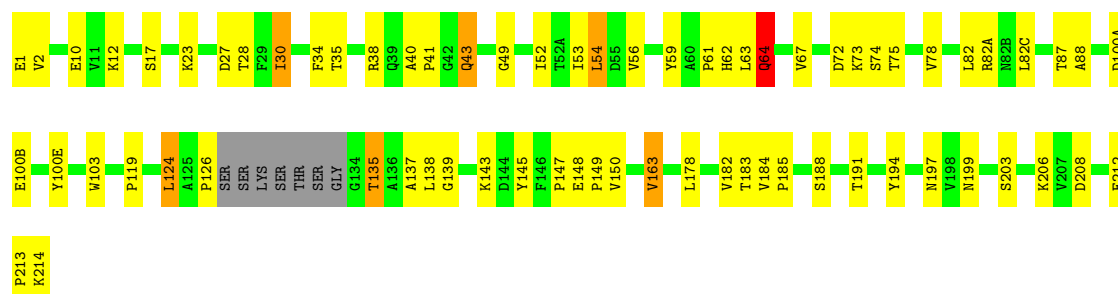
• Molecule 2: ANTIBODY 17B LIGHT CHAIN



• Molecule 3: ANTIBODY 17B HEAVY CHAIN



• Molecule 3: ANTIBODY 17B HEAVY CHAIN



• Molecule 4: [PHE23]M47, SCORPION-TOXIN MIMIC OF CD4



• Molecule 4: [PHE23]M47, SCORPION-TOXIN MIMIC OF CD4



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	51.44Å 157.76Å 109.85Å 90.00° 93.74° 90.00°	Depositor
Resolution (Å)	19.98 – 2.40 19.98 – 2.40	Depositor EDS
% Data completeness (in resolution range)	83.6 (19.98-2.40) 83.5 (19.98-2.40)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.10	Depositor
$\langle I/\sigma(I) \rangle$ ¹	2.30 (at 2.08Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.215 , 0.281 0.220 , 0.284	Depositor DCC
R_{free} test set	6863 reflections (10.11%)	wwPDB-VP
Wilson B-factor (Å ²)	28.0	Xtriage
Anisotropy	0.669	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.34 , 54.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.48$, $\langle L^2 \rangle = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	12434	wwPDB-VP
Average B, all atoms (Å ²)	37.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.87% 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, 0.333 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: MPT, VLM, NAG, DPR, IPA

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	G	0.42	0/2387	0.91	5/3234 (0.2%)
1	P	0.39	0/2377	0.92	11/3220 (0.3%)
2	L	0.46	0/1684	0.91	4/2288 (0.2%)
2	Q	0.41	0/1684	0.91	4/2288 (0.2%)
3	H	0.46	0/1708	0.96	2/2326 (0.1%)
3	R	0.44	0/1717	0.92	3/2338 (0.1%)
4	M	0.41	0/182	0.85	0/240
4	S	0.37	0/182	1.03	1/240 (0.4%)
All	All	0.43	0/11921	0.92	30/16174 (0.2%)

There are no bond length outliers.

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	H	86	ASP	N-CA-C	-8.36	103.09	113.38
2	Q	29	VAL	N-CA-C	-8.01	104.56	112.17
1	P	464	GLY	N-CA-C	-6.96	105.62	115.30
2	L	114	SER	N-CA-C	-6.29	99.39	109.96
2	Q	114	SER	N-CA-C	-6.15	100.48	110.20
1	P	252	ARG	CA-C-N	6.09	127.04	119.98
1	P	252	ARG	C-N-CA	6.09	127.04	119.98
1	P	427	TRP	N-CA-C	-6.03	106.05	113.41
1	G	366	GLY	N-CA-C	5.96	119.33	111.70
1	G	252	ARG	CA-C-N	5.84	125.85	119.90
1	G	252	ARG	C-N-CA	5.84	125.85	119.90
2	L	99	GLY	N-CA-C	-5.77	104.86	112.82
1	G	298	GLY	N-CA-C	-5.62	107.35	114.16
1	G	374	HIS	N-CA-C	-5.57	99.44	108.41
1	P	261	LEU	N-CA-C	5.49	118.42	109.59
2	L	106	ILE	N-CA-C	5.48	116.15	109.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	Q	196	VAL	N-CA-C	5.46	115.75	108.11
1	P	491	ILE	N-CA-C	5.43	116.42	109.30
1	P	424	ILE	N-CA-C	5.34	116.39	108.65
1	P	251	ILE	N-CA-C	5.34	115.67	107.77
3	H	33	SER	N-CA-C	-5.29	101.54	109.95
3	R	143	LYS	N-CA-C	5.26	117.86	109.81
3	R	59	TYR	N-CA-C	5.17	117.27	109.41
4	S	11	LYS	N-CA-C	-5.14	105.80	111.71
2	Q	133	VAL	N-CA-C	5.13	115.97	108.53
1	P	351	GLU	N-CA-C	-5.13	106.28	112.54
1	P	350	LYS	N-CA-C	-5.13	106.53	112.89
3	R	148	GLU	N-CA-C	-5.11	102.72	110.39
1	P	299	ALA	N-CA-C	-5.10	107.34	113.21
2	L	30	SER	CB-CA-C	-5.05	110.36	117.23

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	G	2342	0	2294	76	0
1	P	2332	0	2289	124	0
2	L	1647	0	1593	46	0
2	Q	1647	0	1593	55	0
3	H	1669	0	1638	47	0
3	R	1678	0	1647	44	0
4	M	201	0	201	7	0
4	S	201	0	201	7	0
5	G	112	0	104	7	0
5	P	112	0	104	12	0
6	G	4	0	8	0	0
6	P	4	0	8	2	0
7	G	83	0	0	2	0
7	H	112	0	0	1	0
7	L	85	0	0	3	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
7	M	7	0	0	0	0
7	P	59	0	0	5	0
7	Q	70	0	0	1	0
7	R	61	0	0	2	0
7	S	8	0	0	0	0
All	All	12434	0	11680	403	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 17.

All (403) 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:P:439:ILE:HG13	1:P:440:ARG:H	1.18	1.04
3:H:199:ASN:HD21	3:H:206:LYS:HG3	1.30	0.94
3:H:199:ASN:ND2	3:H:206:LYS:HG3	1.84	0.92
1:P:442:GLN:HE21	1:P:444:ARG:HD2	1.33	0.92
2:L:106:ILE:H	2:L:166:GLN:HE22	1.20	0.88
2:Q:145:LYS:HB3	2:Q:197:THR:HG23	1.53	0.88
2:Q:94:TRP:HA	2:Q:95:PRO:C	2.01	0.83
3:H:135:THR:HG23	3:H:183:THR:HG23	1.59	0.82
3:H:63:LEU:HD13	3:H:67:VAL:HG11	1.64	0.80
2:L:94:TRP:HA	2:L:95:PRO:C	2.06	0.80
3:R:135:THR:HG23	3:R:183:THR:HG23	1.63	0.79
1:G:440:ARG:HD3	1:G:441:GLY:H	1.48	0.77
2:Q:105:GLU:HG2	2:Q:106:ILE:N	2.00	0.77
1:G:386:ASN:ND2	5:G:886:NAG:C7	2.48	0.77
1:G:121:LYS:HD2	1:G:426:MET:HE1	1.66	0.74
3:R:191:THR:HG22	7:R:273:HOH:O	1.86	0.74
1:P:439:ILE:HG13	1:P:440:ARG:N	1.97	0.74
1:G:439:ILE:HG13	1:G:440:ARG:H	1.50	0.74
3:R:1:GLU:HG2	3:R:2:VAL:H	1.53	0.74
1:P:271:VAL:HG11	1:P:273:ARG:NH1	2.04	0.73
2:L:105:GLU:HG3	2:L:173:TYR:OH	1.88	0.72
2:L:113:PRO:HB3	2:L:139:PHE:HB3	1.74	0.69
1:G:386:ASN:O	1:G:416:LEU:HD23	1.92	0.69
2:L:21:LEU:HD12	2:L:21:LEU:N	2.07	0.68
3:H:38:ARG:HG3	3:H:46:GLU:HB3	1.75	0.68
1:P:122:LEU:CD2	1:P:200:VAL:HG22	2.23	0.68
2:L:32:ASP:HB2	2:L:92:ASN:HB2	1.75	0.67
1:G:107:ASP:O	1:G:111:LEU:HD22	1.93	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:98:ASN:C	1:P:98:ASN:HD22	1.99	0.67
1:G:439:ILE:HG13	1:G:440:ARG:N	2.08	0.67
3:H:83:ARG:HG3	3:H:85:ASP:OD1	1.93	0.67
1:G:207:LYS:HE3	1:G:381:GLU:OE2	1.94	0.67
1:G:440:ARG:HD3	1:G:441:GLY:N	2.10	0.66
1:P:444:ARG:HH11	1:P:444:ARG:HB3	1.61	0.66
1:P:98:ASN:ND2	1:P:100:MET:H	1.94	0.66
1:P:219:ALA:HB2	1:P:225:ILE:HG13	1.78	0.65
1:G:337:GLN:C	1:G:337:GLN:HE21	2.05	0.65
5:G:886:NAG:H3	5:G:886:NAG:C8	2.27	0.65
2:Q:91:TYR:HA	2:Q:96:TYR:CD1	2.32	0.65
4:S:3:LEU:O	4:S:7:GLN:HG3	1.97	0.64
3:R:30:ILE:HD11	3:R:73:LYS:HD3	1.79	0.64
1:P:390:LEU:HD11	1:P:416:LEU:HD11	1.80	0.64
1:G:227:LYS:HD2	1:G:486:TYR:CE2	2.34	0.63
2:L:105:GLU:HG2	2:L:106:ILE:N	2.12	0.63
3:H:171:GLN:HG3	3:H:175:LEU:O	1.98	0.63
2:Q:120:PRO:HD3	2:Q:132:VAL:HG22	1.80	0.63
1:P:100:MET:HE1	1:P:486:TYR:CB	2.29	0.63
1:P:442:GLN:HG2	1:P:444:ARG:HG3	1.80	0.63
3:R:1:GLU:HG2	3:R:2:VAL:N	2.14	0.63
1:P:412:ARG:HD2	1:P:412:ARG:N	2.14	0.63
1:P:474:ASP:OD2	4:S:21:DPR:HG3	1.99	0.62
1:G:232:LYS:O	1:G:232:LYS:HG3	1.99	0.62
3:R:178:LEU:HD12	3:R:178:LEU:C	2.24	0.62
1:G:255:VAL:HG13	1:G:475:MET:HE3	1.81	0.62
4:M:2:ASN:HD22	4:M:5:PHE:HB3	1.65	0.62
2:L:37:GLN:HB2	2:L:47:LEU:HD11	1.82	0.62
1:P:224:ALA:HB2	1:P:491:ILE:HD11	1.82	0.62
1:P:100:MET:HE1	1:P:486:TYR:C	2.25	0.61
1:P:297:THR:HG23	1:P:299:ALA:H	1.64	0.61
1:G:476:ARG:HB3	1:G:480:ARG:HH12	1.64	0.61
1:G:94:ASN:HA	1:G:236:THR:HG22	1.82	0.61
1:P:98:ASN:HD22	1:P:99:ASN:N	1.99	0.61
1:P:295:ASN:ND2	5:P:795:NAG:H82	2.16	0.61
2:Q:211:ARG:HH11	2:Q:211:ARG:HB3	1.66	0.61
1:G:478:ASN:N	1:G:478:ASN:HD22	1.99	0.60
3:H:121:VAL:O	3:H:209:LYS:HE3	2.00	0.60
7:L:214:HOH:O	3:H:179:SER:HB2	2.01	0.60
1:G:334:SER:OG	1:G:337:GLN:HB2	2.01	0.60
1:P:263:GLY:O	1:P:450:THR:HG21	2.00	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:R:119:PRO:HB3	3:R:145:TYR:HB3	1.83	0.60
1:P:118:PRO:HG3	1:P:435:TYR:CZ	2.36	0.60
1:P:258:GLN:HE21	1:P:470:PRO:HB2	1.66	0.60
1:G:233:PHE:O	1:G:273:ARG:NH1	2.35	0.60
1:G:251:ILE:C	1:G:253:PRO:HD3	2.26	0.60
3:R:100(A):ASP:OD1	3:R:100(B):GLU:HG3	2.02	0.59
2:Q:1:ASP:CG	2:Q:2:ILE:N	2.59	0.59
3:R:35:THR:HG23	3:R:49:GLY:O	2.03	0.59
2:Q:105:GLU:HG3	2:Q:173:TYR:OH	2.01	0.59
3:H:23:LYS:HD3	3:H:23:LYS:C	2.28	0.59
1:G:451:GLY:C	1:G:452:LEU:HD12	2.28	0.59
2:Q:149:LYS:HE2	2:Q:195:GLU:HG3	1.84	0.58
1:G:91:GLU:HG3	1:G:226:LEU:CD2	2.32	0.58
2:L:135:LEU:HD22	2:L:136:LEU:N	2.19	0.58
1:P:373:THR:HB	1:P:385:CYS:O	2.04	0.58
1:P:478:ASN:N	1:P:478:ASN:HD22	2.02	0.58
1:P:338:TRP:O	1:P:342:LEU:HG	2.04	0.58
1:G:488:VAL:HG12	7:G:965:HOH:O	2.03	0.57
2:L:29:VAL:O	2:L:29:VAL:HG12	2.04	0.57
1:P:442:GLN:HE21	1:P:444:ARG:CD	2.12	0.57
2:Q:1:ASP:CG	2:Q:2:ILE:H	2.11	0.57
2:Q:29:VAL:CG2	2:Q:90:GLN:HG3	2.34	0.57
1:P:332:ASN:HB3	1:P:415:THR:HA	1.85	0.57
1:G:297:THR:HG22	1:G:298:GLY:N	2.20	0.57
3:H:210:LYS:HE3	3:H:212:GLU:OE2	2.05	0.57
1:P:207:LYS:HE3	1:P:381:GLU:OE2	2.05	0.57
1:G:89:VAL:HG13	1:G:89:VAL:O	2.05	0.57
1:G:463:ASN:HB2	1:G:465:THR:HG22	1.87	0.57
2:L:183:LYS:O	2:L:187:GLU:HG2	2.05	0.56
1:P:298:GLY:C	1:P:329:GLY:H	2.13	0.56
1:G:255:VAL:CG1	1:G:475:MET:HE3	2.36	0.56
3:H:61:PRO:O	3:H:63:LEU:N	2.38	0.56
5:P:734:NAG:H3	5:P:734:NAG:H82	1.88	0.56
4:S:2:ASN:HB3	4:S:4:HIS:CD2	2.40	0.56
1:G:331:CYS:SG	1:G:418:CYS:SG	3.03	0.56
1:P:271:VAL:HG11	1:P:273:ARG:HH12	1.71	0.56
1:P:233:PHE:O	1:P:273:ARG:NH1	2.39	0.56
1:P:258:GLN:NE2	1:P:470:PRO:HB2	2.21	0.56
2:Q:29:VAL:HG12	2:Q:29:VAL:O	2.05	0.56
1:G:201:ILE:HG13	7:G:927:HOH:O	2.04	0.56
1:G:330:HIS:HA	1:G:416:LEU:O	2.06	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:108:ILE:HA	1:G:111:LEU:HD23	1.88	0.56
5:G:886:NAG:H3	5:G:886:NAG:H82	1.87	0.56
3:R:212:GLU:HG3	3:R:213:PRO:HD2	1.88	0.55
1:G:86:LEU:C	1:G:86:LEU:HD23	2.31	0.55
1:G:391:PHE:CG	1:G:470:PRO:HG3	2.40	0.55
1:G:489:VAL:HG22	1:G:490:LYS:N	2.21	0.55
2:L:154:LEU:HD23	7:L:281:HOH:O	2.05	0.55
2:Q:119:PRO:HB3	2:Q:209:PHE:CZ	2.41	0.55
2:Q:89:GLN:HB2	2:Q:98:PHE:CD1	2.41	0.55
4:M:11:LYS:HE2	4:M:16:LEU:HD23	1.89	0.55
1:P:444:ARG:HB3	1:P:444:ARG:NH1	2.21	0.55
2:Q:95:PRO:O	2:Q:95(B):ARG:HD3	2.07	0.55
3:H:178:LEU:HD12	3:H:178:LEU:C	2.32	0.54
2:L:54:ARG:HD2	2:L:58:VAL:O	2.07	0.54
1:P:331:CYS:SG	1:P:385:CYS:SG	3.05	0.54
2:Q:121:SER:O	2:Q:125:LEU:HD22	2.06	0.54
1:G:215:ILE:C	1:G:215:ILE:HD12	2.32	0.54
2:L:29:VAL:HG13	2:L:92:ASN:HB3	1.89	0.54
2:Q:211:ARG:HB3	2:Q:211:ARG:NH1	2.22	0.54
3:R:124:LEU:HB2	3:R:139:GLY:C	2.33	0.54
1:G:297:THR:HG22	1:G:299:ALA:H	1.72	0.54
1:P:488:VAL:HG12	7:P:914:HOH:O	2.08	0.54
1:P:105:HIS:HA	1:P:479:TRP:HE1	1.73	0.54
1:P:439:ILE:CG1	1:P:440:ARG:H	2.04	0.54
1:P:297:THR:C	1:P:299:ALA:H	2.16	0.54
3:H:138:LEU:HD12	3:H:138:LEU:C	2.33	0.54
2:Q:94:TRP:CE3	2:Q:95(A):PRO:HD3	2.44	0.53
3:H:195:ILE:HD13	3:H:210:LYS:HA	1.89	0.53
3:R:43:GLN:HE21	3:R:43:GLN:N	2.05	0.53
3:R:199:ASN:HD21	3:R:206:LYS:HD3	1.73	0.53
2:L:175:LEU:HD23	2:L:176:SER:N	2.24	0.53
2:L:21:LEU:N	2:L:21:LEU:CD1	2.71	0.53
1:P:122:LEU:HD11	3:R:54:LEU:HG	1.91	0.53
1:G:254:VAL:HG22	5:G:762:NAG:H83	1.91	0.52
1:P:386:ASN:O	1:P:416:LEU:HD22	2.09	0.52
2:Q:193:ALA:CB	2:Q:208:SER:HB3	2.39	0.52
3:R:72:ASP:OD2	3:R:74:SER:HB3	2.09	0.52
1:G:91:GLU:HG3	1:G:226:LEU:HD23	1.91	0.52
1:G:335:LYS:HB2	1:G:414:ILE:HG13	1.90	0.52
2:L:93:ASN:HD21	2:L:95(B):ARG:HB2	1.74	0.52
4:M:1:MPT:HB2	4:M:23:PHE:C	2.34	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:358:THR:HB	1:P:465:THR:HG22	1.91	0.52
2:Q:46:LEU:HD13	2:Q:55:ALA:HB2	1.92	0.52
2:Q:54:ARG:HD2	2:Q:58:VAL:HG12	1.91	0.52
1:P:370:GLU:HG2	4:S:23:PHE:CE2	2.44	0.52
2:L:19:ALA:HB2	2:L:78:LEU:HD21	1.92	0.52
1:P:334:SER:HB3	1:P:337:GLN:HB2	1.90	0.52
5:P:886:NAG:H83	7:P:938:HOH:O	2.10	0.52
2:L:123:GLU:HB2	7:L:285:HOH:O	2.10	0.52
2:L:147:GLN:HB3	2:L:195:GLU:HB3	1.90	0.52
3:H:82:LEU:HB3	3:H:85(C):LEU:HD21	1.92	0.51
1:P:476:ARG:HD3	7:P:889:HOH:O	2.08	0.51
2:Q:54:ARG:HG2	2:Q:58:VAL:HB	1.92	0.51
3:R:63:LEU:HD13	3:R:67:VAL:HG21	1.92	0.51
1:P:115:SER:C	1:P:116:LEU:HD12	2.35	0.51
2:Q:175:LEU:HD23	2:Q:176:SER:N	2.25	0.51
2:L:32:ASP:HB3	2:L:91:TYR:CD1	2.45	0.51
2:Q:193:ALA:HB2	2:Q:208:SER:HB3	1.92	0.51
3:R:27:ASP:OD2	3:R:28:THR:N	2.42	0.51
1:P:278:THR:HG22	5:P:776:NAG:H62	1.93	0.51
2:Q:113:PRO:HB3	2:Q:139:PHE:HB3	1.92	0.51
3:H:143:LYS:NZ	3:H:171:GLN:HE22	2.09	0.51
1:P:386:ASN:ND2	5:P:886:NAG:H82	2.27	0.51
1:G:366:GLY:HA2	1:G:372:VAL:HG22	1.92	0.50
2:L:78:LEU:HD11	2:L:104:LEU:HD21	1.93	0.50
2:L:175:LEU:HD23	2:L:175:LEU:C	2.36	0.50
3:H:201:LYS:HB2	3:H:202:PRO:HD3	1.93	0.50
1:P:98:ASN:C	1:P:98:ASN:ND2	2.69	0.50
2:Q:6:GLN:OE1	2:Q:87:TYR:HA	2.12	0.50
1:P:86:LEU:HD23	1:P:86:LEU:C	2.37	0.50
1:P:89:VAL:O	1:P:89:VAL:HG13	2.11	0.50
1:P:104:MET:HA	1:P:217:TYR:OH	2.11	0.50
1:P:239:CYS:SG	1:P:242:VAL:HG12	2.51	0.50
3:H:119:PRO:HB3	3:H:145:TYR:HB3	1.93	0.50
4:M:2:ASN:HD22	4:M:5:PHE:CB	2.24	0.50
1:G:232:LYS:HE2	1:G:271:VAL:HG13	1.93	0.50
1:G:373:THR:HB	1:G:385:CYS:O	2.12	0.50
1:P:341:THR:HG22	1:P:345:ILE:HD11	1.92	0.50
1:P:362:ASN:HD22	1:P:467:ILE:CG2	2.24	0.50
2:Q:21:LEU:HD12	2:Q:21:LEU:N	2.27	0.50
1:G:294:ILE:HG23	1:G:294:ILE:O	2.11	0.50
3:H:126:PRO:HG3	3:H:138:LEU:HB3	1.94	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:20:THR:C	2:L:21:LEU:HD12	2.36	0.50
3:H:200:HIS:CE1	3:H:202:PRO:HB2	2.47	0.50
2:L:24:ARG:NE	2:L:70:GLU:HG3	2.27	0.50
3:H:144:ASP:OD1	3:H:171:GLN:NE2	2.45	0.50
5:P:588:NAG:H2	7:P:931:HOH:O	2.12	0.50
1:P:105:HIS:HA	1:P:479:TRP:NE1	2.27	0.49
2:Q:194:CYS:O	2:Q:206:THR:HA	2.12	0.49
1:P:451:GLY:C	1:P:452:LEU:HD12	2.37	0.49
3:H:210:LYS:NZ	3:H:212:GLU:HG2	2.27	0.49
1:P:110:SER:O	1:P:114:GLN:HG3	2.12	0.49
1:P:386:ASN:HB3	1:P:417:PRO:HD2	1.94	0.49
2:Q:63:SER:O	2:Q:73:LEU:HD23	2.12	0.49
2:Q:95:PRO:O	2:Q:95(B):ARG:NH1	2.45	0.49
1:P:112:TRP:C	1:P:114:GLN:H	2.21	0.49
1:P:288:LEU:HG	1:P:450:THR:O	2.12	0.49
1:P:478:ASN:HD22	1:P:478:ASN:H	1.60	0.49
2:Q:29:VAL:HG21	2:Q:90:GLN:HG3	1.95	0.49
1:G:478:ASN:HD22	1:G:478:ASN:H	1.60	0.49
3:H:40:ALA:HB1	3:H:41:PRO:HD2	1.94	0.48
2:Q:32:ASP:HB3	2:Q:91:TYR:CD1	2.48	0.48
3:R:82(A):ARG:HD2	7:R:223:HOH:O	2.13	0.48
3:H:34:PHE:CG	3:H:78:VAL:HG21	2.49	0.48
1:P:202:THR:HG22	2:Q:95:PRO:HG3	1.95	0.48
3:H:40:ALA:HA	3:H:88:ALA:CB	2.44	0.48
1:P:91:GLU:HG3	1:P:226:LEU:HD23	1.93	0.48
3:R:184:VAL:HG11	3:R:194:TYR:CE1	2.49	0.48
1:G:359:ILE:O	1:G:360:ILE:HD13	2.14	0.48
4:M:2:ASN:ND2	4:M:5:PHE:HB3	2.28	0.48
1:P:255:VAL:HG12	6:P:502:IPA:H32	1.95	0.48
1:G:390:LEU:HG	1:G:416:LEU:HD21	1.96	0.48
2:Q:188:LYS:O	2:Q:188:LYS:HG2	2.14	0.48
1:P:207:LYS:HE2	1:P:438:PRO:HA	1.95	0.48
2:Q:44:PRO:HD2	3:R:103:TRP:CE3	2.48	0.48
1:P:234:ASN:C	1:P:234:ASN:OD1	2.56	0.48
1:P:333:LEU:N	1:P:333:LEU:HD23	2.29	0.48
1:G:362:ASN:HB3	1:G:469:ARG:NH1	2.28	0.48
2:L:91:TYR:HA	2:L:96:TYR:CD1	2.49	0.48
1:P:118:PRO:HG3	1:P:435:TYR:OH	2.13	0.48
2:L:161:GLU:HG2	2:L:175:LEU:HD21	1.96	0.47
2:Q:183:LYS:HB3	7:Q:269:HOH:O	2.14	0.47
4:S:15:LEU:HB3	4:S:27:VLM:O	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:P:259:LEU:HD13	1:P:449:ILE:HD13	1.96	0.47
1:P:294:ILE:HG23	1:P:294:ILE:O	2.15	0.47
2:Q:61:ARG:HD2	2:Q:77:SER:O	2.14	0.47
2:Q:175:LEU:HD23	2:Q:175:LEU:C	2.39	0.47
1:G:298:GLY:C	1:G:329:GLY:H	2.22	0.47
1:P:362:ASN:HD22	1:P:467:ILE:HG23	1.80	0.47
1:G:340:ASN:O	1:G:343:GLU:HB3	2.13	0.47
1:G:348:LYS:HD3	1:G:351:GLU:OE1	2.15	0.47
2:L:48:ILE:HG22	2:L:49:TYR:N	2.30	0.47
3:H:213:PRO:O	3:H:214:LYS:C	2.57	0.47
3:R:52:ILE:HG23	3:R:100(E):TYR:OH	2.14	0.47
3:R:137:ALA:C	3:R:138:LEU:HD12	2.40	0.47
1:G:91:GLU:HG3	1:G:226:LEU:HD21	1.95	0.47
1:G:251:ILE:O	1:G:253:PRO:HD3	2.15	0.47
1:P:359:ILE:HD12	1:P:359:ILE:N	2.30	0.47
3:R:12:LYS:HD3	3:R:17:SER:O	2.15	0.47
3:R:34:PHE:CG	3:R:78:VAL:HG21	2.49	0.47
2:L:65:SER:HB3	2:L:72:THR:HG23	1.97	0.46
1:P:92:ASN:OD1	1:P:238:PRO:HB3	2.15	0.46
1:P:258:GLN:NE2	1:P:470:PRO:CB	2.78	0.46
1:P:386:ASN:CG	5:P:886:NAG:H82	2.40	0.46
2:Q:151:ASP:HA	2:Q:191:VAL:CG1	2.45	0.46
2:L:33:LEU:HG	2:L:71:PHE:CG	2.51	0.46
3:H:135:THR:HG23	3:H:183:THR:CG2	2.39	0.46
4:M:2:ASN:ND2	4:M:5:PHE:CB	2.78	0.46
1:P:91:GLU:HA	1:P:91:GLU:OE2	2.15	0.46
3:R:82:LEU:HD22	3:R:82(C):LEU:HD23	1.98	0.46
1:P:335:LYS:HA	1:P:414:ILE:CD1	2.46	0.46
3:R:185:PRO:HG2	3:R:188:SER:OG	2.15	0.46
1:G:230:ASP:HB3	5:G:741:NAG:H81	1.96	0.46
1:P:297:THR:HG23	1:P:299:ALA:HB3	1.98	0.46
2:L:119:PRO:HB3	2:L:209:PHE:CZ	2.51	0.46
3:R:1:GLU:HG2	3:R:2:VAL:HG23	1.97	0.46
3:R:63:LEU:HD22	3:R:67:VAL:HG21	1.97	0.46
1:G:278:THR:HG22	5:G:776:NAG:O6	2.16	0.46
2:Q:32:ASP:HB2	2:Q:92:ASN:HB2	1.97	0.46
2:L:30:SER:OG	2:L:31:SER:N	2.49	0.46
2:L:94:TRP:CA	2:L:95:PRO:C	2.82	0.46
1:P:355:ASN:C	1:P:355:ASN:HD22	2.22	0.45
1:G:273:ARG:NH2	1:G:287:GLN:OE1	2.49	0.45
3:R:212:GLU:HG2	3:R:214:LYS:H	1.80	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:104:MET:HA	1:G:217:TYR:OH	2.16	0.45
1:P:296:CYS:HA	1:P:331:CYS:HA	1.97	0.45
1:P:430:VAL:CG2	4:S:1:MPT:HA1	2.46	0.45
2:Q:13:VAL:CG1	2:Q:104:LEU:HD21	2.45	0.45
1:G:391:PHE:CD2	1:G:470:PRO:HG3	2.51	0.45
1:G:101:VAL:HG21	1:G:480:ARG:HG2	1.99	0.45
1:G:489:VAL:HG22	1:G:490:LYS:H	1.79	0.45
1:P:382:PHE:HD1	7:P:905:HOH:O	1.99	0.45
3:R:1:GLU:CG	3:R:2:VAL:H	2.27	0.45
3:H:154:TRP:CH2	3:H:196:CYS:HB3	2.52	0.45
1:P:480:ARG:C	1:P:482:GLU:N	2.75	0.45
1:G:113:ASP:O	1:G:113:ASP:OD2	2.35	0.45
1:P:269:GLU:HA	5:P:789:NAG:O5	2.17	0.45
2:Q:105:GLU:HG2	2:Q:106:ILE:H	1.78	0.45
1:G:337:GLN:HE21	1:G:337:GLN:CA	2.26	0.45
3:H:82(A):ARG:O	3:H:82(B):ASN:C	2.59	0.45
1:P:98:ASN:HD22	1:P:100:MET:H	1.64	0.45
1:P:104:MET:O	1:P:108:ILE:HG12	2.17	0.45
3:R:53:ILE:HG13	3:R:53:ILE:O	2.15	0.45
3:H:61:PRO:C	3:H:63:LEU:H	2.25	0.45
3:H:66:ARG:NH2	3:H:83:ARG:HE	2.15	0.45
4:M:1:MPT:HB2	4:M:23:PHE:O	2.16	0.45
1:P:233:PHE:CE2	1:P:235:GLY:HA2	2.52	0.45
1:P:480:ARG:C	1:P:482:GLU:H	2.25	0.45
2:Q:29:VAL:HG22	2:Q:90:GLN:HG3	1.98	0.45
2:Q:104:LEU:C	2:Q:104:LEU:HD23	2.42	0.45
3:H:23:LYS:HD3	3:H:24:ALA:N	2.31	0.44
1:P:376:PHE:HA	6:P:502:IPA:H33	1.98	0.44
3:R:163:VAL:HG12	3:R:182:VAL:CG2	2.47	0.44
1:P:333:LEU:HD23	1:P:333:LEU:H	1.82	0.44
1:G:349:LEU:HD13	1:G:468:PHE:CE1	2.53	0.44
1:G:232:LYS:O	1:G:232:LYS:CG	2.65	0.44
1:P:344:GLN:OE1	5:P:789:NAG:H62	2.18	0.44
1:P:101:VAL:HG21	1:P:480:ARG:HG2	1.98	0.44
1:P:361:PHE:CD2	1:P:468:PHE:HB2	2.53	0.44
2:L:89:GLN:HG2	2:L:90:GLN:N	2.31	0.44
1:G:335:LYS:HG3	1:G:414:ILE:HD11	2.00	0.44
1:P:100:MET:HE1	1:P:486:TYR:HB3	1.99	0.44
1:P:270:ILE:HD12	1:P:344:GLN:HB3	2.00	0.44
2:Q:149:LYS:CE	2:Q:195:GLU:HG3	2.48	0.44
3:R:197:ASN:ND2	3:R:208:ASP:OD1	2.51	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:17:GLU:HG3	2:L:18:ARG:H	1.82	0.44
3:H:168:ALA:HA	3:H:178:LEU:HB3	1.99	0.44
1:G:333:LEU:O	1:G:414:ILE:N	2.45	0.44
2:L:19:ALA:CB	2:L:78:LEU:HD21	2.48	0.43
3:R:54:LEU:O	3:R:56:VAL:HG23	2.18	0.43
3:H:125:ALA:HA	3:H:126:PRO:HD3	1.90	0.43
2:L:29:VAL:HG11	2:L:90:GLN:HB2	2.00	0.43
3:H:209:LYS:HB2	3:H:209:LYS:HE2	1.81	0.43
2:Q:142:ARG:HB2	2:Q:173:TYR:CE2	2.53	0.43
1:G:259:LEU:HD13	1:G:449:ILE:HD13	2.01	0.43
1:P:270:ILE:HG23	1:P:287:GLN:O	2.18	0.43
3:H:95:VAL:HG22	3:H:96:TYR:N	2.34	0.43
1:P:93:PHE:CE2	1:P:487:LYS:HB3	2.54	0.43
1:P:240:THR:HG22	5:P:588:NAG:H3	2.00	0.43
2:L:137:ASN:ND2	2:L:138:ASN:OD1	2.51	0.43
1:P:259:LEU:HD13	1:P:449:ILE:CD1	2.48	0.43
2:Q:110:VAL:HG21	2:Q:199:GLN:NE2	2.33	0.43
1:G:242:VAL:HG22	1:G:243:SER:N	2.32	0.43
1:P:430:VAL:HG21	4:S:1:MPT:HA1	2.00	0.43
2:Q:198:HIS:C	2:Q:200:GLY:H	2.27	0.43
3:R:41:PRO:O	3:R:43:GLN:NE2	2.52	0.43
1:G:294:ILE:HG22	1:G:447:SER:O	2.19	0.42
2:L:154:LEU:N	2:L:154:LEU:HD22	2.34	0.42
3:H:72:ASP:OD2	3:H:74:SER:HB3	2.19	0.42
1:P:444:ARG:HH11	1:P:444:ARG:CB	2.30	0.42
2:Q:201:LEU:HD13	2:Q:205:VAL:HG23	2.00	0.42
3:H:68:THR:OG1	3:H:82(A):ARG:NH2	2.31	0.42
3:H:194:TYR:O	3:H:195:ILE:HD13	2.19	0.42
2:L:17:GLU:O	2:L:78:LEU:HD23	2.19	0.42
1:G:386:ASN:HB3	1:G:417:PRO:HD2	2.01	0.42
3:H:100:ALA:HA	3:H:100(D):GLU:O	2.19	0.42
3:H:191:THR:HB	7:H:307:HOH:O	2.18	0.42
2:Q:29:VAL:O	2:Q:29:VAL:CG1	2.68	0.42
2:Q:145:LYS:HD3	2:Q:197:THR:HG21	2.00	0.42
3:R:213:PRO:O	3:R:214:LYS:C	2.62	0.42
1:P:426:MET:HB2	1:P:429:GLU:O	2.20	0.42
1:G:249:HIS:ND1	1:G:486:TYR:OH	2.31	0.42
1:G:457:ASP:O	1:G:459:GLY:N	2.52	0.42
2:L:189:HIS:HB2	2:L:192:TYR:OH	2.20	0.42
3:H:40:ALA:HA	3:H:88:ALA:HB2	2.02	0.42
1:P:390:LEU:HG	1:P:416:LEU:HD21	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:R:126:PRO:HG3	3:R:138:LEU:CD1	2.50	0.42
1:P:246:GLN:HA	1:P:246:GLN:NE2	2.35	0.42
3:H:143:LYS:HG2	3:H:144:ASP:CG	2.45	0.42
1:P:100:MET:HE1	1:P:486:TYR:HB2	2.00	0.42
1:P:391:PHE:CD1	1:P:470:PRO:HG3	2.55	0.42
1:P:222:GLY:C	1:P:491:ILE:HG12	2.45	0.42
3:R:87:THR:O	3:R:88:ALA:HB2	2.20	0.42
2:Q:135:LEU:C	2:Q:136:LEU:HD12	2.45	0.41
1:G:122:LEU:HA	1:G:199:SER:O	2.21	0.41
1:P:227:LYS:HA	1:P:485:LYS:O	2.20	0.41
1:G:456:ARG:HA	1:G:467:ILE:O	2.20	0.41
1:P:212:PRO:HG2	5:P:762:NAG:H4	2.02	0.41
1:P:239:CYS:HB3	1:P:242:VAL:HG12	2.03	0.41
1:P:292:VAL:HB	1:P:449:ILE:HB	2.03	0.41
2:L:29:VAL:O	2:L:29:VAL:CG1	2.67	0.41
2:Q:50:GLY:O	2:Q:51:ALA:HB3	2.21	0.41
1:G:439:ILE:CG1	1:G:440:ARG:N	2.81	0.41
1:P:347:ILE:O	1:P:350:LYS:HG3	2.20	0.41
3:R:63:LEU:O	3:R:64:GLN:C	2.63	0.41
1:G:334:SER:CB	1:G:337:GLN:HB2	2.51	0.41
1:P:105:HIS:HB2	1:P:479:TRP:CD1	2.56	0.41
1:G:456:ARG:HD3	1:G:468:PHE:CE2	2.56	0.41
2:L:95(B):ARG:HD2	3:H:61:PRO:HD3	2.02	0.41
1:P:269:GLU:HA	5:P:789:NAG:C1	2.51	0.41
1:P:298:GLY:C	1:P:329:GLY:N	2.77	0.41
1:P:351:GLU:O	1:P:351:GLU:HG2	2.20	0.41
3:R:23:LYS:HE3	3:R:75:THR:O	2.21	0.41
2:L:32:ASP:OD2	2:L:92:ASN:ND2	2.42	0.41
2:Q:29:VAL:HG13	2:Q:92:ASN:CB	2.51	0.41
1:P:335:LYS:HB2	1:P:414:ILE:HG13	2.03	0.40
3:H:116:THR:HB	3:R:203:SER:HA	2.03	0.40
1:P:222:GLY:O	1:P:491:ILE:HG12	2.21	0.40
1:P:257:THR:O	1:P:259:LEU:N	2.54	0.40
1:P:341:THR:HG22	1:P:345:ILE:CD1	2.51	0.40
1:P:351:GLU:OE2	1:P:352:GLN:HG2	2.21	0.40
1:P:375:SER:O	1:P:376:PHE:HB3	2.21	0.40
3:R:178:LEU:C	3:R:178:LEU:CD1	2.92	0.40
2:Q:78:LEU:HD21	2:Q:104:LEU:HD21	2.03	0.40
3:R:72:ASP:OD2	3:R:72:ASP:C	2.64	0.40
2:L:207:LYS:HA	2:L:207:LYS:HD3	1.92	0.40
1:G:463:ASN:HB2	1:G:465:THR:CG2	2.51	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:G:795:NAG:O3	5:G:795:NAG:H83	2.22	0.40
2:L:11:LEU:HD23	2:L:104:LEU:HD11	2.04	0.40
3:H:195:ILE:CD1	3:H:210:LYS:HA	2.51	0.40
1:P:270:ILE:HG22	1:P:271:VAL:N	2.37	0.40
1:P:416:LEU:HA	1:P:417:PRO:HD3	1.91	0.40
3:R:40:ALA:HB1	3:R:41:PRO:HD2	2.02	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	G	297/313 (95%)	279 (94%)	12 (4%)	6 (2%)	6	7
1	P	296/313 (95%)	266 (90%)	25 (8%)	5 (2%)	7	10
2	L	212/214 (99%)	200 (94%)	11 (5%)	1 (0%)	24	37
2	Q	212/214 (99%)	194 (92%)	15 (7%)	3 (1%)	9	13
3	H	217/229 (95%)	203 (94%)	11 (5%)	3 (1%)	9	13
3	R	218/229 (95%)	203 (93%)	12 (6%)	3 (1%)	9	13
4	M	24/27 (89%)	23 (96%)	1 (4%)	0	100	100
4	S	24/27 (89%)	23 (96%)	1 (4%)	0	100	100
All	All	1500/1566 (96%)	1391 (93%)	88 (6%)	21 (1%)	9	13

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	H	62	HIS
1	P	114	GLN
2	Q	138	ASN
3	R	62	HIS

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Mol	Chain	Res	Type
3	R	64	GLN
1	G	129	ALA
1	G	268	GLU
1	P	462	THR
1	P	113	ASP
3	R	61	PRO
1	G	128	GLY
1	G	299	ALA
2	Q	199	GLN
1	G	276	ASN
3	H	61	PRO
1	P	268	GLU
2	Q	2	ILE
1	G	463	ASN
2	L	59	PRO
1	P	212	PRO
3	H	147	PRO

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	G	266/276 (96%)	258 (97%)	8 (3%)	36	58
1	P	265/276 (96%)	256 (97%)	9 (3%)	32	54
2	L	184/184 (100%)	177 (96%)	7 (4%)	29	49
2	Q	184/184 (100%)	167 (91%)	17 (9%)	8	14
3	H	186/193 (96%)	170 (91%)	16 (9%)	10	16
3	R	187/193 (97%)	175 (94%)	12 (6%)	16	28
4	M	20/20 (100%)	19 (95%)	1 (5%)	22	38
4	S	20/20 (100%)	19 (95%)	1 (5%)	22	38
All	All	1312/1346 (98%)	1241 (95%)	71 (5%)	20	35

All (71) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	G	111	LEU
1	G	226	LEU
1	G	335	LYS
1	G	337	GLN
1	G	352	GLN
1	G	358	THR
1	G	424	ILE
1	G	478	ASN
2	L	13	VAL
2	L	105	GLU
2	L	125	LEU
2	L	135	LEU
2	L	160	GLN
2	L	190	LYS
2	L	197	THR
3	H	23	LYS
3	H	38	ARG
3	H	43	GLN
3	H	54	LEU
3	H	67	VAL
3	H	82	LEU
3	H	82(A)	ARG
3	H	82(B)	ASN
3	H	83	ARG
3	H	124	LEU
3	H	135	THR
3	H	147	PRO
3	H	149	PRO
3	H	179	SER
3	H	191	THR
3	H	197	ASN
4	M	18	ARG
1	P	111	LEU
1	P	114	GLN
1	P	207	LYS
1	P	226	LEU
1	P	283	THR
1	P	350	LYS
1	P	351	GLU
1	P	374	HIS
1	P	478	ASN
2	Q	24	ARG
2	Q	31	SER

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Mol	Chain	Res	Type
2	Q	46	LEU
2	Q	73	LEU
2	Q	81	GLU
2	Q	90	GLN
2	Q	95	PRO
2	Q	95(A)	PRO
2	Q	95(B)	ARG
2	Q	105	GLU
2	Q	125	LEU
2	Q	135	LEU
2	Q	154	LEU
2	Q	180	THR
2	Q	195	GLU
2	Q	197	THR
2	Q	207	LYS
3	R	10	GLU
3	R	30	ILE
3	R	38	ARG
3	R	43	GLN
3	R	54	LEU
3	R	64	GLN
3	R	124	LEU
3	R	135	THR
3	R	147	PRO
3	R	149	PRO
3	R	150	VAL
3	R	163	VAL
4	S	4	HIS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (47) such sidechains are listed below:

Mol	Chain	Res	Type
1	G	197	ASN
1	G	203	GLN
1	G	216	HIS
1	G	229	ASN
1	G	330	HIS
1	G	337	GLN
1	G	352	GLN
1	G	355	ASN
1	G	413	ASN
1	G	478	ASN

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Mol	Chain	Res	Type
2	L	38	GLN
2	L	79	GLN
2	L	137	ASN
2	L	147	GLN
2	L	166	GLN
2	L	199	GLN
3	H	39	GLN
3	H	43	GLN
3	H	164	HIS
3	H	171	GLN
3	H	192	GLN
3	H	199	ASN
4	M	2	ASN
1	P	98	ASN
1	P	99	ASN
1	P	197	ASN
1	P	203	GLN
1	P	216	HIS
1	P	246	GLN
1	P	340	ASN
1	P	355	ASN
1	P	356	ASN
1	P	362	ASN
1	P	442	GLN
1	P	448	ASN
1	P	463	ASN
1	P	478	ASN
2	Q	90	GLN
2	Q	160	GLN
2	Q	189	HIS
2	Q	199	GLN
3	R	43	GLN
3	R	64	GLN
3	R	171	GLN
3	R	192	GLN
3	R	199	ASN
4	S	2	ASN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

4 non-standard protein/DNA/RNA residues 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	VLM	M	27	4	6,7,7	1.65	1 (16%)	7,9,9	0.66	0
4	VLM	S	27	4	6,7,7	1.38	1 (16%)	7,9,9	0.64	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
4	VLM	M	27	4	-	0/7/8/8	-
4	VLM	S	27	4	-	0/7/8/8	-

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	M	27	VLM	C-NT	-4.03	1.23	1.32
4	S	27	VLM	C-NT	-3.22	1.25	1.32

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	S	27	VLM	1	0

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

18 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
5	NAG	G	741	1	14,14,15	0.57	0	17,19,21	0.73	0
5	NAG	G	734	1	14,14,15	0.54	0	17,19,21	0.71	1 (5%)
5	NAG	P	795	1	14,14,15	0.59	0	17,19,21	0.85	1 (5%)
6	IPA	G	501	-	3,3,3	0.65	0	3,3,3	0.32	0
5	NAG	P	588	1	14,14,15	0.67	0	17,19,21	0.71	0
5	NAG	P	789	1	14,14,15	0.68	0	17,19,21	0.86	1 (5%)
5	NAG	P	741	1	14,14,15	0.68	0	17,19,21	0.75	0
5	NAG	G	762	1	14,14,15	0.50	0	17,19,21	0.79	0
5	NAG	P	734	1	14,14,15	0.65	0	17,19,21	0.70	0
5	NAG	P	762	1	14,14,15	0.52	0	17,19,21	0.74	0
5	NAG	P	776	1	14,14,15	0.57	0	17,19,21	0.70	1 (5%)
5	NAG	G	789	1	14,14,15	0.45	0	17,19,21	0.74	0
6	IPA	P	502	-	3,3,3	0.60	0	3,3,3	0.36	0
5	NAG	G	795	1	14,14,15	0.58	0	17,19,21	0.84	1 (5%)
5	NAG	G	886	1	14,14,15	0.96	1 (7%)	17,19,21	0.85	0
5	NAG	G	588	1	14,14,15	0.57	0	17,19,21	0.70	1 (5%)
5	NAG	G	776	1	14,14,15	0.52	0	17,19,21	0.80	1 (5%)
5	NAG	P	886	1	14,14,15	0.54	0	17,19,21	0.79	1 (5%)

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
5	NAG	G	741	1	-	0/6/23/26	0/1/1/1
5	NAG	G	734	1	-	5/6/23/26	0/1/1/1
5	NAG	P	795	1	-	5/6/23/26	0/1/1/1
5	NAG	P	588	1	-	3/6/23/26	0/1/1/1
5	NAG	P	789	1	1/1/5/7	3/6/23/26	0/1/1/1
5	NAG	P	741	1	1/1/5/7	4/6/23/26	0/1/1/1
5	NAG	G	762	1	-	4/6/23/26	0/1/1/1
5	NAG	P	734	1	1/1/5/7	6/6/23/26	0/1/1/1
5	NAG	P	762	1	-	2/6/23/26	0/1/1/1
5	NAG	P	776	1	-	4/6/23/26	0/1/1/1
5	NAG	G	789	1	-	0/6/23/26	0/1/1/1
5	NAG	G	886	1	1/1/5/7	3/6/23/26	0/1/1/1
5	NAG	G	795	1	-	4/6/23/26	0/1/1/1
5	NAG	G	588	1	-	4/6/23/26	0/1/1/1
5	NAG	G	776	1	-	4/6/23/26	0/1/1/1
5	NAG	P	886	1	-	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)
5	G	886	NAG	C1-C2	3.10	1.56	1.52

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	G	795	NAG	C2-N2-C7	-2.55	119.48	122.90
5	P	795	NAG	C2-N2-C7	-2.54	119.50	122.90
5	P	789	NAG	C2-N2-C7	-2.43	119.64	122.90
5	P	886	NAG	C2-N2-C7	-2.21	119.94	122.90
5	P	776	NAG	C2-N2-C7	-2.19	119.96	122.90
5	G	588	NAG	C2-N2-C7	-2.12	120.05	122.90
5	G	776	NAG	C2-N2-C7	-2.03	120.18	122.90
5	G	734	NAG	C2-N2-C7	-2.00	120.22	122.90

All (4) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
5	G	886	NAG	C1
5	P	734	NAG	C1

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Mol	Chain	Res	Type	Atom
5	P	741	NAG	C1
5	P	789	NAG	C1

All (55) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	G	588	NAG	C8-C7-N2-C2
5	G	588	NAG	O7-C7-N2-C2
5	G	734	NAG	C8-C7-N2-C2
5	G	734	NAG	O7-C7-N2-C2
5	G	762	NAG	C8-C7-N2-C2
5	G	762	NAG	O7-C7-N2-C2
5	G	776	NAG	C8-C7-N2-C2
5	G	776	NAG	O7-C7-N2-C2
5	G	795	NAG	C8-C7-N2-C2
5	G	795	NAG	O7-C7-N2-C2
5	G	886	NAG	C1-C2-N2-C7
5	G	886	NAG	C8-C7-N2-C2
5	G	886	NAG	O7-C7-N2-C2
5	P	734	NAG	C8-C7-N2-C2
5	P	734	NAG	O7-C7-N2-C2
5	P	741	NAG	C8-C7-N2-C2
5	P	741	NAG	O7-C7-N2-C2
5	P	762	NAG	C8-C7-N2-C2
5	P	762	NAG	O7-C7-N2-C2
5	P	776	NAG	C8-C7-N2-C2
5	P	776	NAG	O7-C7-N2-C2
5	P	789	NAG	C8-C7-N2-C2
5	P	789	NAG	O7-C7-N2-C2
5	P	795	NAG	C8-C7-N2-C2
5	P	795	NAG	O7-C7-N2-C2
5	P	886	NAG	C8-C7-N2-C2
5	P	886	NAG	O7-C7-N2-C2
5	P	734	NAG	O5-C5-C6-O6
5	P	776	NAG	O5-C5-C6-O6
5	P	886	NAG	O5-C5-C6-O6
5	G	762	NAG	C4-C5-C6-O6
5	G	734	NAG	O5-C5-C6-O6
5	P	734	NAG	C4-C5-C6-O6
5	P	886	NAG	C4-C5-C6-O6
5	P	795	NAG	O5-C5-C6-O6
5	P	741	NAG	C4-C5-C6-O6

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Mol	Chain	Res	Type	Atoms
5	G	734	NAG	C4-C5-C6-O6
5	P	795	NAG	C4-C5-C6-O6
5	P	776	NAG	C4-C5-C6-O6
5	G	762	NAG	O5-C5-C6-O6
5	P	741	NAG	O5-C5-C6-O6
5	P	588	NAG	C8-C7-N2-C2
5	G	795	NAG	O5-C5-C6-O6
5	P	588	NAG	O7-C7-N2-C2
5	G	734	NAG	C3-C2-N2-C7
5	G	795	NAG	C4-C5-C6-O6
5	G	776	NAG	C4-C5-C6-O6
5	G	588	NAG	C4-C5-C6-O6
5	P	734	NAG	C1-C2-N2-C7
5	P	789	NAG	O5-C5-C6-O6
5	P	734	NAG	C3-C2-N2-C7
5	G	588	NAG	O5-C5-C6-O6
5	P	588	NAG	O5-C5-C6-O6
5	G	776	NAG	O5-C5-C6-O6
5	P	795	NAG	C1-C2-N2-C7

There are no ring outliers.

13 monomers are involved in 21 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	G	741	NAG	1	0
5	P	795	NAG	1	0
5	P	588	NAG	2	0
5	P	789	NAG	3	0
5	G	762	NAG	1	0
5	P	734	NAG	1	0
5	P	762	NAG	1	0
5	P	776	NAG	1	0
6	P	502	IPA	2	0
5	G	795	NAG	1	0
5	G	886	NAG	3	0
5	G	776	NAG	1	0
5	P	886	NAG	3	0

5.7 Other polymers [i](#)

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	G	301/313 (96%)	0.05	4 (1%) 75 71	17, 35, 65, 76	0
1	P	300/313 (95%)	0.46	12 (4%) 42 38	28, 48, 73, 87	0
2	L	214/214 (100%)	-0.33	1 (0%) 87 85	14, 29, 42, 48	0
2	Q	214/214 (100%)	-0.02	0 100 100	19, 36, 59, 68	0
3	H	221/229 (96%)	-0.42	0 100 100	15, 25, 40, 73	0
3	R	222/229 (96%)	-0.11	0 100 100	15, 33, 48, 75	0
4	M	24/27 (88%)	0.45	1 (4%) 40 36	27, 40, 51, 59	0
4	S	24/27 (88%)	0.32	0 100 100	32, 38, 47, 58	0
All	All	1520/1566 (97%)	-0.02	18 (1%) 76 73	14, 35, 64, 87	0

All (18) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	P	458	GLY	3.5
1	P	459	GLY	3.4
1	G	129	ALA	3.1
1	P	464	GLY	2.9
1	P	129	ALA	2.8
1	P	297	THR	2.6
1	P	127	VAL	2.5
1	P	210	PHE	2.5
1	P	444	ARG	2.3
1	P	460	LYS	2.3
1	G	462	THR	2.3
1	P	125	LEU	2.3
1	G	441	GLY	2.3
1	P	330	HIS	2.3
1	P	462	THR	2.2
1	G	458	GLY	2.1

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Mol	Chain	Res	Type	RSRZ
4	M	4	HIS	2.1
2	L	212	GLY	2.0

6.2 Non-standard residues in protein, DNA, RNA chains [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
4	VLM	M	27	8/8	0.77	0.14	35,36,38,39	0
4	VLM	S	27	8/8	0.92	0.09	40,41,43,44	0
4	DPR	S	21	7/8	0.93	0.09	31,32,34,35	0
4	DPR	M	21	7/8	0.94	0.07	26,27,28,30	0

6.3 Carbohydrates [i](#)

There are no oligosaccharides 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
5	NAG	P	741	14/15	0.24	0.22	77,80,80,81	0
5	NAG	P	734	14/15	0.47	0.16	81,83,84,84	0
5	NAG	P	795	14/15	0.63	0.14	71,74,75,77	0
5	NAG	P	886	14/15	0.67	0.14	63,67,69,71	0
5	NAG	P	588	14/15	0.71	0.14	61,65,65,66	0
5	NAG	G	741	14/15	0.75	0.13	65,67,70,70	0
5	NAG	P	789	14/15	0.77	0.12	65,69,74,75	0
5	NAG	P	776	14/15	0.78	0.14	63,65,67,67	0
5	NAG	G	734	14/15	0.79	0.12	66,67,69,69	0
5	NAG	G	588	14/15	0.80	0.11	66,67,69,70	0
5	NAG	G	795	14/15	0.81	0.11	52,54,55,55	0
5	NAG	G	776	14/15	0.81	0.09	42,44,47,48	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
5	NAG	G	886	14/15	0.83	0.12	49,52,56,56	0
6	IPA	G	501	4/4	0.86	0.16	44,47,48,48	0
5	NAG	G	789	14/15	0.89	0.09	40,42,44,45	0
5	NAG	G	762	14/15	0.90	0.09	32,34,38,39	0
6	IPA	P	502	4/4	0.90	0.20	46,47,48,48	0
5	NAG	P	762	14/15	0.91	0.08	40,42,45,46	0

6.5 Other polymers [i](#)

There are no such residues in this entry.