WORLDWIDE wwPDB PROTEIN DATA BANK

Full wwPDB EM Validation Report ⓘ

Jun 15, 2025 – 12:49 AM JST

PDB ID	:	9JQR / pdb_00009jqr
EMDB ID	:	EMD-61740
Title	:	Cryo-EM structure of the Vgamma9Vdelta2 TCR-engaged BTN3A1-BTN3A2-BTN2A1 complex
Authors	:	Zhang, M.; Wang, Y.Q.; Xiao, J.Y.
Deposited on	:	2024-09-28
Resolution	:	3.00 Å(reported)

This is a Full wwPDB EM 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/EMValidationReportHelp
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:

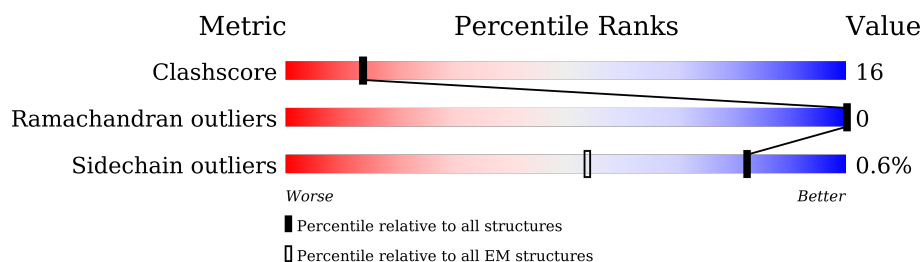|		
EMDB validation analysis	:	0.0.1.dev118
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.00 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
Clashscore		16
Ramachandran outliers		0
Sidechain outliers		0.6%

Worse — *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures

Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the 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 EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	527	55% 33% · 10%
2	B	318	59% 32% · 8%
3	D	274	62% 12% 26%
4	E	532	61% 28% 11%
4	F	532	61% 29% 11%
5	G	295	62% 16% 23%
6	C	3	33% 33% 33%
6	H	3	67% 33%

2 Entry composition ⓘ

There are 8 unique types of molecules in this entry. The entry contains 17295 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Butyrophilin subfamily 3 member A1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	475	3767	2403	650	698	16	0	0

There are 43 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	485	GLY	-	expression tag	UNP O00481
A	486	GLY	-	expression tag	UNP O00481
A	487	GLY	-	expression tag	UNP O00481
A	488	GLY	-	expression tag	UNP O00481
A	489	SER	-	expression tag	UNP O00481
A	490	GLY	-	expression tag	UNP O00481
A	491	GLY	-	expression tag	UNP O00481
A	492	GLY	-	expression tag	UNP O00481
A	493	GLY	-	expression tag	UNP O00481
A	494	SER	-	expression tag	UNP O00481
A	495	GLY	-	expression tag	UNP O00481
A	496	GLY	-	expression tag	UNP O00481
A	497	GLY	-	expression tag	UNP O00481
A	498	GLY	-	expression tag	UNP O00481
A	499	SER	-	expression tag	UNP O00481
A	500	TRP	-	expression tag	UNP O00481
A	501	SER	-	expression tag	UNP O00481
A	502	HIS	-	expression tag	UNP O00481
A	503	PRO	-	expression tag	UNP O00481
A	504	GLN	-	expression tag	UNP O00481
A	505	PHE	-	expression tag	UNP O00481
A	506	GLU	-	expression tag	UNP O00481
A	507	LYS	-	expression tag	UNP O00481
A	508	GLY	-	expression tag	UNP O00481
A	509	GLY	-	expression tag	UNP O00481
A	510	GLY	-	expression tag	UNP O00481
A	511	SER	-	expression tag	UNP O00481
A	512	GLY	-	expression tag	UNP O00481

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
A	513	GLY	-	expression tag	UNP O00481
A	514	GLY	-	expression tag	UNP O00481
A	515	SER	-	expression tag	UNP O00481
A	516	GLY	-	expression tag	UNP O00481
A	517	GLY	-	expression tag	UNP O00481
A	518	SER	-	expression tag	UNP O00481
A	519	ALA	-	expression tag	UNP O00481
A	520	TRP	-	expression tag	UNP O00481
A	521	SER	-	expression tag	UNP O00481
A	522	HIS	-	expression tag	UNP O00481
A	523	PRO	-	expression tag	UNP O00481
A	524	GLN	-	expression tag	UNP O00481
A	525	PHE	-	expression tag	UNP O00481
A	526	GLU	-	expression tag	UNP O00481
A	527	LYS	-	expression tag	UNP O00481

- Molecule 2 is a protein called Butyrophilin subfamily 3 member A2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	294	2260	1430	385	435	10	0	0

There are 13 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	306	GLY	-	expression tag	UNP P78410
B	307	GLY	-	expression tag	UNP P78410
B	308	GLY	-	expression tag	UNP P78410
B	309	GLY	-	expression tag	UNP P78410
B	310	SER	-	expression tag	UNP P78410
B	311	ASP	-	expression tag	UNP P78410
B	312	TYR	-	expression tag	UNP P78410
B	313	LYS	-	expression tag	UNP P78410
B	314	ASP	-	expression tag	UNP P78410
B	315	ASP	-	expression tag	UNP P78410
B	316	ASP	-	expression tag	UNP P78410
B	317	ASP	-	expression tag	UNP P78410
B	318	LYS	-	expression tag	UNP P78410

- Molecule 3 is a protein called Vdelta2 T cell receptor.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	D	203	Total 1598	C 1015	N 267	O 307	S 9	0	0

- Molecule 4 is a protein called Butyrophilin subfamily 2 member A1.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	E	475	Total 3821	C 2426	N 669	O 704	S 22	0	0
4	F	475	Total 3815	C 2418	N 668	O 706	S 23	0	0

There are 66 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
E	500	GLY	-	expression tag	UNP Q7KYR7
E	501	GLY	-	expression tag	UNP Q7KYR7
E	502	GLY	-	expression tag	UNP Q7KYR7
E	503	GLY	-	expression tag	UNP Q7KYR7
E	504	SER	-	expression tag	UNP Q7KYR7
E	505	TRP	-	expression tag	UNP Q7KYR7
E	506	SER	-	expression tag	UNP Q7KYR7
E	507	HIS	-	expression tag	UNP Q7KYR7
E	508	PRO	-	expression tag	UNP Q7KYR7
E	509	GLN	-	expression tag	UNP Q7KYR7
E	510	PHE	-	expression tag	UNP Q7KYR7
E	511	GLU	-	expression tag	UNP Q7KYR7
E	512	LYS	-	expression tag	UNP Q7KYR7
E	513	GLY	-	expression tag	UNP Q7KYR7
E	514	GLY	-	expression tag	UNP Q7KYR7
E	515	GLY	-	expression tag	UNP Q7KYR7
E	516	SER	-	expression tag	UNP Q7KYR7
E	517	GLY	-	expression tag	UNP Q7KYR7
E	518	GLY	-	expression tag	UNP Q7KYR7
E	519	GLY	-	expression tag	UNP Q7KYR7
E	520	SER	-	expression tag	UNP Q7KYR7
E	521	GLY	-	expression tag	UNP Q7KYR7
E	522	GLY	-	expression tag	UNP Q7KYR7
E	523	SER	-	expression tag	UNP Q7KYR7
E	524	ALA	-	expression tag	UNP Q7KYR7
E	525	TRP	-	expression tag	UNP Q7KYR7
E	526	SER	-	expression tag	UNP Q7KYR7
E	527	HIS	-	expression tag	UNP Q7KYR7
E	528	PRO	-	expression tag	UNP Q7KYR7

Continued on next page...

Continued from previous page...

Chain	Residue	Modelled	Actual	Comment	Reference
E	529	GLN	-	expression tag	UNP Q7KYR7
E	530	PHE	-	expression tag	UNP Q7KYR7
E	531	GLU	-	expression tag	UNP Q7KYR7
E	532	LYS	-	expression tag	UNP Q7KYR7
F	500	GLY	-	expression tag	UNP Q7KYR7
F	501	GLY	-	expression tag	UNP Q7KYR7
F	502	GLY	-	expression tag	UNP Q7KYR7
F	503	GLY	-	expression tag	UNP Q7KYR7
F	504	SER	-	expression tag	UNP Q7KYR7
F	505	TRP	-	expression tag	UNP Q7KYR7
F	506	SER	-	expression tag	UNP Q7KYR7
F	507	HIS	-	expression tag	UNP Q7KYR7
F	508	PRO	-	expression tag	UNP Q7KYR7
F	509	GLN	-	expression tag	UNP Q7KYR7
F	510	PHE	-	expression tag	UNP Q7KYR7
F	511	GLU	-	expression tag	UNP Q7KYR7
F	512	LYS	-	expression tag	UNP Q7KYR7
F	513	GLY	-	expression tag	UNP Q7KYR7
F	514	GLY	-	expression tag	UNP Q7KYR7
F	515	GLY	-	expression tag	UNP Q7KYR7
F	516	SER	-	expression tag	UNP Q7KYR7
F	517	GLY	-	expression tag	UNP Q7KYR7
F	518	GLY	-	expression tag	UNP Q7KYR7
F	519	GLY	-	expression tag	UNP Q7KYR7
F	520	SER	-	expression tag	UNP Q7KYR7
F	521	GLY	-	expression tag	UNP Q7KYR7
F	522	GLY	-	expression tag	UNP Q7KYR7
F	523	SER	-	expression tag	UNP Q7KYR7
F	524	ALA	-	expression tag	UNP Q7KYR7
F	525	TRP	-	expression tag	UNP Q7KYR7
F	526	SER	-	expression tag	UNP Q7KYR7
F	527	HIS	-	expression tag	UNP Q7KYR7
F	528	PRO	-	expression tag	UNP Q7KYR7
F	529	GLN	-	expression tag	UNP Q7KYR7
F	530	PHE	-	expression tag	UNP Q7KYR7
F	531	GLU	-	expression tag	UNP Q7KYR7
F	532	LYS	-	expression tag	UNP Q7KYR7

- Molecule 5 is a protein called Vgamma9 T cell receptor.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	G	228	1815	1158	302	349	6	0	0

- Molecule 6 is an oligosaccharide called beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms				AltConf	Trace
6	C	3	Total 39	C 22	N 2	O 15	0	0
6	H	3	Total 39	C 22	N 2	O 15	0	0

- Molecule 7 is (2E)-4-hydroxy-3-methylbut-2-en-1-yl trihydrogen diphosphate (CCD ID: H6P) (formula: $C_5H_{12}O_8P_2$) (labeled as "Ligand of Interest" by depositor).
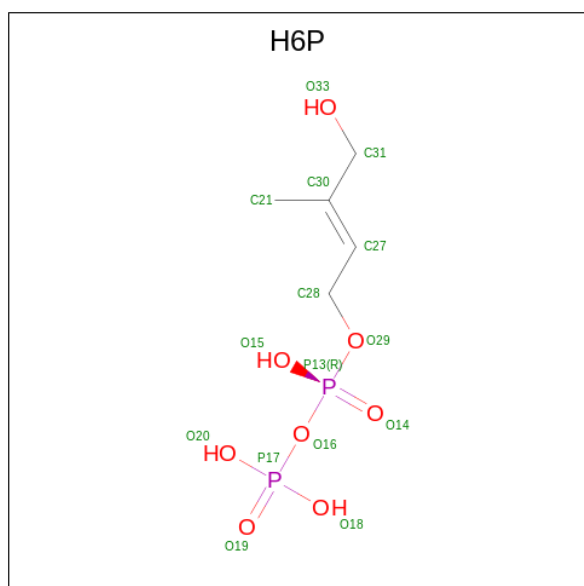
Mol	Chain	Residues	Atoms				AltConf
7	A	1	Total 15	C 5	O 8	P 2	0

- Molecule 8 is 2-acetamido-2-deoxy-beta-D-glucopyranose (CCD ID: NAG) (formula: $C_8H_{15}NO_6$).

Mol	Chain	Residues	Atoms				AltConf
8	B	1	Total	C	N	O	0
			14	8	1	5	
8	E	1	Total	C	N	O	0
			14	8	1	5	
8	E	1	Total	C	N	O	0
			14	8	1	5	
8	E	1	Total	C	N	O	0
			14	8	1	5	
8	F	1	Total	C	N	O	0
			14	8	1	5	
8	F	1	Total	C	N	O	0
			14	8	1	5	
8	F	1	Total	C	N	O	0
			14	8	1	5	
8	F	1	Total	C	N	O	0
			14	8	1	5	
8	F	1	Total	C	N	O	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 displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map 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 diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). 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.
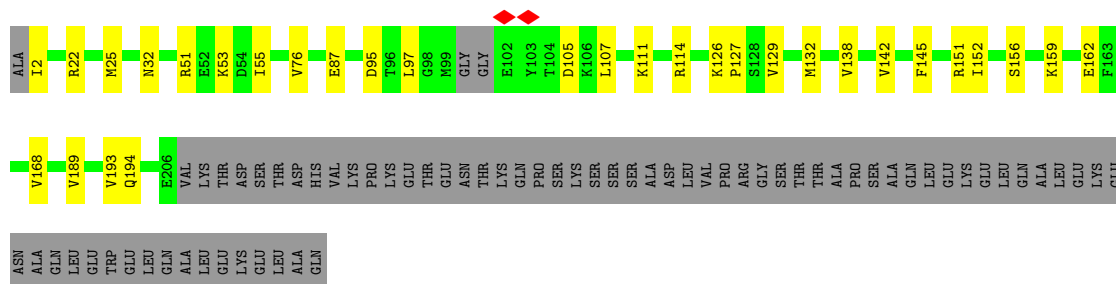
- Molecule 1: Butyrophilin subfamily 3 member A1

- Molecule 2: Butyrophilin subfamily 3 member A2

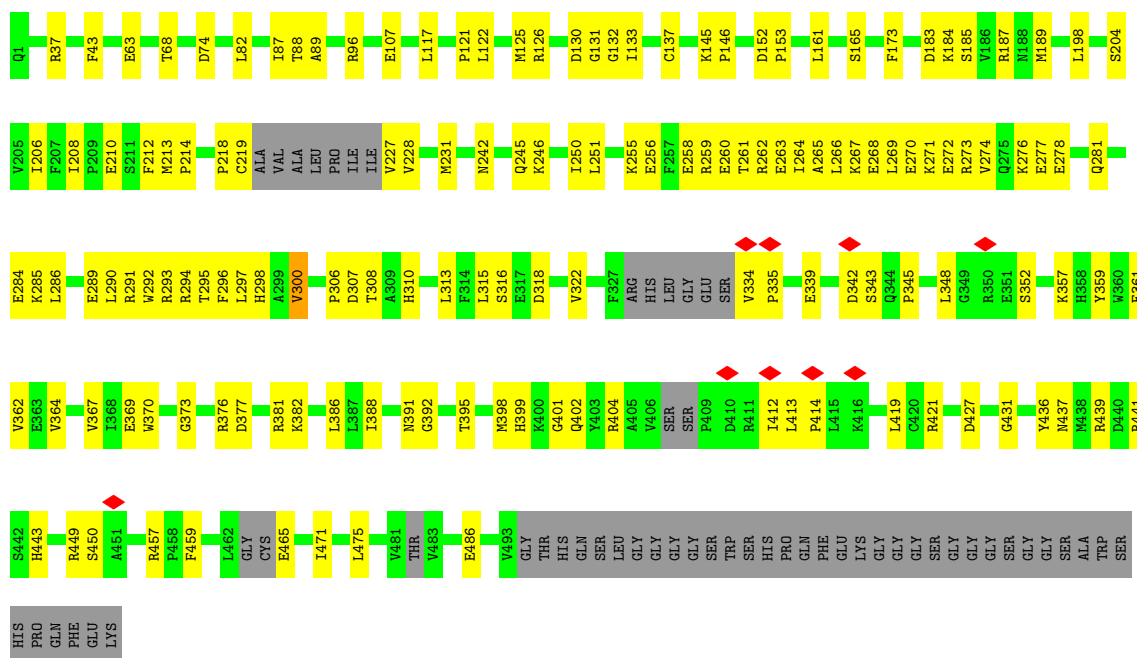E247 I248 T249 A250 L251 S252 S253 E254 I255 E256 S257 E260 M261 K262 Y266 A267 A268 T269 E270 R271 E272 I273 S274 L275 R276 E277 S278 L279 Q280 E281 E282 L283 K284 R285 K286 K287 I288 Q289 Y290 L291 T292 R293 G294 GLU SER SER ASP THR ASN LYS SER ALA GLY GLY GLY

SER ASP TYR LYS ASP ASP ASP LYS

• Molecule 3: Vdelta2 T cell receptor

Chain D: 62%   12%   26%

ALA I2 R22 M25 N32 R51 E52 K53 D54 I55 V76 E87 D95 T96 L97 G98 M99 GLY GLY E102 Y103 T104 D105 K106 L107 K111 R114 K126 P127 S128 V129 M132 V138 V142 F145 R151 I152 S156 K159 E162 F163 D164

V168 V189 V193 Q194 E206 VAL LYS THR ASP SER THR ASP HIS VAL LYS PRO LYS GLU THR GLU ASN THR LYS GLN PRO SER LYS SER SER ALA ASP VAL LEU VAL PRO ARG GLY SER THR THR ALA PRO SER ALA GLN LEU LEU GLU LYS GLU LEU GLN ALA LEU GLU LYS GLU

ASN ALA GLN LEU GLU TRP GLU LEU GLN ALA LEU GLU LYS GLU LEU ALA GLN

• Molecule 4: Butyrophilin subfamily 2 member A1

Chain E: 61%   28%   11%

Q1 R37 F43 E63 T68 D74 L82 I87 T88 A89 R96 E107 L117 P121 L122 M125 R126 D130 G131 G132 I133 C137 K145 P146 D152 P153 L161 S165 F173 D183 K184 S185 V186 R187 N188 M189 L198 S204

V205 I206 F207 I208 P209 E210 S211 F212 M213 P214 P218 C219 ALA VAL ALA LEU PRO ILE ILE V227 V228 M231 N242 Q245 Q246 I250 L251 K255 K256 F257 E258 R259 E260 T261 R262 E263 I264 A265 L266 K267 L269 E270 K271 E272 R273 V274 Q275 K276 E277 E278 Q281

E284 K285 L286 E289 L290 R291 W292 R293 R294 T295 F296 L297 H298 A299 V300 P306 D307 T308 A309 H310 L313 F314 L315 S316 E317 D318 V322 F327 ARG HIS LEU GLY GLU SER V334 P335 E339 D342 S343 Q344 P345 L348 G349 R350 E351 S352 K357 H358 Y359 W360 E361

V362 E363 V364 V367 I368 E369 W370 G373 R376 D377 R381 K382 L386 L387 I388 N391 G392 T395 M398 H399 K400 G401 Q402 Y403 R404 A405 V406 SER SER P409 D410 R411 I412 L413 P414 L415 K416 L419 C420 R421 D427 G431 Y436 N437 M438 R439 D440 R441

S442 H443 R449 S450 A451 R457 P458 F459 L462 GLY CYS E465 I471 L475 V481 THR V483 E486 V493 GLY THR HIS GLN SER LEU GLY GLY GLY SER TRP SER HIS PRO GLN PHE GLU LYS GLY GLY GLY SER GLY GLY GLY SER GLY GLY GLY SER ALA TRP SER

HIS PRO GLN PHE GLU LYS

• Molecule 4: Butyrophilin subfamily 2 member A1

Chain F: 61%   29%   11%

GLN F2 I3 V4 I11 T19 R22 C23 H24 L25 V36 R37 W38 F39 F48 V49 Y50 K51 R56 T57 E58 M61 E62 E63 T69 F70 V71 S72 K73 S79 V80 A81 L82 V83 I87 T88 E91 T94 Y95 R96 C97 Y98 F99 G102 R103 S104

• Molecule 5: Vgamma9 T cell receptor

Chain G:

62%	16%	23%

• Molecule 6: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-ac
etamido-2-deoxy-beta-D-glucopyranose

Chain C:

33%	33%	33%

• Molecule 6: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-ac
etamido-2-deoxy-beta-D-glucopyranose

Chain H:

67%	33%

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	282479	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	60.0	Depositor
Minimum defocus (nm)	1300	Depositor
Maximum defocus (nm)	1700	Depositor
Magnification	Not provided	
Image detector	FEI FALCON IV (4k x 4k)	Depositor
Maximum map value	19.269	Depositor
Minimum map value	-0.100	Depositor
Average map value	-0.021	Depositor
Map value standard deviation	0.336	Depositor
Recommended contour level	2	Depositor
Map size (Å)	399.0, 399.0, 399.0	wwPDB
Map dimensions	420, 420, 420	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	0.95, 0.95, 0.95	Depositor

5   Model quality ⓘ

5.1   Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: BMA, NAG, H6P

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	0.28	0/3857	0.55	6/5224 (0.1%)
2	B	0.37	0/2303	0.64	4/3117 (0.1%)
3	D	0.18	0/1632	0.36	0/2208
4	E	0.20	0/3905	0.42	0/5279
4	F	0.14	0/3900	0.36	0/5277
5	G	0.21	0/1854	0.39	1/2511 (0.0%)
All	All	0.24	0/17451	0.46	11/23616 (0.0%)

There are no bond length outliers.

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	B	131	GLY	N-CA-C	-7.89	104.99	115.40
1	A	227	LEU	CA-C-N	-7.18	111.13	119.32
1	A	227	LEU	C-N-CA	-7.18	111.13	119.32
1	A	96	LEU	CB-CA-C	-6.36	101.37	111.17
1	A	48	ASN	N-CA-C	6.08	118.09	108.79
1	A	95	TYR	N-CA-C	5.61	116.67	108.14
2	B	24	HIS	N-CA-C	5.60	117.49	109.14
1	A	39	VAL	N-CA-C	5.54	116.46	108.48
5	G	188	ASN	CB-CA-C	-5.20	110.59	116.63
2	B	256	GLU	N-CA-CB	5.13	117.66	110.12
2	B	126	LYS	N-CA-C	5.11	116.93	111.36

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	A	3767	0	3730	173	0
2	B	2260	0	2252	112	0
3	D	1598	0	1581	23	0
4	E	3821	0	3791	118	0
4	F	3815	0	3781	126	0
5	G	1815	0	1829	30	0
6	C	39	0	34	4	0
6	H	39	0	34	0	0
7	A	15	0	9	2	0
8	B	14	0	13	0	0
8	E	42	0	39	0	0
8	F	70	0	65	1	0
All	All	17295	0	17158	538	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 (538) 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:39:VAL:HG12	1:A:41:SER:H	1.23	1.00
1:A:35:GLU:HB3	1:A:100:GLN:O	1.71	0.88
1:A:224:ALA:O	1:A:228:PRO:HD2	1.77	0.84
1:A:241:LEU:O	1:A:244:GLN:HG3	1.79	0.82
1:A:39:VAL:HG13	1:A:46:VAL:HG22	1.64	0.79
1:A:39:VAL:HB	1:A:96:LEU:HB2	1.65	0.79
1:A:37:LYS:HG3	1:A:49:VAL:HG22	1.65	0.78
1:A:234:LEU:HB3	2:B:234:LEU:HD11	1.65	0.78
4:E:298:HIS:CE1	4:E:300:VAL:HG13	2.19	0.77
1:A:118:GLY:HA3	1:A:142:TRP:CE2	2.20	0.76
1:A:83:ARG:HG2	1:A:85:HIS:CE1	2.22	0.74
2:B:224:ALA:O	2:B:228:PRO:HD2	1.88	0.73
4:F:371:THR:HB	4:F:461:ARG:HB3	1.69	0.73
4:E:286:LEU:HA	4:E:289:GLU:HG2	1.69	0.73
1:A:237:ALA:HB1	2:B:241:LEU:HD11	1.69	0.73

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:126:LYS:HB2	2:B:134:HIS:CD2	2.25	0.72
4:F:118:GLY:HA3	4:F:142:TRP:CE2	2.24	0.72
3:D:22:ARG:HG2	3:D:76:VAL:HG22	1.72	0.71
4:E:298:HIS:CE1	4:F:296:PHE:HB3	2.25	0.71
1:A:242:TRP:O	1:A:245:GLN:HG2	1.90	0.71
1:A:261:LEU:HD11	2:B:262:LYS:HE3	1.73	0.70
1:A:223:LEU:CD1	2:B:223:LEU:HD23	2.21	0.70
2:B:134:HIS:HE1	2:B:178:SER:HB3	1.57	0.70
1:A:90:SER:O	1:A:91:ASP:C	2.33	0.70
2:B:11:ILE:HD11	2:B:22:PRO:HD2	1.73	0.70
2:B:128:TYR:CD2	2:B:131:GLY:HA2	2.26	0.69
2:B:126:LYS:HB2	2:B:134:HIS:HD2	1.57	0.69
2:B:136:GLU:OE1	2:B:138:ARG:NH2	2.25	0.69
5:G:38:TYR:OH	5:G:111:LYS:NZ	2.25	0.69
1:A:148:ILE:HG12	1:A:193:ILE:HG22	1.73	0.69
1:A:213:PHE:C	1:A:215:SER:H	2.00	0.69
4:E:270:GLU:HA	4:E:273:ARG:HG2	1.73	0.69
1:A:375:ARG:HH21	1:A:471:ILE:HB	1.57	0.68
2:B:227:LEU:O	2:B:230:LEU:HG	1.93	0.68
1:A:35:GLU:HA	1:A:51:ALA:HB2	1.76	0.68
2:B:251:LEU:O	2:B:254:GLU:HG3	1.94	0.68
1:A:39:VAL:HG12	1:A:41:SER:N	2.05	0.67
1:A:124:ASP:OD2	1:A:138:ARG:NH1	2.30	0.65
2:B:192:ILE:HG12	2:B:203:THR:HG22	1.78	0.65
1:A:286:ARG:HH11	1:A:290:TYR:HE1	1.42	0.65
1:A:227:LEU:HB3	1:A:228:PRO:HD2	1.78	0.65
4:F:399:HIS:HE2	4:F:404:ARG:HE	1.44	0.65
4:F:190:SER:HA	4:F:204:SER:O	1.96	0.65
4:E:449:ARG:NH1	4:E:450:SER:O	2.30	0.64
4:F:264:ILE:HA	4:F:267:LYS:HE2	1.78	0.64
1:A:31:ALA:HA	1:A:34:MET:HE2	1.79	0.64
4:F:98:TYR:HD1	4:F:107:GLU:HG3	1.63	0.64
2:B:133:ILE:HG21	2:B:208:ILE:CD1	2.28	0.64
2:B:243:ARG:HH11	2:B:246:LYS:NZ	1.97	0.63
4:E:292:TRP:HB2	4:E:296:PHE:CZ	2.34	0.63
1:A:208:ILE:HA	2:B:125:VAL:CG2	2.29	0.63
1:A:210:ASP:N	1:A:211:PRO:HD2	2.13	0.63
1:A:198:LEU:HG	1:A:200:LEU:HD13	1.81	0.62
4:E:125:MET:HE2	4:E:208:ILE:HG12	1.81	0.62
1:A:37:LYS:HB3	1:A:98:TYR:HB2	1.81	0.62
1:A:223:LEU:HD13	2:B:223:LEU:HD23	1.80	0.62

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:441:ARG:NH1	4:F:472:CYS:SG	2.73	0.62
1:A:7:PRO:HB3	1:A:22:PRO:HG2	1.82	0.62
2:B:229:ILE:HG12	2:B:230:LEU:HD23	1.81	0.62
1:A:239:TYR:O	1:A:243:GLN:HG2	2.00	0.61
1:A:290:TYR:HB3	1:A:303:TRP:HE1	1.66	0.61
4:F:257:PHE:O	4:F:260:GLU:HG2	2.01	0.61
4:F:38:TRP:CZ3	4:F:82:LEU:HB2	2.35	0.61
1:A:223:LEU:HD22	2:B:223:LEU:HB3	1.81	0.61
1:A:220:ILE:O	1:A:223:LEU:HG	2.01	0.60
2:B:257:SER:O	2:B:260:GLU:HG3	2.01	0.60
4:E:227:VAL:HG23	4:F:230:LEU:HD21	1.82	0.60
4:F:127:GLY:O	4:F:133:ILE:N	2.35	0.60
4:F:373:GLY:HA3	4:F:395:THR:HG22	1.82	0.60
1:A:39:VAL:CB	1:A:96:LEU:HB2	2.30	0.60
1:A:214:ARG:HA	1:A:214:ARG:HH21	1.66	0.60
2:B:217:GLN:O	2:B:220:ILE:HG12	2.02	0.60
4:E:412:ILE:HG13	4:E:414:PRO:HD3	1.84	0.60
4:E:436:TYR:HD2	4:F:475:LEU:HD13	1.67	0.60
1:A:83:ARG:CG	1:A:85:HIS:CE1	2.85	0.60
4:F:48:PHE:CE2	4:F:50:TYR:HB2	2.37	0.60
4:F:135:LEU:HD11	4:F:208:ILE:HD11	1.83	0.60
2:B:134:HIS:CE1	2:B:178:SER:HB3	2.37	0.59
2:B:262:LYS:HG2	2:B:266:TYR:CE2	2.37	0.59
1:A:414:THR:HG21	1:A:454:HIS:CD2	2.37	0.59
4:F:394:TRP:HB3	4:F:433:VAL:HG11	1.83	0.59
1:A:227:LEU:HB3	1:A:228:PRO:CD	2.32	0.59
1:A:227:LEU:O	1:A:231:LEU:HG	2.02	0.59
4:F:38:TRP:HZ2	4:F:80:VAL:HB	1.67	0.59
1:A:95:TYR:C	1:A:96:LEU:HD12	2.27	0.59
2:B:267:ALA:O	2:B:270:GLU:HG2	2.02	0.59
2:B:278:SER:O	2:B:281:GLU:HG3	2.01	0.59
4:F:363:GLU:HB3	4:F:470:PHE:HB2	1.85	0.59
2:B:244:GLN:NE2	2:B:245:GLN:HG3	2.18	0.58
2:B:243:ARG:HH11	2:B:246:LYS:HZ1	1.51	0.58
2:B:107:LYS:HE3	3:D:97:LEU:HD22	1.84	0.58
4:E:145:LYS:HE3	4:E:165:SER:HB2	1.86	0.58
4:E:369:GLU:OE1	4:E:465:GLU:N	2.36	0.58
1:A:213:PHE:CG	1:A:214:ARG:N	2.70	0.58
4:E:37:ARG:NH1	4:E:43:PHE:O	2.36	0.58
1:A:39:VAL:O	1:A:95:TYR:HA	2.03	0.58
4:E:291:ARG:O	4:E:295:THR:HG23	2.04	0.58

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:213:MET:SD	4:E:214:PRO:HD2	2.43	0.58
4:F:365:GLU:O	4:F:467:SER:OG	2.22	0.58
4:F:37:ARG:NH1	4:F:48:PHE:O	2.36	0.58
2:B:279:LEU:O	2:B:282:GLU:HG3	2.04	0.57
2:B:126:LYS:HD3	2:B:134:HIS:CD2	2.39	0.57
4:E:398:MET:HE2	4:E:401:GLY:H	1.69	0.57
4:E:306:PRO:HB3	4:E:315:LEU:HD22	1.85	0.57
1:A:220:ILE:HB	2:B:219:TRP:CH2	2.38	0.57
1:A:231:LEU:O	1:A:234:LEU:HG	2.04	0.57
4:E:218:PRO:O	4:E:219:CYS:C	2.48	0.57
4:E:315:LEU:HG	4:E:322:VAL:HG12	1.85	0.57
2:B:126:LYS:CB	2:B:134:HIS:HD2	2.18	0.57
2:B:130:ASP:C	2:B:132:GLY:H	2.12	0.57
2:B:133:ILE:HG21	2:B:208:ILE:HD13	1.86	0.57
1:A:38:TRP:CB	1:A:82:LEU:HD22	2.35	0.57
4:E:130:ASP:OD1	4:E:131:GLY:N	2.36	0.57
4:F:370:TRP:HZ3	4:F:372:VAL:HG22	1.69	0.57
1:A:35:GLU:HA	1:A:51:ALA:CB	2.35	0.57
1:A:280:LEU:O	1:A:284:ARG:HG3	2.04	0.57
4:F:345:PRO:HD2	4:F:461:ARG:HG2	1.87	0.57
1:A:94:LYS:O	1:A:95:TYR:CG	2.59	0.56
1:A:213:PHE:HE2	2:B:128:TYR:CD1	2.24	0.56
4:F:245:GLN:O	4:F:248:LYS:HG3	2.05	0.56
1:A:32:GLU:O	1:A:72:ARG:NH2	2.38	0.56
1:A:224:ALA:O	1:A:228:PRO:CD	2.50	0.56
2:B:288:ILE:HD13	2:B:291:LEU:HD21	1.88	0.56
1:A:48:ASN:OD1	1:A:82:LEU:HD11	2.06	0.56
2:B:239:TYR:OH	2:B:243:ARG:NH2	2.32	0.56
3:D:87:GLU:OE2	3:D:114:ARG:NH2	2.39	0.56
4:F:24:HIS:CD2	4:F:25:LEU:HD23	2.41	0.56
5:G:60:LYS:NZ	5:G:69:PHE:O	2.36	0.56
2:B:4:VAL:HG22	2:B:25:LEU:CD2	2.36	0.56
4:E:291:ARG:HA	4:E:294:ARG:NH1	2.21	0.55
2:B:68:THR:HB	2:B:82:LEU:HD11	1.88	0.55
3:D:156:SER:HB3	3:D:189:VAL:HG12	1.88	0.55
4:E:291:ARG:HA	4:E:294:ARG:CZ	2.36	0.55
4:F:144:PRO:CG	4:F:197:LEU:CD1	2.85	0.55
4:F:311:PRO:HB3	4:F:334:VAL:HG11	1.87	0.55
1:A:296:ARG:HB2	1:A:299:ALA:HB3	1.87	0.55
2:B:97:CYS:O	2:B:107:LYS:HA	2.06	0.55
4:E:255:LYS:HG3	4:F:251:LEU:HD11	1.89	0.55

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:G:2:GLY:HA2	5:G:28:ILE:HB	1.89	0.55
3:D:105:ASP:OD1	5:G:59:ARG:NH1	2.39	0.55
4:F:145:LYS:HA	4:F:173:PHE:CD2	2.42	0.55
5:G:70:GLU:OE2	5:G:85:HIS:NE2	2.26	0.55
1:A:82:LEU:O	1:A:82:LEU:HG	2.06	0.55
4:E:291:ARG:NH1	4:E:295:THR:HG21	2.22	0.55
4:E:273:ARG:O	4:E:276:LYS:HG3	2.06	0.54
1:A:290:TYR:HB3	1:A:303:TRP:NE1	2.22	0.54
1:A:316:ASP:OD2	1:A:319:THR:N	2.40	0.54
4:F:22:ARG:NH2	4:F:79:SER:OG	2.41	0.54
1:A:285:TRP:O	1:A:289:GLN:HG3	2.08	0.54
4:F:144:PRO:HG2	4:F:197:LEU:CD1	2.38	0.54
1:A:39:VAL:CG2	1:A:96:LEU:HB2	2.37	0.54
3:D:95:ASP:HB2	3:D:107:LEU:HD23	1.90	0.54
4:F:252:SER:O	4:F:255:LYS:HG3	2.07	0.54
2:B:244:GLN:O	2:B:247:GLU:HG2	2.08	0.54
4:F:434:SER:HA	4:F:445:TYR:O	2.07	0.54
5:G:138:LEU:HD21	5:G:228:PRO:HD2	1.90	0.54
1:A:119:SER:O	1:A:139:SER:OG	2.22	0.54
4:F:144:PRO:HD3	4:F:197:LEU:HD12	1.90	0.54
4:E:250:ILE:HG13	4:E:251:LEU:HD12	1.90	0.54
1:A:152:ASN:HA	1:A:189:VAL:HG12	1.90	0.53
1:A:38:TRP:HB3	1:A:82:LEU:HD22	1.90	0.53
1:A:50:TYR:HB3	1:A:70:ILE:HD12	1.90	0.53
4:F:144:PRO:CD	4:F:197:LEU:HD12	2.38	0.53
4:E:292:TRP:HB2	4:E:296:PHE:CE2	2.44	0.53
1:A:120:ASP:OD2	2:B:203:THR:OG1	2.25	0.53
2:B:230:LEU:O	2:B:233:LEU:HB3	2.08	0.53
4:F:142:TRP:HH2	4:F:202:LYS:HE2	1.73	0.53
1:A:436:ASP:OD2	1:A:439:THR:OG1	2.25	0.53
1:A:69:SER:O	1:A:82:LEU:HD12	2.09	0.53
2:B:192:ILE:HG23	2:B:201:GLU:HG3	1.91	0.53
1:A:61:SER:HB3	1:A:64:TYR:HB2	1.91	0.53
1:A:118:GLY:HA3	1:A:142:TRP:NE1	2.23	0.53
4:F:168:ASP:OD1	4:F:169:ALA:N	2.40	0.53
1:A:73:ASP:OD1	1:A:74:GLY:N	2.41	0.53
1:A:150:TRP:CD2	1:A:191:CYS:HB3	2.43	0.53
1:A:321:ASN:ND2	1:A:352:HIS:O	2.42	0.53
2:B:4:VAL:HG23	2:B:106:GLU:HB3	1.91	0.52
4:F:255:LYS:HA	4:F:258:GLU:HG3	1.90	0.52
4:F:316:SER:OG	4:F:321:SER:OG	2.26	0.52

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:39:VAL:HA	1:A:46:VAL:HG13	1.90	0.52
3:D:142:VAL:HG11	3:D:193:VAL:HG11	1.91	0.52
1:A:214:ARG:HH22	2:B:212:PHE:HD2	1.58	0.52
1:A:223:LEU:HD12	1:A:224:ALA:N	2.24	0.52
4:E:291:ARG:CZ	4:E:295:THR:HG21	2.38	0.52
1:A:38:TRP:HH2	1:A:80:ALA:HB3	1.74	0.52
1:A:85:HIS:O	1:A:86:ASN:C	2.52	0.52
2:B:122:HIS:HB3	2:B:138:ARG:HG2	1.90	0.52
4:E:183:ASP:OD1	4:E:185:SER:N	2.37	0.52
4:F:344:GLN:HE22	4:F:385:VAL:H	1.55	0.52
4:F:405:ALA:HB2	4:F:413:LEU:HD21	1.91	0.52
2:B:246:LYS:O	2:B:249:THR:HG22	2.09	0.52
2:B:262:LYS:HG2	2:B:266:TYR:HE2	1.74	0.52
4:F:38:TRP:CZ2	4:F:80:VAL:HB	2.45	0.52
1:A:118:GLY:HA2	1:A:141:GLY:O	2.10	0.52
4:F:39:PHE:CE2	4:F:96:ARG:HD2	2.45	0.52
1:A:124:ASP:OD1	1:A:136:GLU:HB2	2.09	0.51
1:A:442:ILE:HD11	1:A:461:PHE:HZ	1.75	0.51
2:B:219:TRP:CE3	2:B:223:LEU:HD22	2.46	0.51
4:F:69:THR:HB	4:F:83:VAL:HB	1.92	0.51
1:A:11:ILE:HB	1:A:112:LEU:HD12	1.91	0.51
1:A:227:LEU:HD12	1:A:230:LEU:HD11	1.91	0.51
1:A:317:PRO:HG3	1:A:326:VAL:HG11	1.92	0.51
3:D:111:LYS:HG2	5:G:45:VAL:HG12	1.92	0.51
1:A:419:ARG:NH1	7:A:601:H6P:O18	2.44	0.51
2:B:226:THR:O	2:B:229:ILE:HG12	2.10	0.51
2:B:252:SER:O	2:B:256:GLU:OE1	2.28	0.51
3:D:138:VAL:HG11	3:D:189:VAL:HG21	1.91	0.51
4:E:298:HIS:ND1	4:E:300:VAL:HG22	2.25	0.51
4:F:370:TRP:NE1	4:F:398:MET:HE2	2.25	0.51
1:A:375:ARG:NH2	1:A:473:THR:O	2.43	0.51
4:F:370:TRP:HE1	4:F:398:MET:HE2	1.75	0.51
1:A:209:ALA:HB3	1:A:214:ARG:HG3	1.92	0.51
4:E:242:ASN:O	4:E:245:GLN:HG2	2.10	0.51
1:A:154:LYS:HG3	1:A:156:GLU:HG3	1.92	0.51
3:D:132:MET:HE2	5:G:137:PHE:HB3	1.93	0.51
4:E:264:ILE:HA	4:E:267:LYS:HD3	1.93	0.51
1:A:213:PHE:C	1:A:215:SER:N	2.62	0.51
1:A:323:ILE:HG13	1:A:353:TYR:CE1	2.45	0.50
4:E:370:TRP:NE1	4:E:398:MET:HB2	2.26	0.50
3:D:127:PRO:HB3	3:D:145:PHE:HB3	1.92	0.50

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:304:LEU:HD22	4:F:347:VAL:HB	1.92	0.50
1:A:220:ILE:HG12	1:A:221:ALA:N	2.25	0.50
4:F:48:PHE:HE2	4:F:50:TYR:HB2	1.77	0.50
2:B:128:TYR:CG	2:B:131:GLY:HA2	2.46	0.50
2:B:230:LEU:HA	2:B:233:LEU:HB3	1.93	0.50
3:D:51:ARG:HB3	3:D:55:ILE:HB	1.93	0.50
2:B:4:VAL:HG22	2:B:25:LEU:HD23	1.93	0.50
4:E:334:VAL:N	4:E:335:PRO:HD2	2.27	0.50
1:A:143:TYR:CD1	1:A:144:PRO:HA	2.47	0.50
2:B:219:TRP:CZ3	2:B:223:LEU:HD22	2.46	0.50
1:A:50:TYR:CD1	1:A:50:TYR:C	2.90	0.50
1:A:94:LYS:HZ3	1:A:111:GLU:HB3	1.77	0.50
4:E:132:GLY:HA2	4:E:213:MET:HE1	1.94	0.50
4:E:256:GLU:O	4:E:259:ARG:HG3	2.11	0.50
4:E:258:GLU:O	4:E:262:ARG:HG2	2.12	0.50
4:E:261:THR:O	4:E:264:ILE:HG12	2.11	0.50
4:E:475:LEU:HD21	4:F:441:ARG:HE	1.76	0.50
5:G:136:ILE:HG23	6:C:1:NAG:H2	1.92	0.50
1:A:223:LEU:CD2	2:B:223:LEU:HD23	2.41	0.50
1:A:39:VAL:HB	1:A:96:LEU:CB	2.40	0.49
1:A:267:SER:HA	1:A:270:LYS:HG2	1.94	0.49
1:A:472:LEU:HD22	7:A:601:H6P:H31	1.93	0.49
5:G:7:PRO:O	5:G:213:ARG:NH2	2.42	0.49
1:A:227:LEU:O	1:A:228:PRO:C	2.52	0.49
4:E:152:ASP:HB2	4:E:153:PRO:HD2	1.94	0.49
4:E:297:LEU:HD13	4:E:357:LYS:HG3	1.93	0.49
4:E:352:SER:OG	4:E:457:ARG:NH2	2.41	0.49
4:E:63:GLU:OE1	4:E:63:GLU:N	2.43	0.49
2:B:290:TYR:O	2:B:293:ARG:HG2	2.12	0.49
5:G:88:GLU:OE1	5:G:90:GLN:NE2	2.30	0.49
4:F:307:ASP:OD1	4:F:337:ASN:ND2	2.46	0.49
5:G:136:ILE:HG22	6:C:1:NAG:H4	1.95	0.49
1:A:319:THR:HG22	1:A:347:GLU:HB3	1.94	0.49
4:E:298:HIS:CE1	4:F:296:PHE:CD1	3.00	0.49
4:F:438:MET:N	4:F:438:MET:HE2	2.27	0.49
4:F:371:THR:HG23	4:F:397:GLU:HG3	1.95	0.48
1:A:83:ARG:HG2	1:A:85:HIS:NE2	2.28	0.48
1:A:94:LYS:HZ2	1:A:110:VAL:C	2.21	0.48
4:E:290:LEU:HD23	4:E:290:LEU:O	2.12	0.48
4:F:321:SER:HB2	4:F:468:PRO:HB2	1.95	0.48
4:E:298:HIS:NE2	4:F:296:PHE:CD1	2.82	0.48

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:144:PRO:CG	4:F:197:LEU:HD12	2.44	0.48
1:A:217:GLN:HG3	1:A:218:ARG:CZ	2.44	0.48
1:A:367:TYR:HB2	1:A:434:PHE:CD1	2.49	0.48
4:E:278:GLU:HA	4:E:281:GLN:NE2	2.29	0.48
4:E:292:TRP:HZ3	4:F:298:HIS:NE2	2.11	0.48
1:A:220:ILE:CG1	2:B:219:TRP:HH2	2.26	0.48
1:A:228:PRO:HA	1:A:231:LEU:HD12	1.94	0.48
1:A:378:TRP:HZ3	1:A:380:ILE:HG12	1.78	0.48
2:B:228:PRO:O	2:B:232:LEU:HG	2.14	0.48
1:A:234:LEU:HB3	2:B:234:LEU:CD1	2.39	0.48
2:B:234:LEU:O	2:B:237:ALA:N	2.47	0.48
4:F:19:THR:HB	4:F:87:ILE:HD11	1.95	0.48
2:B:221:ALA:O	2:B:224:ALA:HB3	2.13	0.48
2:B:234:LEU:O	2:B:235:ALA:C	2.57	0.48
4:E:300:VAL:HG13	4:F:296:PHE:CD1	2.48	0.48
1:A:413:ARG:HD2	1:A:419:ARG:HB3	1.96	0.48
4:E:298:HIS:NE2	4:F:296:PHE:CG	2.82	0.48
1:A:210:ASP:N	1:A:211:PRO:CD	2.77	0.48
2:B:14:MET:HB2	2:B:17:GLU:CD	2.39	0.48
4:E:419:LEU:HA	4:E:439:ARG:HH12	1.79	0.48
4:F:37:ARG:HH12	4:F:49:VAL:HA	1.78	0.48
4:E:264:ILE:O	4:E:267:LYS:HG2	2.14	0.47
4:F:424:VAL:HG12	4:F:424:VAL:O	2.14	0.47
4:E:266:LEU:HA	4:E:269:LEU:HD12	1.95	0.47
4:E:362:VAL:HG22	4:E:471:ILE:HG12	1.96	0.47
2:B:252:SER:HA	2:B:255:ILE:HG12	1.95	0.47
4:F:245:GLN:O	4:F:249:LYS:HG2	2.14	0.47
4:F:374:VAL:HG21	4:F:426:LEU:HD12	1.95	0.47
5:G:70:GLU:O	5:G:82:LEU:HD12	2.14	0.47
2:B:115:ALA:HB2	2:B:197:LEU:HD23	1.97	0.47
2:B:276:ARG:O	2:B:279:LEU:HG	2.13	0.47
4:E:339:GLU:HA	4:E:381:ARG:HH11	1.79	0.47
4:F:116:GLY:N	4:F:143:TYR:O	2.47	0.47
1:A:40:SER:HB2	1:A:45:GLN:O	2.14	0.47
1:A:94:LYS:C	1:A:95:TYR:CG	2.92	0.47
4:E:343:SER:OG	4:E:382:LYS:O	2.32	0.47
5:G:41:ARG:HG2	5:G:93:ALA:HB2	1.96	0.47
1:A:387:VAL:HG21	1:A:401:PHE:CE2	2.50	0.47
1:A:395:MET:HG3	1:A:470:ARG:HH12	1.80	0.47
4:E:161:LEU:H	4:E:161:LEU:HD23	1.79	0.47
4:F:144:PRO:HG2	4:F:197:LEU:HD11	1.96	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:E:413:LEU:HD11	4:F:489:THR:HB	1.97	0.47
4:F:243:LYS:O	4:F:246:LYS:HG2	2.15	0.47
1:A:50:TYR:HD2	1:A:55:GLU:CA	2.28	0.47
1:A:125:VAL:HG12	1:A:135:LEU:HD23	1.96	0.47
2:B:229:ILE:CG1	2:B:230:LEU:N	2.77	0.47
4:F:433:VAL:HG12	4:F:447:CYS:SG	2.54	0.47
4:E:187:ARG:NH1	4:E:210:GLU:HB3	2.29	0.46
1:A:148:ILE:HD11	1:A:175:VAL:HB	1.97	0.46
4:E:268:GLU:O	4:E:272:GLU:OE1	2.33	0.46
1:A:375:ARG:NH1	1:A:475:GLU:HB3	2.31	0.46
3:D:129:VAL:HG22	3:D:142:VAL:HG12	1.96	0.46
4:E:96:ARG:NH1	4:E:107:GLU:OE2	2.49	0.46
4:E:121:PRO:O	4:E:204:SER:OG	2.24	0.46
4:F:183:ASP:OD1	4:F:184:LYS:N	2.49	0.46
4:E:293:ARG:O	4:E:293:ARG:HD3	2.14	0.46
4:E:285:LYS:O	4:E:289:GLU:HG2	2.15	0.46
4:E:437:ASN:O	4:E:441:ARG:N	2.47	0.46
1:A:434:PHE:HB2	1:A:443:SER:OG	2.15	0.46
2:B:126:LYS:CB	2:B:134:HIS:CD2	2.96	0.46
4:E:437:ASN:HD21	4:E:439:ARG:NH1	2.14	0.46
4:F:123:ILE:HD11	4:F:191:CYS:HB2	1.97	0.46
4:F:315:LEU:HD23	4:F:319:ARG:HG3	1.98	0.46
2:B:269:THR:O	2:B:273:ILE:HG23	2.15	0.46
2:B:281:GLU:HA	2:B:284:LYS:HG2	1.97	0.46
4:E:307:ASP:OD1	4:E:308:THR:N	2.49	0.46
4:F:283:LYS:O	4:F:283:LYS:HD3	2.16	0.46
4:F:399:HIS:ND1	4:F:400:LYS:HE2	2.31	0.46
4:E:68:THR:HB	4:E:82:LEU:HD11	1.97	0.46
4:E:293:ARG:HD3	4:E:293:ARG:C	2.41	0.46
1:A:150:TRP:CE2	1:A:191:CYS:HB3	2.50	0.45
1:A:241:LEU:C	1:A:241:LEU:HD23	2.41	0.45
4:E:475:LEU:HB3	4:F:436:TYR:HE2	1.81	0.45
5:G:132:PRO:HD3	5:G:214:HIS:ND1	2.30	0.45
1:A:36:LEU:O	1:A:49:VAL:HG13	2.17	0.45
1:A:277:VAL:O	1:A:280:LEU:HG	2.16	0.45
4:F:113:VAL:HG22	8:F:603:NAG:H62	1.99	0.45
4:F:292:TRP:CD1	4:F:293:ARG:HH21	2.34	0.45
1:A:241:LEU:O	1:A:242:TRP:C	2.59	0.45
4:E:263:GLU:O	4:E:266:LEU:HG	2.17	0.45
4:F:24:HIS:HD2	4:F:25:LEU:HD23	1.82	0.45
4:F:256:GLU:O	4:F:259:ARG:HG3	2.17	0.45

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:G:4:LEU:HD12	5:G:23:CYS:SG	2.56	0.45
5:G:50:VAL:HG12	5:G:60:LYS:HG2	1.98	0.45
1:A:223:LEU:O	1:A:226:THR:HG22	2.16	0.45
2:B:270:GLU:HG2	2:B:271:ARG:N	2.31	0.45
4:F:304:LEU:O	4:F:350:ARG:NH1	2.50	0.45
1:A:268:THR:O	1:A:271:GLN:HG3	2.16	0.45
4:F:4:VAL:HG21	4:F:99:PHE:CD1	2.51	0.45
2:B:231:LEU:C	2:B:231:LEU:HD23	2.42	0.45
3:D:152:ILE:HG12	3:D:193:VAL:HG12	1.99	0.45
4:E:427:ASP:O	4:E:431:GLY:N	2.49	0.45
5:G:136:ILE:HG13	5:G:227:PHE:CE2	2.52	0.45
1:A:96:LEU:HB3	1:A:98:TYR:CE1	2.52	0.45
1:A:228:PRO:O	1:A:232:LEU:HD23	2.17	0.45
4:E:133:ILE:HG23	4:F:212:PHE:HZ	1.82	0.45
4:E:260:GLU:O	4:E:264:ILE:HG23	2.16	0.45
4:F:38:TRP:HZ3	4:F:82:LEU:HB2	1.80	0.45
4:F:187:ARG:HA	4:F:187:ARG:HD3	1.76	0.45
4:F:262:ARG:HG2	4:F:266:LEU:HD23	1.98	0.45
2:B:37:LYS:HG3	2:B:49:VAL:HG22	1.99	0.45
4:E:265:ALA:HA	4:E:268:GLU:CD	2.41	0.45
4:F:24:HIS:CD2	4:F:25:LEU:H	2.35	0.45
1:A:343:PRO:O	1:A:348:ARG:NH2	2.50	0.45
2:B:222:ALA:O	2:B:226:THR:HG23	2.17	0.45
2:B:270:GLU:O	2:B:273:ILE:HG12	2.17	0.45
4:F:61:MET:HG2	4:F:63:GLU:OE1	2.17	0.45
1:A:225:GLY:O	1:A:229:VAL:HG23	2.17	0.44
2:B:121:LEU:HD12	2:B:137:CYS:SG	2.57	0.44
4:E:313:LEU:HD21	4:E:345:PRO:HB3	1.98	0.44
4:F:281:GLN:HA	4:F:284:GLU:OE1	2.17	0.44
1:A:82:LEU:O	1:A:83:ARG:C	2.59	0.44
4:E:286:LEU:HA	4:E:289:GLU:CG	2.42	0.44
4:E:370:TRP:HE1	4:E:398:MET:HB2	1.81	0.44
1:A:220:ILE:HB	2:B:219:TRP:HH2	1.81	0.44
1:A:334:GLN:HG2	1:A:478:ALA:HB2	1.98	0.44
2:B:285:ARG:O	2:B:289:GLN:OE1	2.35	0.44
4:E:145:LYS:HA	4:E:146:PRO:HD3	1.83	0.44
1:A:223:LEU:HD12	1:A:224:ALA:H	1.83	0.44
4:E:145:LYS:HA	4:E:173:PHE:HD2	1.82	0.44
2:B:41:SER:OG	3:D:32:ASN:OD1	2.36	0.44
4:E:388:ILE:HG13	4:E:391:ASN:H	1.81	0.44
1:A:299:ALA:O	1:A:302:GLU:HG3	2.18	0.44

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:53:LYS:HA	3:D:53:LYS:HD2	1.61	0.44
4:E:486:GLU:O	4:F:411:ARG:NH1	2.44	0.44
4:F:121:PRO:HB3	4:F:193:ILE:HD11	1.99	0.44
4:E:274:VAL:O	4:E:277:GLU:HB3	2.17	0.44
4:E:290:LEU:O	4:E:291:ARG:C	2.60	0.44
4:F:146:PRO:C	4:F:147:LEU:HD22	2.42	0.44
2:B:270:GLU:HA	2:B:273:ILE:HG12	1.99	0.44
4:E:361:GLU:OE2	4:E:421:ARG:HB2	2.17	0.44
1:A:334:GLN:OE1	1:A:335:ARG:N	2.38	0.44
1:A:257:ARG:HA	1:A:260:GLU:HG2	2.00	0.43
1:A:279:LEU:O	1:A:282:GLU:HG3	2.18	0.43
2:B:241:LEU:O	2:B:244:GLN:HG3	2.18	0.43
4:F:36:VAL:HA	4:F:98:TYR:O	2.18	0.43
4:F:37:ARG:O	4:F:97:CYS:HA	2.17	0.43
4:E:125:MET:O	4:E:126:ARG:HD2	2.18	0.43
4:E:268:GLU:O	4:E:271:LYS:HB3	2.19	0.43
4:F:206:ILE:HG13	4:F:207:PHE:H	1.83	0.43
1:A:117:LEU:HG	1:A:118:GLY:H	1.82	0.43
1:A:219:TRP:CE2	2:B:220:ILE:HD12	2.53	0.43
1:A:446:ASN:OD1	1:A:447:ALA:N	2.51	0.43
2:B:194:ARG:HH12	2:B:196:SER:HB3	1.84	0.43
2:B:274:SER:HA	2:B:277:GLU:HG2	1.99	0.43
2:B:58:ASP:N	2:B:58:ASP:OD1	2.50	0.43
4:E:228:VAL:HA	4:E:231:MET:HB3	2.00	0.43
4:E:297:LEU:HG	4:E:359:TYR:HE1	1.83	0.43
4:F:362:VAL:HG11	4:F:372:VAL:HG11	2.01	0.43
5:G:136:ILE:CG2	6:C:1:NAG:H2	2.48	0.43
4:E:342:ASP:OD1	4:E:342:ASP:N	2.52	0.43
1:A:25:LEU:HD21	1:A:99:PHE:CG	2.54	0.43
2:B:262:LYS:HE2	2:B:266:TYR:OH	2.17	0.43
4:E:316:SER:OG	4:E:318:ASP:OD1	2.30	0.43
4:F:292:TRP:NE1	4:F:293:ARG:HH21	2.16	0.43
1:A:19:ALA:N	1:A:84:ILE:O	2.49	0.43
1:A:21:LEU:HD21	1:A:110:VAL:HG21	2.00	0.43
4:E:373:GLY:HA3	4:E:395:THR:HG22	2.00	0.43
4:F:187:ARG:NH2	4:F:210:GLU:HB2	2.33	0.43
1:A:39:VAL:HG22	1:A:46:VAL:HG13	2.01	0.43
1:A:227:LEU:CB	1:A:228:PRO:CD	2.97	0.43
3:D:164:ASP:OD1	3:D:164:ASP:N	2.52	0.43
4:F:367:VAL:HG12	4:F:369:GLU:H	1.84	0.43
1:A:261:LEU:HD11	2:B:262:LYS:CE	2.45	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:F:187:ARG:HH22	4:F:210:GLU:HB2	1.82	0.43
4:F:432:ASP:OD1	4:F:434:SER:N	2.51	0.43
1:A:126:LYS:HE3	1:A:134:HIS:CE1	2.53	0.43
1:A:317:PRO:HA	1:A:326:VAL:HG21	2.00	0.43
2:B:122:HIS:HB3	2:B:138:ARG:CG	2.49	0.43
5:G:95:TYR:O	5:G:116:GLY:HA2	2.19	0.43
5:G:159:PHE:HB2	5:G:214:HIS:CE1	2.54	0.43
6:C:1:NAG:O3	6:C:1:NAG:C7	2.67	0.43
2:B:286:LYS:HD2	2:B:286:LYS:HA	1.90	0.42
4:E:267:LYS:O	4:E:270:GLU:HG3	2.18	0.42
4:E:74:ASP:N	4:E:74:ASP:OD1	2.49	0.42
4:E:88:THR:HG22	4:E:89:ALA:N	2.34	0.42
5:G:211:ILE:CD1	5:G:224:GLU:HG2	2.48	0.42
2:B:45:GLN:HB3	2:B:61:SER:OG	2.19	0.42
2:B:232:LEU:O	2:B:233:LEU:C	2.61	0.42
1:A:47:VAL:HG23	1:A:64:TYR:HB3	2.00	0.42
1:A:363:SER:OG	1:A:364:GLY:N	2.52	0.42
4:E:189:MET:HB2	4:E:206:ILE:HG22	2.01	0.42
4:E:364:VAL:HG13	4:E:367:VAL:HB	2.02	0.42
4:F:38:TRP:HH2	4:F:70:PHE:HE1	1.66	0.42
4:F:144:PRO:CG	4:F:197:LEU:HD11	2.49	0.42
2:B:227:LEU:O	2:B:228:PRO:C	2.61	0.42
4:F:49:VAL:HG11	4:F:56:ARG:HB2	2.02	0.42
4:F:88:THR:OG1	4:F:91:GLU:OE1	2.35	0.42
1:A:314:ILE:HG23	1:A:358:CYS:HB2	2.02	0.42
3:D:159:LYS:HD3	3:D:162:GLU:HG3	2.00	0.42
4:F:281:GLN:O	4:F:284:GLU:HG2	2.20	0.42
1:A:245:GLN:O	1:A:248:LYS:HG2	2.20	0.42
4:E:386:LEU:HG	4:E:388:ILE:HG23	2.01	0.42
4:F:432:ASP:OD1	4:F:433:VAL:N	2.53	0.42
1:A:270:LYS:HG3	1:A:271:GLN:N	2.33	0.42
1:A:377:GLU:HG3	1:A:407:THR:HA	2.01	0.42
4:F:369:GLU:OE2	4:F:461:ARG:NH1	2.36	0.42
1:A:297:HIS:O	1:A:301:ASN:ND2	2.53	0.42
4:F:49:VAL:HG12	4:F:49:VAL:O	2.20	0.42
4:F:139:SER:O	4:F:174:MET:HB2	2.20	0.42
4:F:292:TRP:HE1	4:F:293:ARG:HH21	1.67	0.42
1:A:40:SER:O	1:A:41:SER:HB3	2.20	0.41
1:A:50:TYR:O	1:A:51:ALA:HB2	2.20	0.41
4:E:117:LEU:HG	4:E:198:LEU:HD12	2.02	0.41
1:A:94:LYS:C	1:A:95:TYR:CD2	2.98	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:23:CYS:SG	2:B:99:PHE:HE1	2.43	0.41
4:E:122:LEU:O	4:E:137:CYS:HA	2.20	0.41
4:E:242:ASN:O	4:E:246:LYS:HG2	2.20	0.41
4:E:386:LEU:HD23	4:E:386:LEU:H	1.84	0.41
4:F:11:ILE:HD12	4:F:110:LEU:HD21	2.01	0.41
4:F:431:GLY:HA2	4:F:452:PHE:CE1	2.55	0.41
5:G:161:PRO:HD2	5:G:214:HIS:CE1	2.55	0.41
5:G:210:CYS:HB3	5:G:225:ILE:HB	2.02	0.41
1:A:39:VAL:CG1	1:A:96:LEU:HD13	2.50	0.41
1:A:72:ARG:HB3	1:A:75:ILE:HB	2.02	0.41
1:A:347:GLU:O	1:A:389:ARG:NH1	2.53	0.41
4:F:191:CYS:O	4:F:203:GLU:HA	2.20	0.41
4:F:379:VAL:HG11	4:F:393:PHE:HE1	1.86	0.41
1:A:97:CYS:SG	1:A:108:ALA:HB3	2.60	0.41
1:A:203:THR:HG22	1:A:204:ALA:N	2.35	0.41
2:B:14:MET:HE3	2:B:14:MET:HB3	1.89	0.41
2:B:281:GLU:O	2:B:284:LYS:HG2	2.21	0.41
3:D:168:VAL:HG11	5:G:180:GLN:HB3	2.02	0.41
4:E:183:ASP:OD1	4:E:184:LYS:N	2.54	0.41
1:A:208:ILE:HG22	2:B:125:VAL:HG21	2.02	0.41
4:E:348:LEU:HD21	4:E:459:PHE:HD1	1.85	0.41
4:E:399:HIS:O	4:E:402:GLN:NE2	2.54	0.41
4:F:25:LEU:HD23	4:F:25:LEU:H	1.85	0.41
1:A:213:PHE:CE2	2:B:128:TYR:CD1	3.08	0.41
2:B:105:TYR:CE2	3:D:53:LYS:HD3	2.55	0.41
1:A:279:LEU:HD11	2:B:279:LEU:HD13	2.01	0.41
2:B:219:TRP:O	2:B:223:LEU:HD13	2.21	0.41
2:B:252:SER:O	2:B:255:ILE:HG12	2.20	0.41
4:F:283:LYS:HD3	4:F:283:LYS:C	2.46	0.41
4:F:309:ALA:HA	4:F:347:VAL:HG22	2.03	0.41
1:A:160:THR:HA	1:A:179:VAL:HG22	2.03	0.41
4:F:94:THR:OG1	4:F:110:LEU:O	2.27	0.41
4:F:360:TRP:CH2	4:F:458:PRO:HG3	2.55	0.41
1:A:172:LEU:HD23	1:A:172:LEU:HA	1.96	0.41
1:A:321:ASN:OD1	1:A:322:PRO:HD2	2.20	0.41
2:B:94:LYS:HB3	2:B:109:LEU:HD11	2.02	0.41
2:B:226:THR:O	2:B:229:ILE:HG23	2.20	0.41
4:E:310:HIS:HB3	4:E:313:LEU:HG	2.03	0.41
4:E:376:ARG:HG3	4:E:392:GLY:HA3	2.03	0.41
4:F:91:GLU:OE1	4:F:91:GLU:N	2.54	0.41
4:F:234:ILE:O	4:F:238:ILE:HG12	2.21	0.41

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:G:6:GLN:NE2	5:G:97:CYS:SG	2.94	0.41
1:A:60:GLN:O	1:A:65:ARG:NH2	2.54	0.41
2:B:56:VAL:O	2:B:56:VAL:HG23	2.21	0.41
2:B:130:ASP:C	2:B:132:GLY:N	2.72	0.41
1:A:259:GLN:O	1:A:262:ARG:HB3	2.21	0.40
2:B:133:ILE:HG12	2:B:213:PHE:CE1	2.57	0.40
2:B:230:LEU:O	2:B:231:LEU:C	2.64	0.40
4:E:212:PHE:HA	4:F:128:HIS:HD2	1.86	0.40
2:B:121:LEU:HD13	2:B:139:SER:HB2	2.03	0.40
3:D:2:ILE:N	3:D:25:MET:HE3	2.36	0.40
4:E:87:ILE:HD13	4:E:87:ILE:HA	1.97	0.40
4:E:436:TYR:HE1	4:E:443:HIS:ND1	2.19	0.40
4:F:308:THR:HG23	4:F:347:VAL:HG13	2.04	0.40
5:G:181:GLU:HG2	5:G:195:SER:HB2	2.02	0.40
4:E:298:HIS:CG	4:E:300:VAL:HG22	2.56	0.40
4:E:399:HIS:CG	4:E:404:ARG:HE	2.40	0.40
1:A:118:GLY:HA3	1:A:142:TRP:CZ2	2.55	0.40
2:B:20:ASP:OD2	2:B:71:LEU:HD21	2.22	0.40
4:E:281:GLN:O	4:E:284:GLU:HG2	2.21	0.40
5:G:192:MET:HE3	5:G:192:MET:HB3	1.85	0.40
1:A:223:LEU:HA	1:A:226:THR:HG22	2.03	0.40
1:A:322:PRO:HB3	1:A:340:GLN:O	2.22	0.40
3:D:126:LYS:HG3	3:D:127:PRO:HD2	2.04	0.40
3:D:151:ARG:HB2	3:D:194:GLN:HB2	2.04	0.40
4:E:145:LYS:HA	4:E:173:PHE:CD2	2.56	0.40
4:E:377:ASP:N	4:E:377:ASP:OD1	2.51	0.40
4:E:421:ARG:HH22	4:F:441:ARG:HD2	1.87	0.40
4:E:475:LEU:HD12	4:F:436:TYR:CE2	2.56	0.40
4:F:206:ILE:HD12	4:F:206:ILE:HA	1.97	0.40
5:G:126:LEU:HD23	5:G:130:VAL:HG11	2.03	0.40
5:G:148:LYS:HG3	5:G:201:GLU: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 PDB entries followed by that with respect to all EM entries.

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	465/527 (88%)	439 (94%)	26 (6%)	0	100	100
2	B	292/318 (92%)	283 (97%)	9 (3%)	0	100	100
3	D	199/274 (73%)	188 (94%)	11 (6%)	0	100	100
4	E	463/532 (87%)	443 (96%)	20 (4%)	0	100	100
4	F	467/532 (88%)	444 (95%)	23 (5%)	0	100	100
5	G	226/295 (77%)	212 (94%)	14 (6%)	0	100	100
All	All	2112/2478 (85%)	2009 (95%)	103 (5%)	0	100	100

There are no Ramachandran outliers to report.

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 PDB entries followed by that with respect to all EM entries.

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	406/434 (94%)	397 (98%)	9 (2%)	47	76
2	B	239/258 (93%)	237 (99%)	2 (1%)	79	90
3	D	180/240 (75%)	180 (100%)	0	100	100
4	E	424/463 (92%)	423 (100%)	1 (0%)	92	97
4	F	425/463 (92%)	425 (100%)	0	100	100
5	G	207/265 (78%)	207 (100%)	0	100	100
All	All	1881/2123 (89%)	1869 (99%)	12 (1%)	82	93

All (12) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	48	ASN
1	A	96	LEU
1	A	208	ILE
1	A	218	ARG

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	219	TRP
1	A	220	ILE
1	A	223	LEU
1	A	230	LEU
1	A	334	GLN
2	B	229	ILE
2	B	230	LEU
4	E	300	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (16) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	289	GLN
1	A	366	HIS
1	A	421	ASN
1	A	454	HIS
2	B	120	ASN
2	B	134	HIS
3	D	124	HIS
4	E	358	HIS
4	E	437	ASN
4	F	24	HIS
4	F	90	GLN
4	F	491	HIS
5	G	103	GLN
5	G	147	GLN
5	G	188	ASN
5	G	214	HIS

5.3.3　RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5　Carbohydrates ⓘ

6 monosaccharides 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	$\#|Z| > 2$
6	NAG	C	1	3,6	14,14,15	0.43	0	17,19,21	1.11	2 (11%)
6	NAG	C	2	6	14,14,15	0.55	0	17,19,21	1.29	2 (11%)
6	BMA	C	3	6	11,11,12	0.30	0	15,15,17	0.88	0
6	NAG	H	1	6,4	14,14,15	0.47	0	17,19,21	1.20	1 (5%)
6	NAG	H	2	6	14,14,15	0.41	0	17,19,21	0.77	0
6	BMA	H	3	6	11,11,12	0.24	0	15,15,17	0.70	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
6	NAG	C	1	3,6	-	4/6/23/26	0/1/1/1
6	NAG	C	2	6	-	0/6/23/26	0/1/1/1
6	BMA	C	3	6	-	0/2/19/22	0/1/1/1
6	NAG	H	1	6,4	-	4/6/23/26	0/1/1/1
6	NAG	H	2	6	-	0/6/23/26	0/1/1/1
6	BMA	H	3	6	-	0/2/19/22	0/1/1/1

There are no bond length outliers.

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	H	1	NAG	C1-O5-C5	3.71	117.22	112.19
6	C	2	NAG	O5-C1-C2	-2.87	106.76	111.29
6	C	1	NAG	C1-O5-C5	2.38	115.41	112.19
6	C	2	NAG	C2-N2-C7	-2.34	119.56	122.90
6	C	1	NAG	O5-C1-C2	-2.22	107.78	111.29

There are no chirality outliers.

All (8) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	C	1	NAG	C3-C2-N2-C7
6	C	1	NAG	C8-C7-N2-C2
6	C	1	NAG	O7-C7-N2-C2
6	H	1	NAG	C8-C7-N2-C2
6	H	1	NAG	O7-C7-N2-C2
6	H	1	NAG	C1-C2-N2-C7
6	C	1	NAG	C1-C2-N2-C7
6	H	1	NAG	O5-C5-C6-O6

There are no ring outliers.

1 monomer is involved in 4 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	C	1	NAG	4	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

Oligosaccharide Chain C

Bond lengths

Bond angles

Torsions

Rings

Oligosaccharide Chain H

Bond lengths

Bond angles

Torsions

Rings
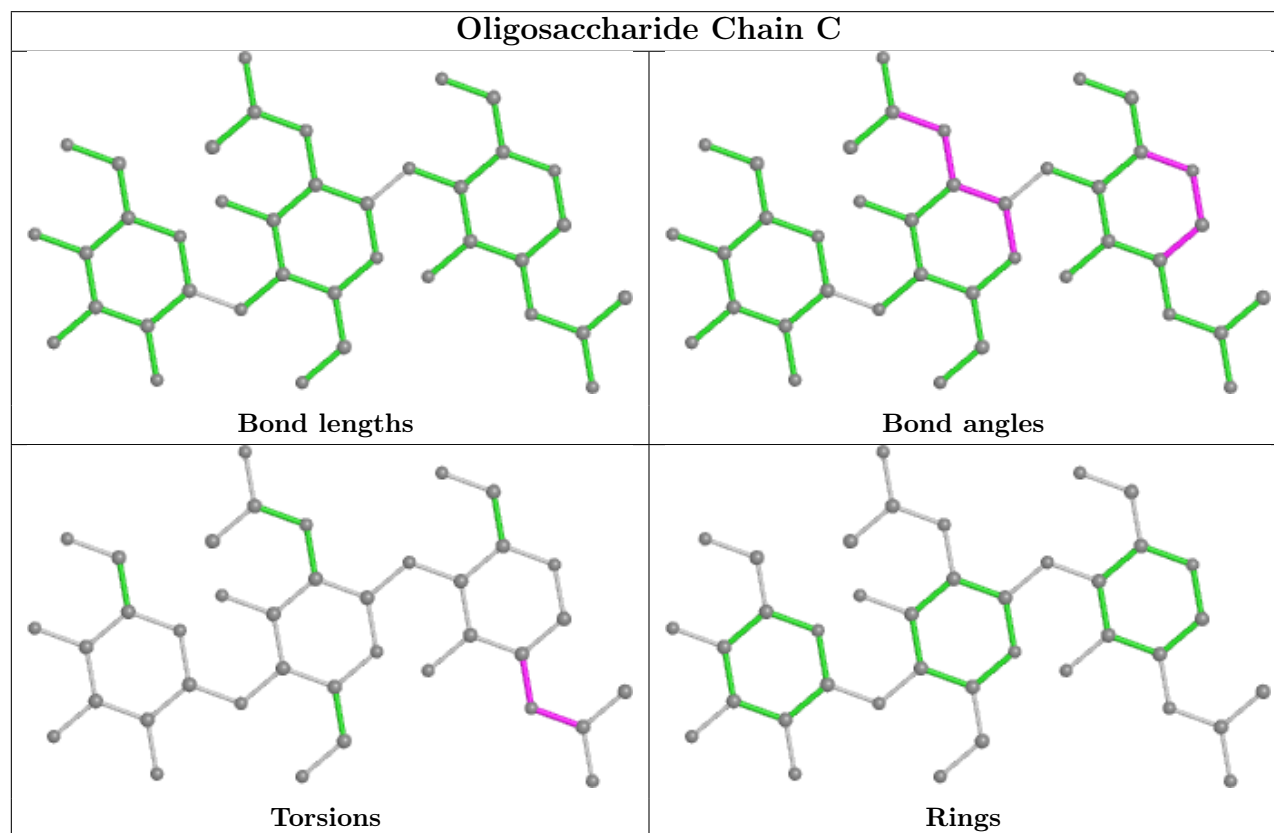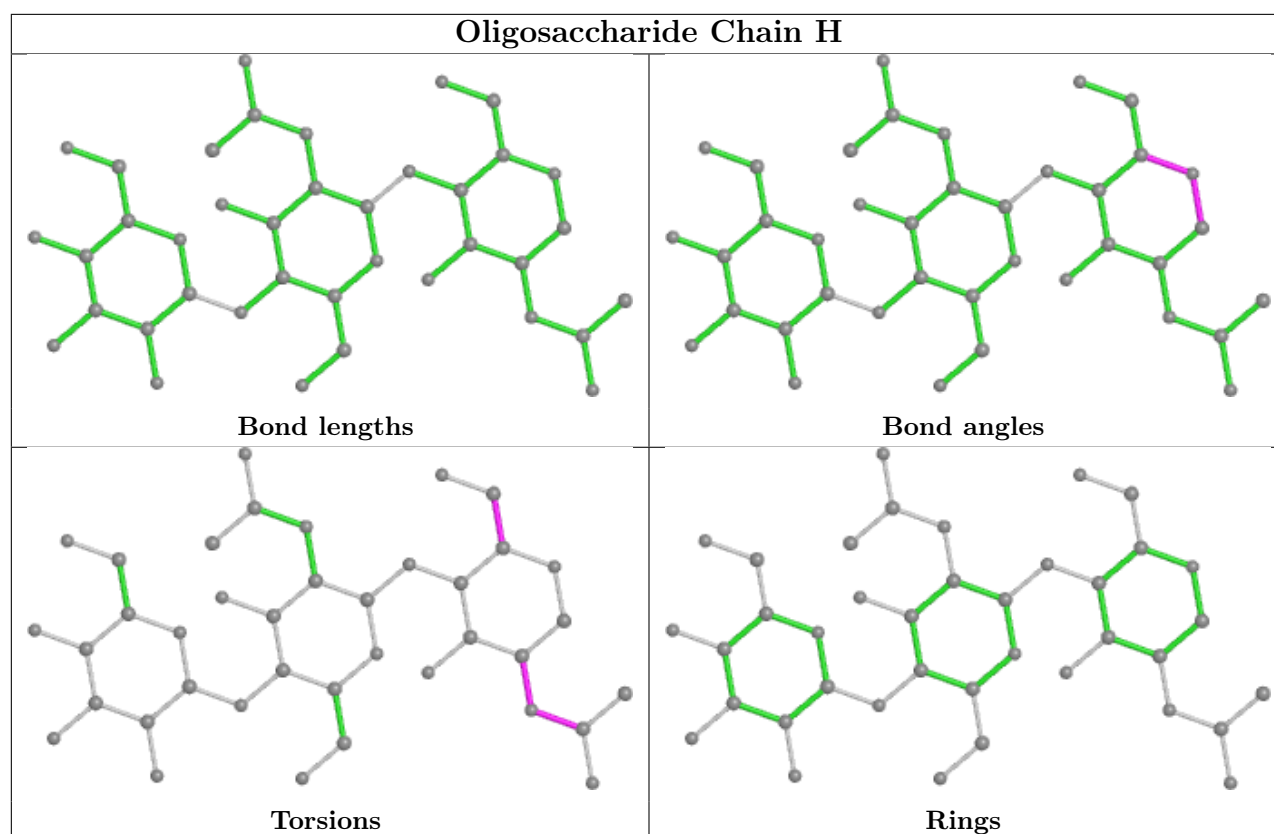
5.6　Ligand geometry ⓘ

10 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	$\#\|Z\| > 2$
8	NAG	F	602	4	14,14,15	0.21	0	17,19,21	0.44	0
8	NAG	F	605	4	14,14,15	0.29	0	17,19,21	0.35	0
8	NAG	F	603	4	14,14,15	0.26	0	17,19,21	0.55	0
8	NAG	F	601	4	14,14,15	0.23	0	17,19,21	0.44	0
8	NAG	E	601	4	14,14,15	0.33	0	17,19,21	0.73	0
8	NAG	B	401	2	14,14,15	0.23	0	17,19,21	0.42	0
8	NAG	E	602	4	14,14,15	0.34	0	17,19,21	0.77	0
8	NAG	E	603	4	14,14,15	0.38	0	17,19,21	0.79	0
8	NAG	F	604	4	14,14,15	0.27	0	17,19,21	0.58	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
7	H6P	A	601	-	11,14,14	0.81	0	13,20,20	1.28	1 (7%)

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
8	NAG	F	602	4	-	2/6/23/26	0/1/1/1
8	NAG	F	605	4	-	3/6/23/26	0/1/1/1
8	NAG	F	603	4	-	4/6/23/26	0/1/1/1
8	NAG	F	601	4	-	0/6/23/26	0/1/1/1
8	NAG	E	601	4	-	2/6/23/26	0/1/1/1
8	NAG	B	401	2	-	0/6/23/26	0/1/1/1
8	NAG	E	602	4	-	2/6/23/26	0/1/1/1
8	NAG	E	603	4	-	4/6/23/26	0/1/1/1
8	NAG	F	604	4	-	3/6/23/26	0/1/1/1
7	H6P	A	601	-	-	4/15/15/15	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
7	A	601	H6P	O20-P17-O18	2.25	116.22	107.64

There are no chirality outliers.

All (24) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
7	A	601	H6P	P13-O16-P17-O20
8	E	601	NAG	O7-C7-N2-C2
8	E	601	NAG	C8-C7-N2-C2
8	F	602	NAG	O5-C5-C6-O6
8	F	602	NAG	C4-C5-C6-O6
8	F	605	NAG	O5-C5-C6-O6
8	F	603	NAG	O5-C5-C6-O6
8	E	602	NAG	C8-C7-N2-C2
8	E	602	NAG	O7-C7-N2-C2
8	E	603	NAG	C8-C7-N2-C2

Continued on next page...

W O R L D W I D E
wwPDB
PROTEIN DATA BANK

Continued from previous page...

Mol	Chain	Res	Type	Atoms
8	F	603	NAG	C8-C7-N2-C2
8	F	603	NAG	O7-C7-N2-C2
8	F	603	NAG	C4-C5-C6-O6
8	F	605	NAG	C4-C5-C6-O6
8	E	603	NAG	O7-C7-N2-C2
8	E	603	NAG	C1-C2-N2-C7
8	F	604	NAG	C4-C5-C6-O6
7	A	601	H6P	P17-O16-P13-O29
8	F	604	NAG	O5-C5-C6-O6
8	F	604	NAG	C3-C2-N2-C7
8	F	605	NAG	C1-C2-N2-C7
7	A	601	H6P	P13-O16-P17-O18
8	E	603	NAG	C3-C2-N2-C7
7	A	601	H6P	P13-O16-P17-O19

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
8	F	603	NAG	1	0
7	A	601	H6P	2	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand H6P A 601

Bond lengths

Bond angles

Torsions

Rings
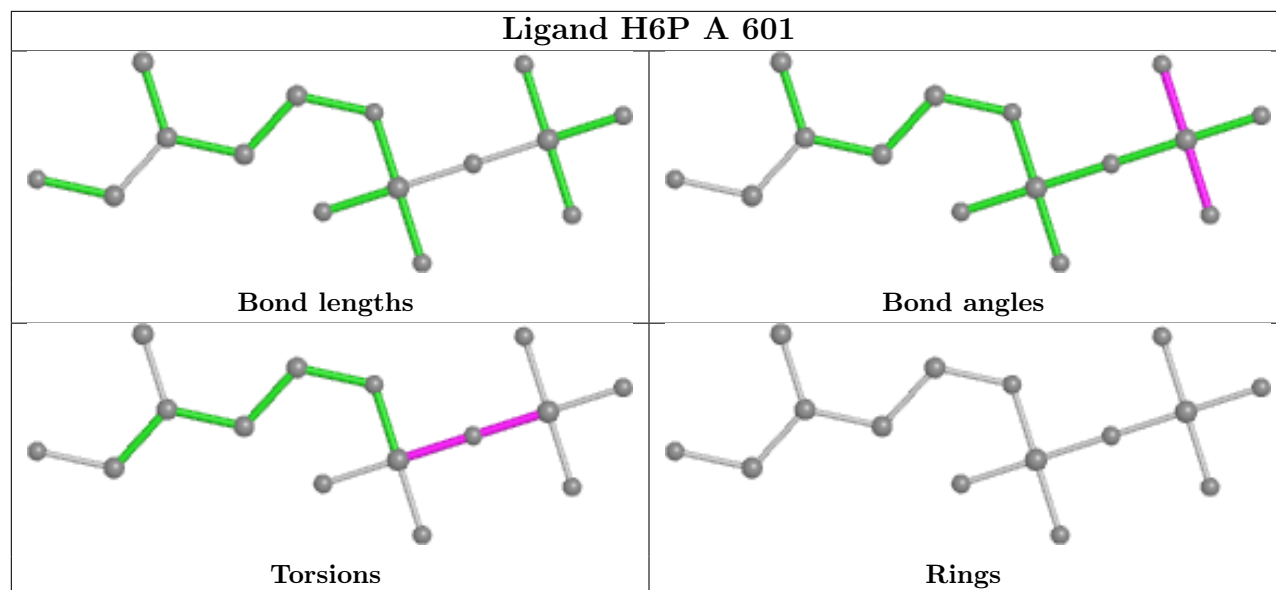
5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-61740. These allow visual inspection of the internal detail of the map and identification of artifacts.

No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections ⓘ

6.1.1 Primary map

| X | Y | Z |
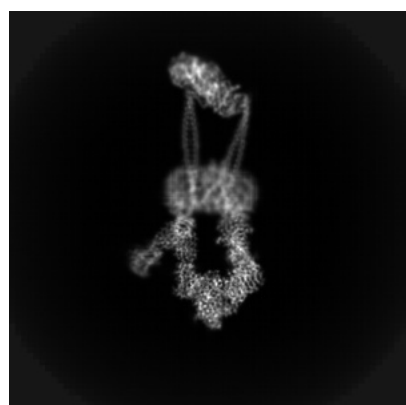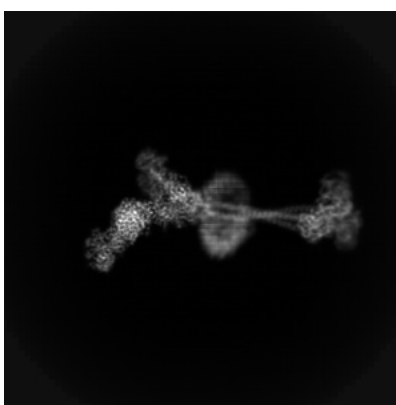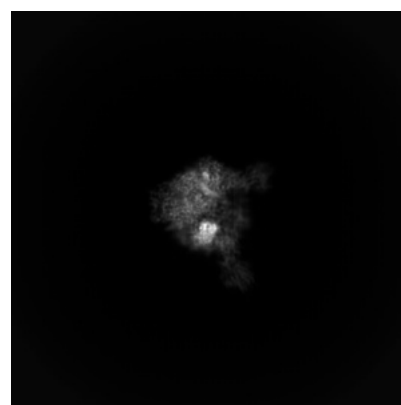
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ
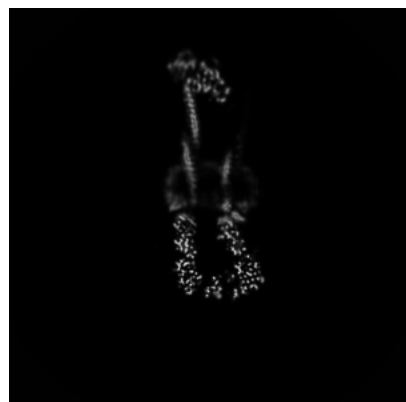
6.2.1 Primary map
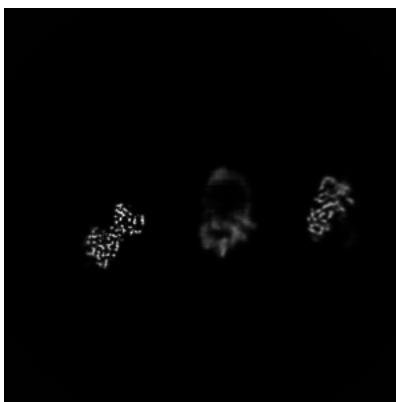
| X Index: 210 | Y Index: 210 | Z Index: 210 |
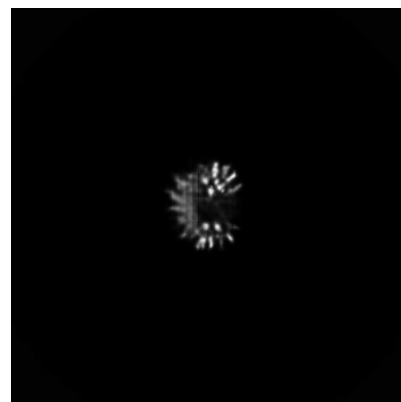
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices ⓘ
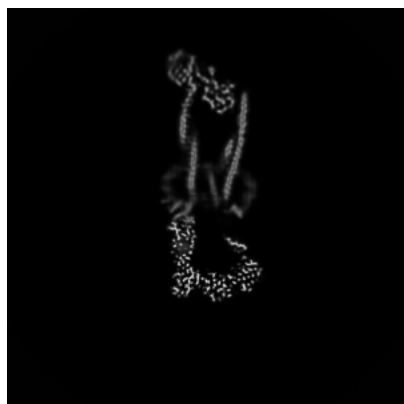
6.3.1 Primary map
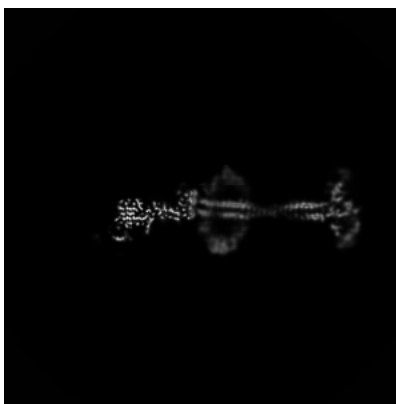
| X Index: 203 | Y Index: 191 | Z Index: 136 |
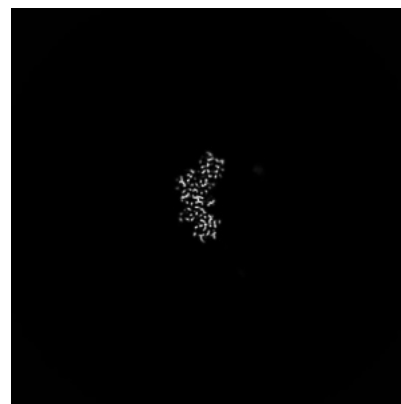
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) ⓘ

6.4.1 Primary map

| X | Y | Z |
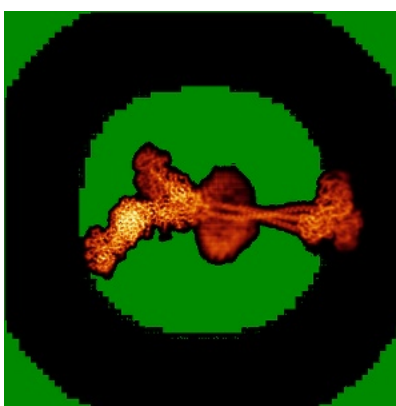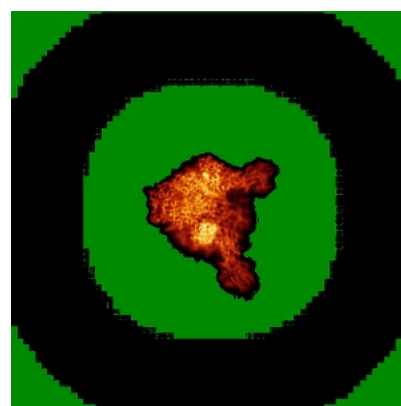
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views ⓘ

6.5.1 Primary map

X   Y   Z
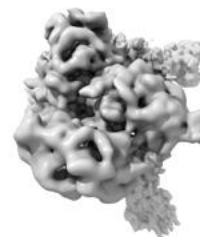
The images above show the 3D surface view of the map at the recommended contour level 2.0. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.6 Mask visualisation ⓘ

This section was not generated. No masks/segmentation were deposited.

7　Map analysis ⓘ

This section contains the results of statistical analysis of the map.

7.1　Map-value distribution ⓘ

The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

7.2 Volume estimate ⓘ
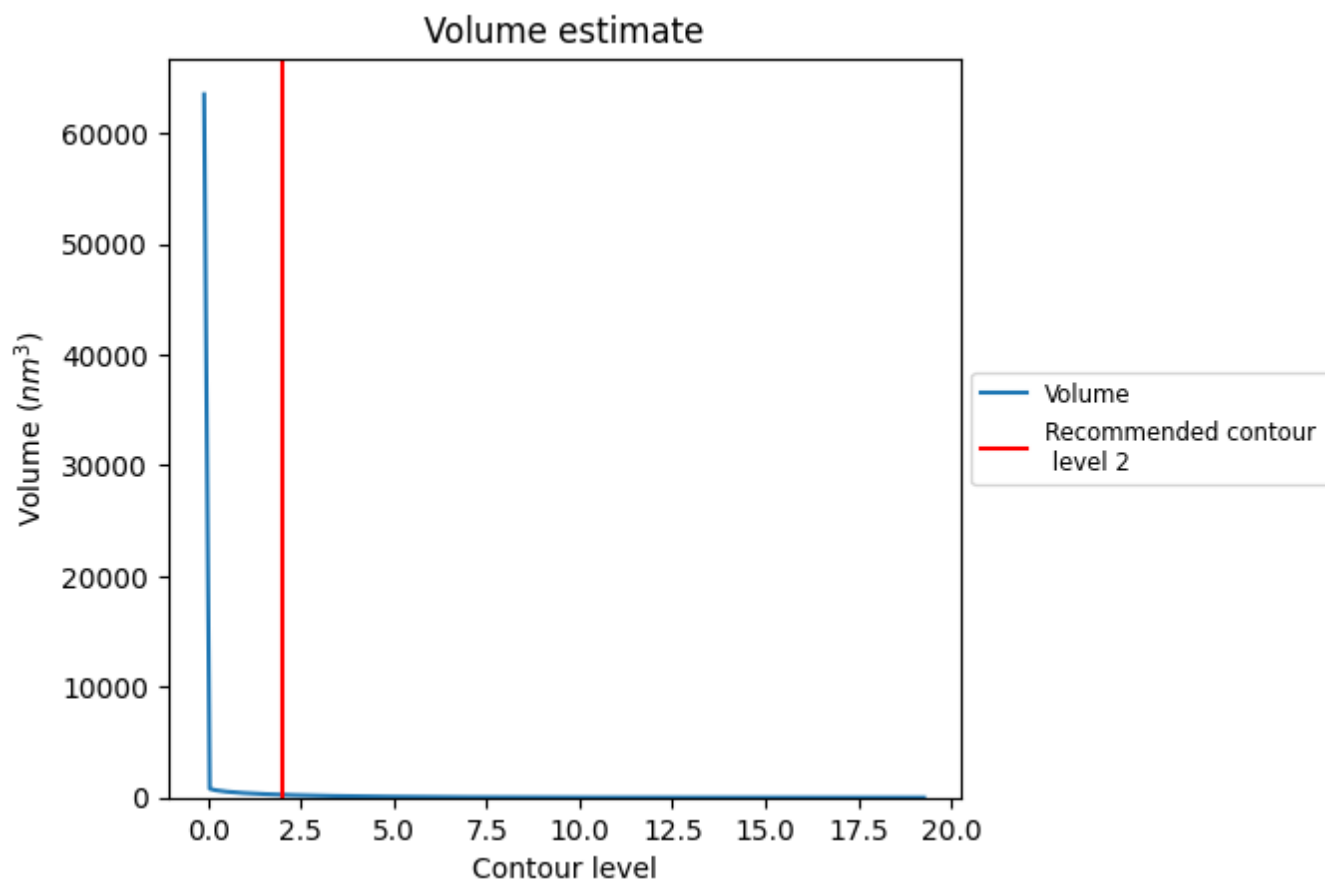
The volume at the recommended contour level is 253 nm^3; this corresponds to an approximate mass of 229 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3　Rotationally averaged power spectrum　ⓘ
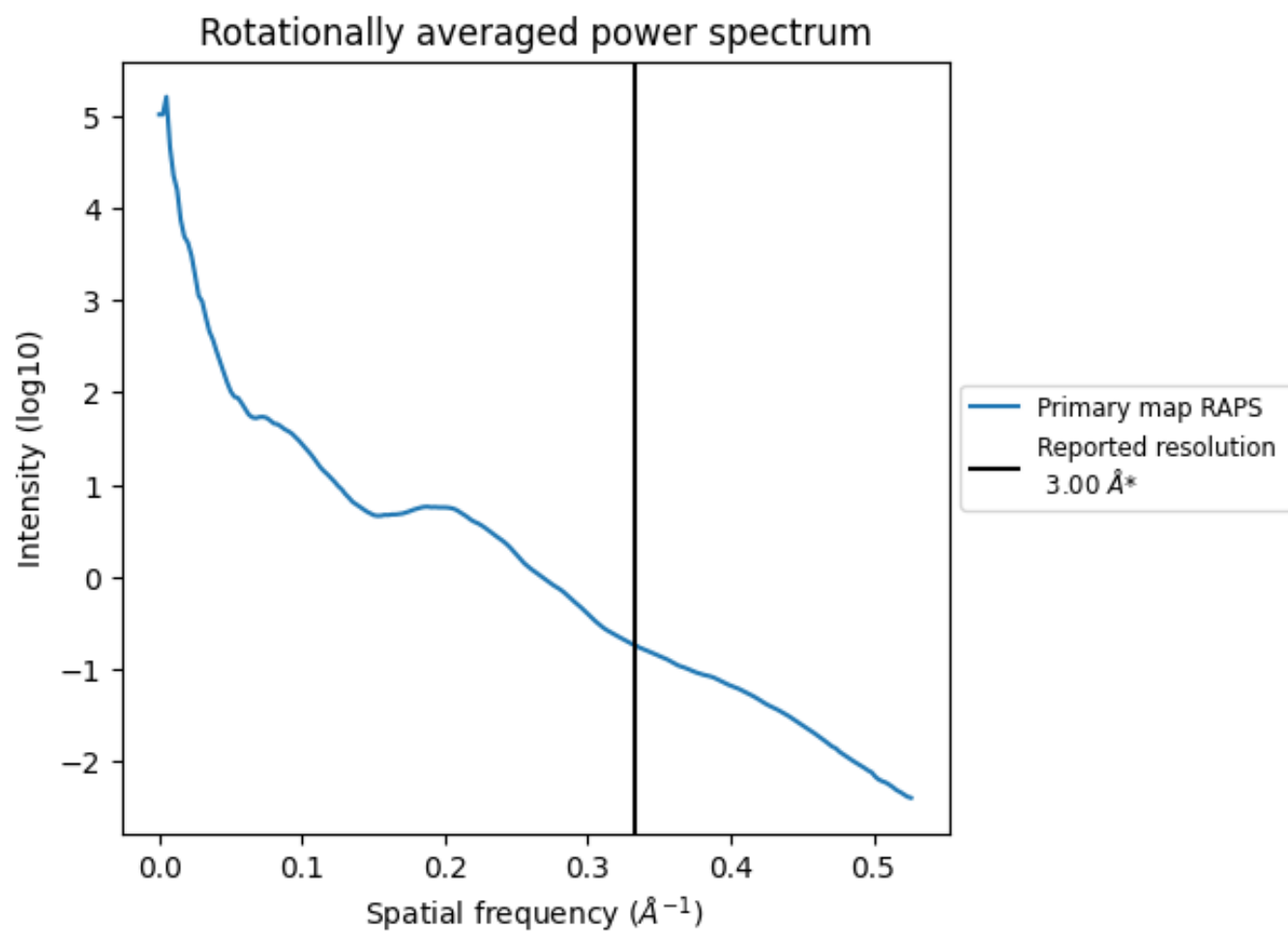
*Reported resolution corresponds to spatial frequency of 0.333 Å^{-1}

8 Fourier-Shell correlation ⓘ

This section was not generated. No FSC curve or half-maps provided.

9 Map-model fit (i)

This section contains information regarding the fit between EMDB map EMD-61740 and PDB model 9JQR. Per-residue inclusion information can be found in section 3 on page 9.

9.1 Map-model overlay (i)

| X | Y | Z |
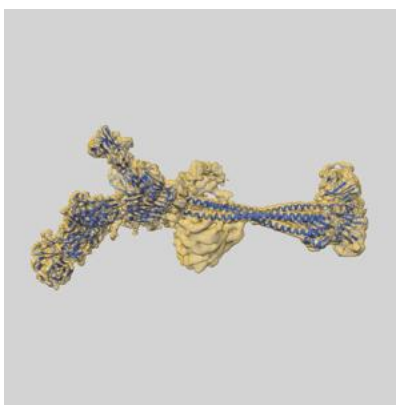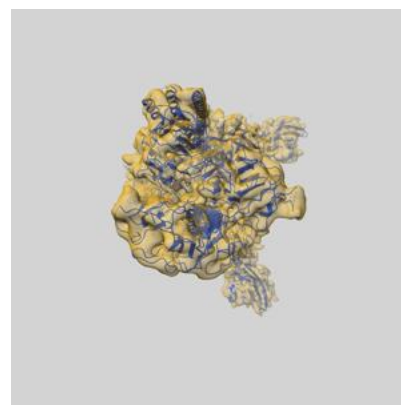
The images above show the 3D surface view of the map at the recommended contour level 2.0 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model ⓘ

X   Y   Z
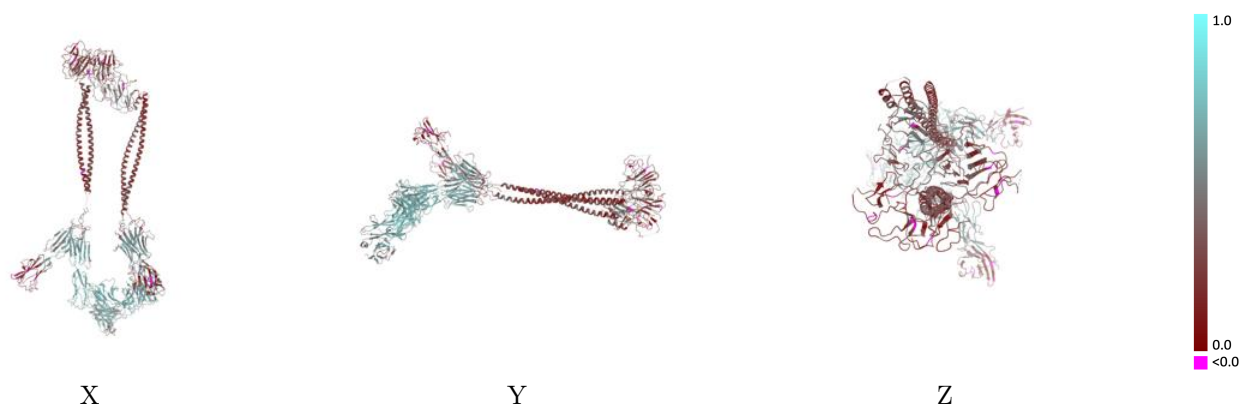
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

9.3 Atom inclusion mapped to coordinate model ⓘ

X   Y   Z
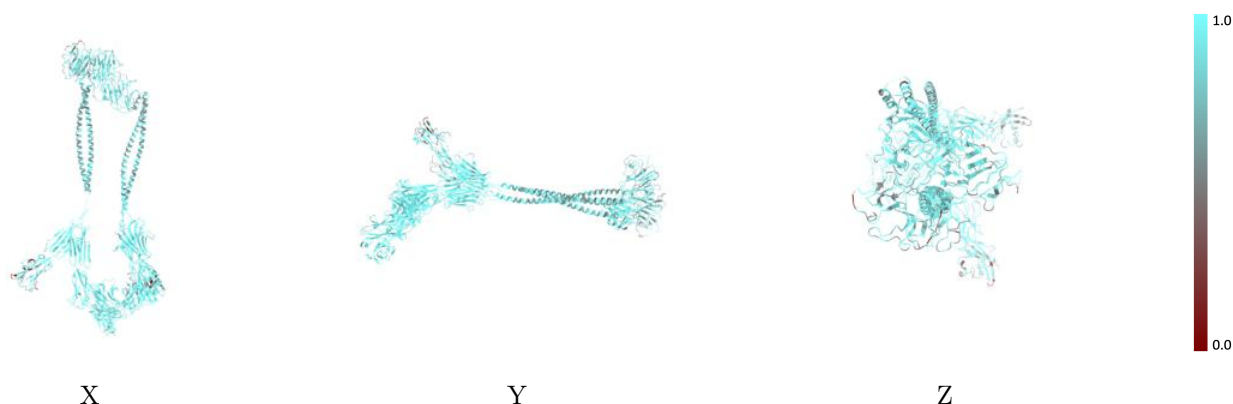
The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (2).

9.4 Atom inclusion ⓘ
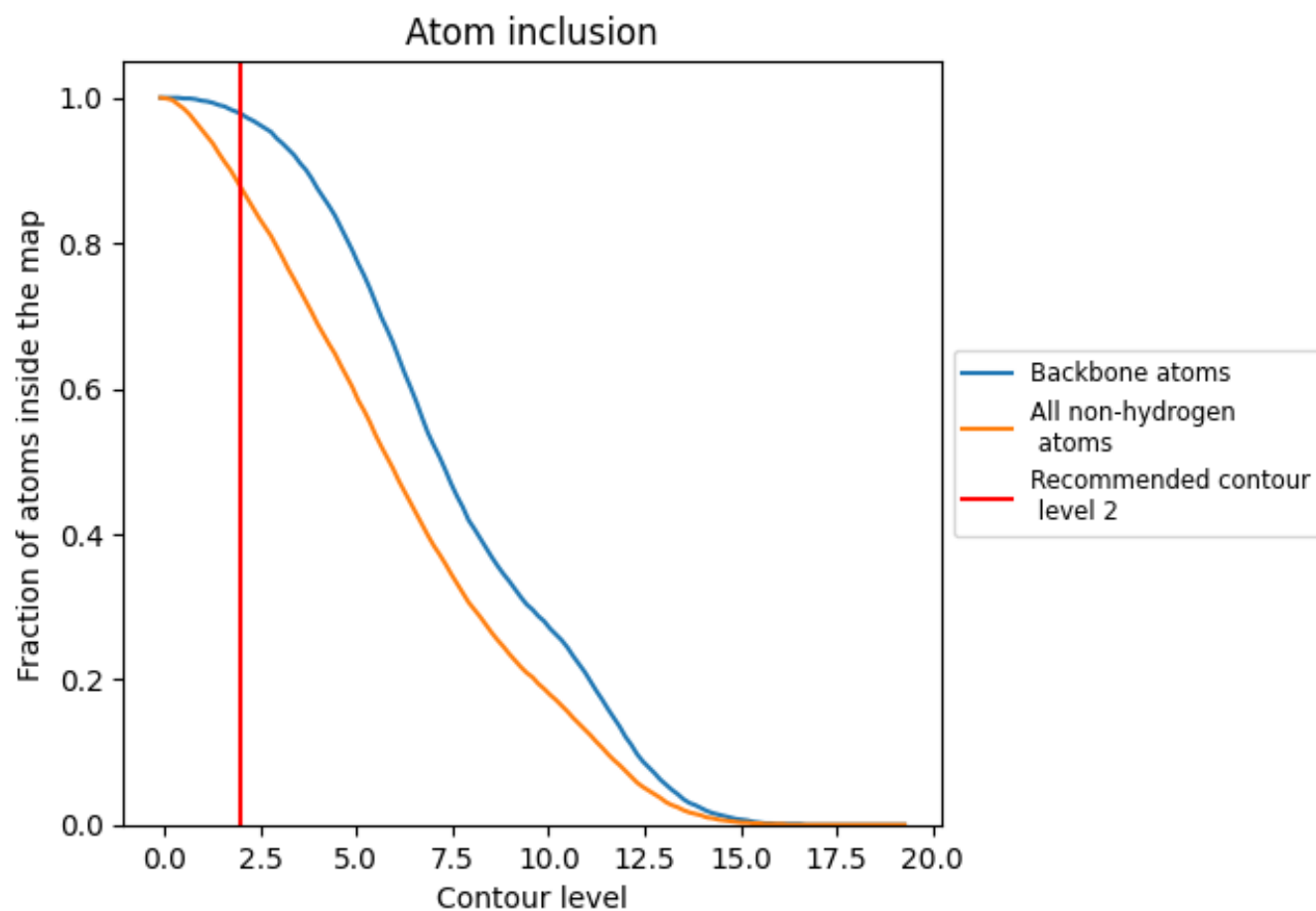
At the recommended contour level, 98% of all backbone atoms, 88% of all non-hydrogen atoms, are inside the map.

9.5   Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (2) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8760	0.4180
A	0.8470	0.3420
B	0.9030	0.4710
C	0.8970	0.5040
D	0.9580	0.5880
E	0.8770	0.4060
F	0.8170	0.3160
G	0.9500	0.5990
H	0.9490	0.5260

1.0

0.0
<0.0