



Full wwPDB EM Validation Report ⓘ

Oct 15, 2024 – 05:49 AM JST

PDB ID : 8K5H
EMDB ID : EMD-36906
Title : Structure of the SARS-CoV-2 BA.1 spike with UT28-RD
Authors : Chen, L.; Kita, S.; Anraku, Y.; Maenaka, K.
Deposited on : 2023-07-21
Resolution : 3.22 Å(reported)
Based on initial models : 8DZH, 7X7O

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:

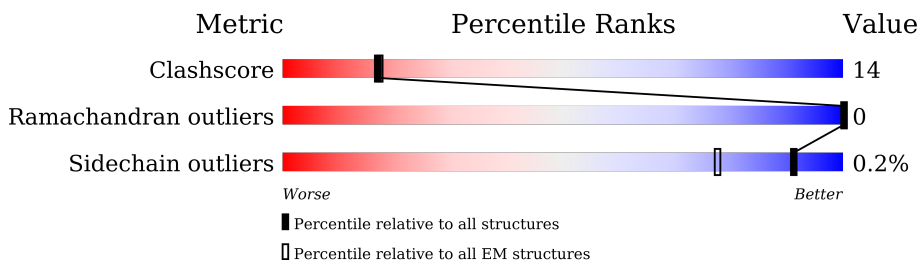
EMDB validation analysis : 0.0.1.dev113
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : 1.9.13
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.39

1 Overall quality at a glance i

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

The reported resolution of this entry is 3.22 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)	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 $\leq 5\%$. 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	1200	65% 22% 13%
1	B	1200	63% 24% 13%
1	C	1200	50% 20% 29%
2	H	252	40% 8% 52%
3	L	235	6% 34% 11% 54%
4	D	2	100%
4	E	2	100%
4	F	2	50% 50%

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Mol	Chain	Length	Quality of chain
4	G	2	 100%
4	I	2	 50% 50%
4	J	2	 50% 50%
4	K	2	 100%
4	M	2	 100%

2 Entry composition i

There are 5 unique types of molecules in this entry. The entry contains 25502 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 Spike glycoprotein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	B	1041	8170	5233	1355	1545	37	0	0
1	A	1048	8226	5269	1368	1551	38	0	0
1	C	853	6651	4251	1097	1274	29	0	0

There are 156 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	10	GLY	-	expression tag	UNP P0DTC2
B	11	THR	-	expression tag	UNP P0DTC2
B	67	VAL	ALA	variant	UNP P0DTC2
B	?	-	HIS	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	93	ILE	THR	variant	UNP P0DTC2
B	?	-	GLY	deletion	UNP P0DTC2
B	?	-	VAL	deletion	UNP P0DTC2
B	?	-	TYR	deletion	UNP P0DTC2
B	140	ASP	TYR	variant	UNP P0DTC2
B	?	-	ASN	deletion	UNP P0DTC2
B	206	ILE	LEU	variant	UNP P0DTC2
B	209	GLU	-	insertion	UNP P0DTC2
B	210	PRO	-	insertion	UNP P0DTC2
B	211	GLU	-	insertion	UNP P0DTC2
B	336	ASP	GLY	variant	UNP P0DTC2
B	368	LEU	SER	variant	UNP P0DTC2
B	370	PRO	SER	variant	UNP P0DTC2
B	372	PHE	SER	variant	UNP P0DTC2
B	414	ASN	LYS	variant	UNP P0DTC2
B	437	LYS	ASN	variant	UNP P0DTC2
B	443	SER	GLY	variant	UNP P0DTC2
B	474	ASN	SER	variant	UNP P0DTC2
B	475	LYS	THR	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
B	481	ALA	GLU	variant	UNP P0DTC2
B	490	ARG	GLN	variant	UNP P0DTC2
B	493	SER	GLY	variant	UNP P0DTC2
B	495	ARG	GLN	variant	UNP P0DTC2
B	498	TYR	ASN	variant	UNP P0DTC2
B	502	HIS	TYR	variant	UNP P0DTC2
B	544	LYS	THR	variant	UNP P0DTC2
B	611	GLY	ASP	variant	UNP P0DTC2
B	652	TYR	HIS	variant	UNP P0DTC2
B	676	LYS	ASN	variant	UNP P0DTC2
B	678	HIS	PRO	variant	UNP P0DTC2
B	679	GLY	ARG	engineered mutation	UNP P0DTC2
B	680	SER	ARG	engineered mutation	UNP P0DTC2
B	682	GLY	ARG	engineered mutation	UNP P0DTC2
B	761	LYS	ASN	variant	UNP P0DTC2
B	793	TYR	ASP	variant	UNP P0DTC2
B	814	PRO	PHE	engineered mutation	UNP P0DTC2
B	853	LYS	ASN	conflict	UNP P0DTC2
B	889	PRO	ALA	engineered mutation	UNP P0DTC2
B	896	PRO	ALA	engineered mutation	UNP P0DTC2
B	939	PRO	ALA	engineered mutation	UNP P0DTC2
B	951	HIS	GLN	variant	UNP P0DTC2
B	966	LYS	ASN	variant	UNP P0DTC2
B	978	PHE	LEU	variant	UNP P0DTC2
B	983	PRO	LYS	engineered mutation	UNP P0DTC2
B	984	PRO	VAL	engineered mutation	UNP P0DTC2
B	1208	ALA	-	expression tag	UNP P0DTC2
B	1209	SER	-	expression tag	UNP P0DTC2
A	10	GLY	-	expression tag	UNP P0DTC2
A	11	THR	-	expression tag	UNP P0DTC2
A	67	VAL	ALA	variant	UNP P0DTC2
A	?	-	HIS	deletion	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	93	ILE	THR	variant	UNP P0DTC2
A	?	-	GLY	deletion	UNP P0DTC2
A	?	-	VAL	deletion	UNP P0DTC2
A	?	-	TYR	deletion	UNP P0DTC2
A	140	ASP	TYR	variant	UNP P0DTC2
A	?	-	ASN	deletion	UNP P0DTC2
A	206	ILE	LEU	variant	UNP P0DTC2
A	209	GLU	-	insertion	UNP P0DTC2
A	210	PRO	-	insertion	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
A	211	GLU	-	insertion	UNP P0DTC2
A	336	ASP	GLY	variant	UNP P0DTC2
A	368	LEU	SER	variant	UNP P0DTC2
A	370	PRO	SER	variant	UNP P0DTC2
A	372	PHE	SER	variant	UNP P0DTC2
A	414	ASN	LYS	variant	UNP P0DTC2
A	437	LYS	ASN	variant	UNP P0DTC2
A	443	SER	GLY	variant	UNP P0DTC2
A	474	ASN	SER	variant	UNP P0DTC2
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A	481	ALA	GLU	variant	UNP P0DTC2
A	490	ARG	GLN	variant	UNP P0DTC2
A	493	SER	GLY	variant	UNP P0DTC2
A	495	ARG	GLN	variant	UNP P0DTC2
A	498	TYR	ASN	variant	UNP P0DTC2
A	502	HIS	TYR	variant	UNP P0DTC2
A	544	LYS	THR	variant	UNP P0DTC2
A	611	GLY	ASP	variant	UNP P0DTC2
A	652	TYR	HIS	variant	UNP P0DTC2
A	676	LYS	ASN	variant	UNP P0DTC2
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A	761	LYS	ASN	variant	UNP P0DTC2
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A	939	PRO	ALA	engineered mutation	UNP P0DTC2
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A	978	PHE	LEU	variant	UNP P0DTC2
A	983	PRO	LYS	engineered mutation	UNP P0DTC2
A	984	PRO	VAL	engineered mutation	UNP P0DTC2
A	1208	ALA	-	expression tag	UNP P0DTC2
A	1209	SER	-	expression tag	UNP P0DTC2
C	10	GLY	-	expression tag	UNP P0DTC2
C	11	THR	-	expression tag	UNP P0DTC2
C	67	VAL	ALA	variant	UNP P0DTC2
C	?	-	HIS	deletion	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	?	-	VAL	deletion	UNP P0DTC2
C	93	ILE	THR	variant	UNP P0DTC2
C	?	-	GLY	deletion	UNP P0DTC2
C	?	-	VAL	deletion	UNP P0DTC2
C	?	-	TYR	deletion	UNP P0DTC2
C	140	ASP	TYR	variant	UNP P0DTC2
C	?	-	ASN	deletion	UNP P0DTC2
C	206	ILE	LEU	variant	UNP P0DTC2
C	209	GLU	-	insertion	UNP P0DTC2
C	210	PRO	-	insertion	UNP P0DTC2
C	211	GLU	-	insertion	UNP P0DTC2
C	336	ASP	GLY	variant	UNP P0DTC2
C	368	LEU	SER	variant	UNP P0DTC2
C	370	PRO	SER	variant	UNP P0DTC2
C	372	PHE	SER	variant	UNP P0DTC2
C	414	ASN	LYS	variant	UNP P0DTC2
C	437	LYS	ASN	variant	UNP P0DTC2
C	443	SER	GLY	variant	UNP P0DTC2
C	474	ASN	SER	variant	UNP P0DTC2
C	475	LYS	THR	variant	UNP P0DTC2
C	481	ALA	GLU	variant	UNP P0DTC2
C	490	ARG	GLN	variant	UNP P0DTC2
C	493	SER	GLY	variant	UNP P0DTC2
C	495	ARG	GLN	variant	UNP P0DTC2
C	498	TYR	ASN	variant	UNP P0DTC2
C	502	HIS	TYR	variant	UNP P0DTC2
C	544	LYS	THR	variant	UNP P0DTC2
C	611	GLY	ASP	variant	UNP P0DTC2
C	652	TYR	HIS	variant	UNP P0DTC2
C	676	LYS	ASN	variant	UNP P0DTC2
C	678	HIS	PRO	variant	UNP P0DTC2
C	679	GLY	ARG	engineered mutation	UNP P0DTC2
C	680	SER	ARG	engineered mutation	UNP P0DTC2
C	682	GLY	ARG	engineered mutation	UNP P0DTC2
C	761	LYS	ASN	variant	UNP P0DTC2
C	793	TYR	ASP	variant	UNP P0DTC2
C	814	PRO	PHE	engineered mutation	UNP P0DTC2
C	853	LYS	ASN	conflict	UNP P0DTC2
C	889	PRO	ALA	engineered mutation	UNP P0DTC2
C	896	PRO	ALA	engineered mutation	UNP P0DTC2
C	939	PRO	ALA	engineered mutation	UNP P0DTC2
C	951	HIS	GLN	variant	UNP P0DTC2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	966	LYS	ASN	variant	UNP P0DTC2
C	978	PHE	LEU	variant	UNP P0DTC2
C	983	PRO	LYS	engineered mutation	UNP P0DTC2
C	984	PRO	VAL	engineered mutation	UNP P0DTC2
C	1208	ALA	-	expression tag	UNP P0DTC2
C	1209	SER	-	expression tag	UNP P0DTC2

- Molecule 2 is a protein called UT28K-RD Fab heavy chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	H	122	939	589	161	181	8	0	0

- Molecule 3 is a protein called UT28K-RD Fab light chain.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	L	107	816	513	138	163	2	0	0

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



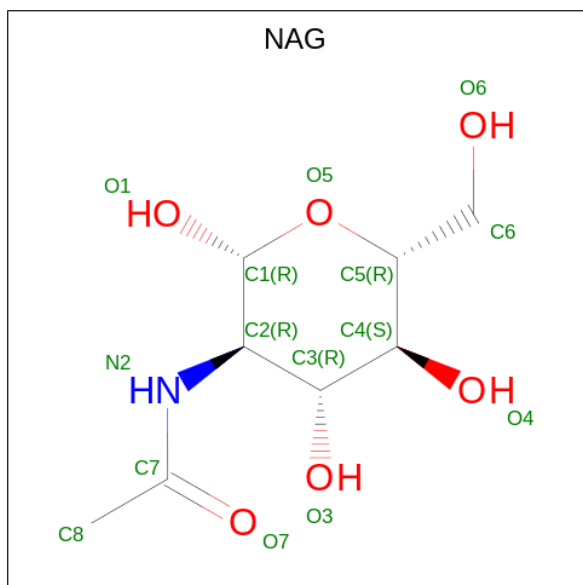
Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	D	2	28	16	2	10	0	0
4	E	2	28	16	2	10	0	0
4	F	2	28	16	2	10	0	0
4	G	2	28	16	2	10	0	0
4	I	2	28	16	2	10	0	0
4	J	2	28	16	2	10	0	0
4	K	2	28	16	2	10	0	0

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Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
4	M	2	28	16	2	10	0	0

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



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

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Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
5	B	1	Total 14	8	1	5	0
5	B	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	A	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0

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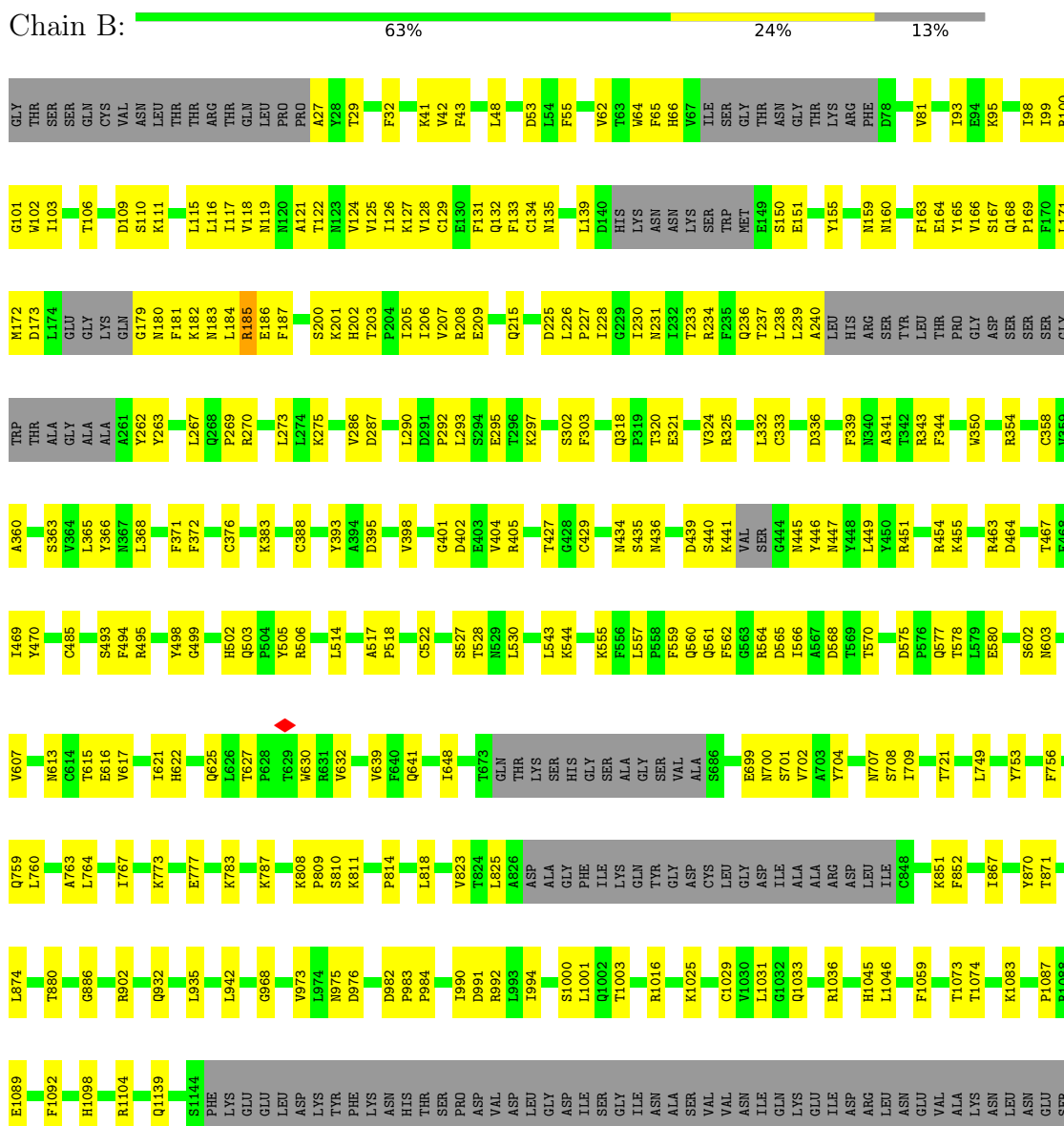
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Mol	Chain	Residues	Atoms				AltConf
			Total	C	N	O	
5	C	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0
5	C	1	Total 14	8	1	5	0

3 Residue-property plots

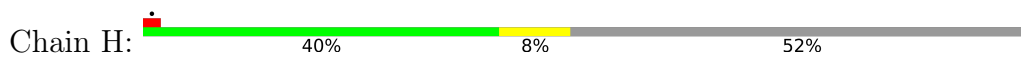
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion 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: Spike glycoprotein



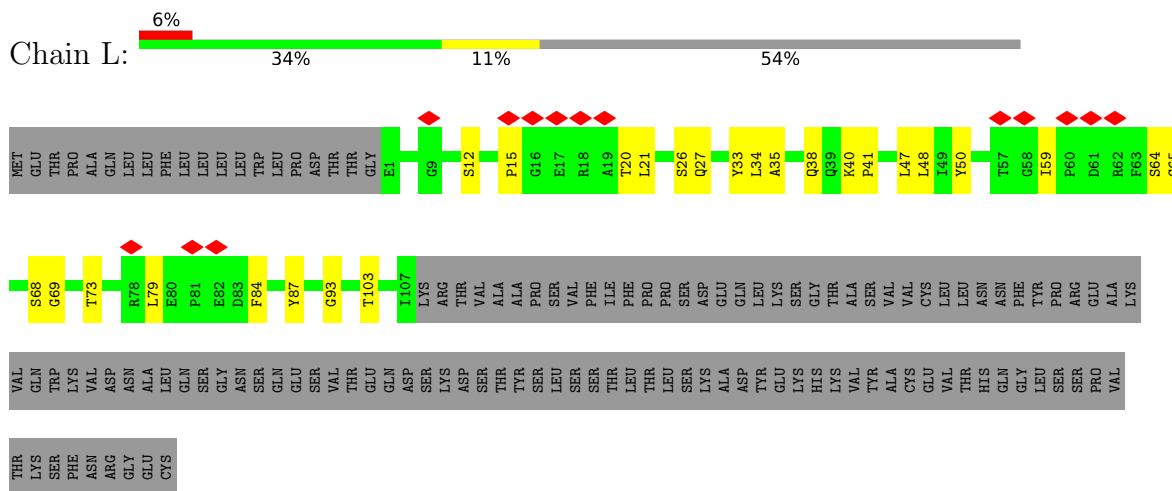
E94	F163	PRO	SER	GLN	SER	LYS	C668	K808	1931	H1061	ASP
K95	E164	GLY	VAL	ILE	THR	LYS	C668	P809	1932	V1062	ARG
S96	Y165	ASP	TYR	ALA	GLU	THR	T528	S810	Q932	E1069	LEU
N97	V166	SER	ALA	PRO	ILE	THR	T528	K811	T938	P1087	ASN
I98	S167	TRP	GLY	GLN	TYR	GLN	L530	F820	P939	F1092	GLU
I99	Q168	SER	ASN	GLN	GLM	VAL	V631	V823	L942	H1098	VAL
R100	P169	GLY	ARG	THR	ALA	SER	C535	T824	N950	H1099	ALA
I103	F170	TRP	LYS	GLY	GLY	HIS	C535	L825	N951	W1099	LYS
I104	L171	THR	THR	ASN	ASN	GLY	N639	T826	F954	F1100	ASN
F105	M172	ALA	ARG	ASN	ARG	GLY	N639	A826	T958	V1101	LEU
G106	D173	ALA	ILE	ILE	ILE	ALA	S886	D827	Q961	Q1102	ILE
T107	L174	GLY	SER	ALA	LEU	GLY	Q887	ALA	K961	Q1103	ASP
L108	L174	GLY	ASN	ASP	PRO	VAL	I689	GLY	F967	F1106	LEU
D109	GLU	GLY	CYS	TYR	CYS	VAL	I689	ASP	G968	P1109	GLU
L110	GLY	LYS	VAL	ASN	GLY	ALA	S886	ILE	A969	M1132	LEU
K111	Q178	ALA	ALA	LYS	ALA	ALA	Q887	ALA	T970	S1144	GLY
T112	Q178	LEU	TYR	LEU	PHE	GLN	Q887	GLM	1970	LYS	THR
Q113	M183	PRO	VAL	PRO	ASN	TYR	I689	TYR	R980	PHE	GLN
S114	L184	LEU	VAL	ASP	CYS	GLY	I689	GLY	R981	LYS	THR
L115	R185	TYR	LEU	PHE	TYR	ASP	Y692	ASP	R982	GLU	THR
L116	E186	ASN	ASN	THR	PHE	CYS	T693	LEU	P983	GLU	THR
I117	F187	LEU	PRO	GLY	ASN	LEU	M694	CYS	P984	GLU	THR
V118	V188	ALA	PRO	CYS	ARG	LEU	S695	LEU	E985	ASP	THR
M119	V188	PRO	PRO	VAL	ARG	ASP	L696	ASP	V988	LYS	THR
M120	F196	PHE	PHE	ILE	SER	ILE	G697	ILE	Q989	THR	THR
A121	R197	ALA	THR	ALA	TYR	ALA	N700	ALA	R992	HIS	THR
I122	I198	THR	TRP	ALA	SER	ALA	N700	ALA	L993	ASN	THR
N123	I198	PHE	ASN	ASN	PHE	ALA	V701	ALA	R994	ASN	THR
V124	K201	PHE	ASN	ASN	ASN	ALA	V702	ALA	E985	ASP	THR
W125	H202	LYS	ARG	ARG	ARG	ALA	V702	ALA	V988	ASP	THR
L126	H202	CYS	CYS	LYS	PRO	THR	V719	THR	Q989	THR	THR
K127	T203	TYR	TYR	LYS	THR	THR	V719	THR	P989	PHE	THR
V128	P204	GLY	GLY	LEU	TYR	GLY	D734	THR	R992	LYS	THR
F131	I205	VAL	VAL	ASP	THR	GLY	C735	THR	L993	HIS	THR
Q132	E209	PRO	PRO	LYS	THR	HIS	E745	THR	G996	THR	THR
F133	E211	LYS	LYS	GLN	THR	GLM	C746	THR	R997	SER	THR
L139	L220	LEU	LEU	PRO	LYS	PRO	S755	THR	L996	PRO	THR
D140	L220	ASP	ASP	TYR	ASP	TYR	F756	THR	Q999	ASP	THR
HIS	D225	LEU	LEU	ASN	LEU	VAL	F756	THR	S1000	VAL	THR
ASN	L226	THR	THR	TYR	CYS	VAL	Q759	THR	L1001	ASP	THR
LYS	I230	ILE	ILE	TYR	PHE	VAL	L760	THR	V1005	GLY	THR
ASN	N231	THR	THR	TYR	THR	LEU	I767	THR	R1011	ASP	THR
LYS	I232	ASN	ASN	ARG	THR	LEU	I767	THR	E1014	ILE	THR
SER	I232	ASN	ASN	ARG	THR	LEU	I767	THR	H1015	SER	THR
TRP	T233	LEU	LEU	PHE	THR	GLU	Q771	THR	R1016	GLY	THR
MET	R234	CYS	TYR	PHE	THR	LEU	Q776	THR	N1020	ILE	THR
E149	T237	PRO	ALA	LYS	THR	LEU	Q776	THR	ALA	ALA	THR
S150	L238	PHE	SER	SER	THR	HIS	R631	THR	VAL	VAL	THR
E151	L238	ASP	ASP	LYS	THR	LEU	R631	THR	VAL	VAL	THR
F152	L241	GLU	GLU	ASN	THR	ALA	V639	THR	E915	VAL	THR
V153	HIS	VAL	VAL	ASN	THR	ALA	V639	THR	K918	VAL	THR
V154	L241	VAL	VAL	LYS	THR	ALA	F640	THR	L919	VAL	THR
Y155	HIS	PHE	PHE	LYS	THR	VAL	Q641	THR	C1029	ILE	THR
S156	ARG	ALA	ALA	PRO	THR	CYS	Q641	THR	R1036	GLN	THR
C161	TYR	THR	THR	GLY	THR	GLY	Q801	THR	L924	LYS	THR
T162	THR	ALA	ALA	ARG	THR	PRO	P806	THR	F924	GLU	THR
				ASP	THR	ASP	S807	THR	N925	ILE	THR

• Molecule 2: UT28K-RD Fab heavy chain

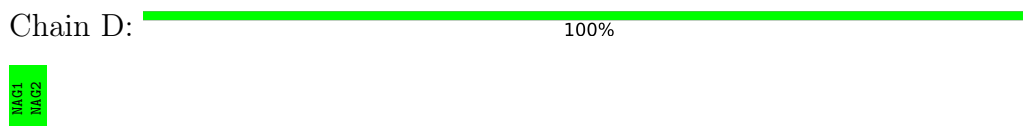


GLN	LYS	LEU
R2	SER	THR
Q6	THR	THR
S7	GLY	GLM
P8	GLY	THR
G9	THR	TYR
E10	ALA	ILE
V18	ALA	CYS
S52	ASN	ASN
Q39	GLY	ASN
A40	CYS	ASN
R41	LEU	THR
L45	VAL	THR
V53	PHE	LYS
G54	PRO	VAL
Y60	GLU	ASP
Q65	VAL	LYS
E66	TRP	PRO
I70	ASN	LYS
T71	GLY	CYS
R72	ALA	ASP
S75	LEU	THR
T76	THR	THR
S77	SER	THR
F88	HIS	PRO
E89	THR	PRO
D90	PHE	PRO
T91	ALA	PRO
Q114	VAL	GLY
V120	LEU	GLN
S121	GLN	SER
S122	SER	SER
A123	GLY	GLY
SER	HIS	HIS
THR	HIS	HIS
LYS	HIS	HIS
GLY	HIS	HIS
PRO	HIS	HIS
PRO	HIS	HIS
VAL	HIS	HIS
VAL	HIS	HIS
VAL	HIS	HIS
PHE	HIS	HIS
LEU	HIS	HIS
LEU	HIS	HIS
ALA	HIS	HIS
PRO	HIS	HIS
PRO	HIS	HIS
SER	HIS	HIS

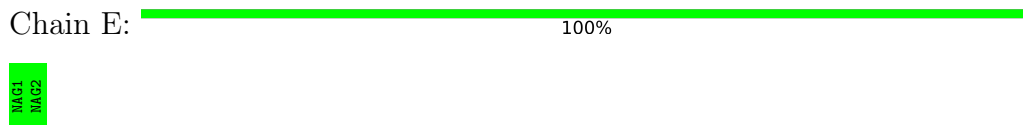
• Molecule 3: UT28K-RD Fab light chain



- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



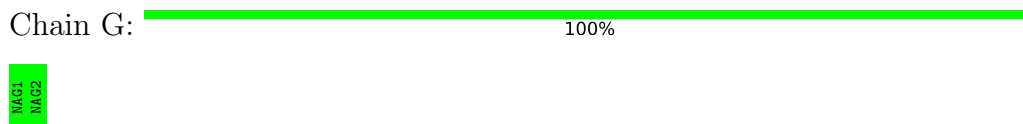
- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose



- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose





- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucofuranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain J:  50% 50%



- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucofuranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain K:  100%



- Molecule 4: 2-acetamido-2-deoxy-beta-D-glucofuranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain M:  100%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	179684	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 ($e^-/\text{\AA}^2$)	50.0	Depositor
Minimum defocus (nm)	1300	Depositor
Maximum defocus (nm)	2300	Depositor
Magnification	130000	Depositor
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	1.100	Depositor
Minimum map value	-0.449	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.026	Depositor
Recommended contour level	0.119	Depositor
Map size (Å)	385.92, 385.92, 385.92	wwPDB
Map dimensions	288, 288, 288	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.34, 1.34, 1.34	Depositor

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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

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	0.58	0/8421	0.60	2/11459 (0.0%)
1	B	0.62	0/8364	0.60	0/11383
1	C	0.57	0/6797	0.59	1/9251 (0.0%)
2	H	0.68	0/959	0.56	0/1297
3	L	0.65	0/836	0.57	0/1137
All	All	0.60	0/25377	0.59	3/34527 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	735	CYS	CA-CB-SG	5.14	123.26	114.00
1	A	749	LEU	CA-CB-CG	5.09	127.02	115.30
1	C	735	CYS	CA-CB-SG	5.06	123.11	114.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	8226	0	8045	236	0
1	B	8170	0	7981	244	0
1	C	6651	0	6525	213	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	H	939	0	903	15	0
3	L	816	0	786	19	0
4	D	28	0	25	0	0
4	E	28	0	25	0	0
4	F	28	0	25	1	0
4	G	28	0	25	0	0
4	I	28	0	25	1	0
4	J	28	0	25	3	0
4	K	28	0	25	0	0
4	M	28	0	25	0	0
5	A	168	0	156	3	0
5	B	168	0	156	6	0
5	C	140	0	130	5	0
All	All	25502	0	24882	683	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 14.

All (683) 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:415:ILE:HD12	1:A:419:ASN:HD22	1.27	0.99
1:B:388:CYS:HA	1:B:522:CYS:HB3	1.48	0.96
1:A:449:LEU:HB3	1:A:489:LEU:HD11	1.52	0.90
1:C:808:LYS:NZ	1:C:810:SER:OG	2.03	0.90
1:A:347:VAL:HG11	1:A:415:ILE:HD11	1.54	0.89
1:B:760:LEU:HD13	1:B:1001:LEU:HD22	1.55	0.87
1:B:514:LEU:HD21	1:A:980:ARG:HE	1.38	0.87
1:B:41:LYS:NZ	1:C:559:PHE:O	2.06	0.86
1:B:93:ILE:O	1:B:182:LYS:NZ	2.08	0.85
1:A:400:ARG:HH22	1:A:402:ASP:HB2	1.40	0.83
1:A:97:ASN:OD1	1:A:100:ARG:NH2	2.12	0.83
1:C:884:THR:HG21	1:C:891:LEU:HD12	1.61	0.83
1:B:320:THR:OG1	1:B:321:GLU:OE1	1.98	0.82
1:C:124:VAL:HG13	1:C:169:PRO:HA	1.59	0.81
1:A:413:GLY:O	1:A:417:ASP:HB3	1.80	0.81
1:A:621:ILE:HG23	1:A:631:ARG:HD2	1.63	0.79
1:B:639:VAL:HG12	1:B:648:ILE:HG12	1.67	0.77
1:A:566:ILE:O	1:C:961:LYS:NZ	2.17	0.77
1:A:400:ARG:HB2	1:A:492:TYR:HE1	1.50	0.76
1:B:183:ASN:OD1	1:B:202:HIS:NE2	2.19	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:552:SER:HB3	1:C:583:ASP:HB2	1.67	0.76
1:B:436:ASN:ND2	1:B:503:GLN:HE21	1.84	0.75
1:A:201:LYS:HD2	1:A:202:HIS:H	1.51	0.74
1:B:1016:ARG:NH1	1:C:1014:GLU:OE1	2.20	0.73
1:C:93:ILE:HD11	1:C:182:LYS:HG3	1.70	0.73
1:B:968:GLY:O	1:B:992:ARG:NH1	2.22	0.73
1:C:700:ASN:OD1	1:C:701:SER:N	2.22	0.73
1:C:1016:ARG:O	1:C:1020:ASN:ND2	2.22	0.72
1:B:401:GLY:HA2	1:B:505:TYR:CD1	2.24	0.72
1:B:454:ARG:NH1	1:B:464:ASP:OD1	2.23	0.72
1:B:1098:HIS:ND1	5:B:1311:NAG:O7	2.23	0.72
1:C:53:ASP:OD1	1:C:54:LEU:N	2.21	0.72
1:C:988:VAL:HG23	1:C:989:GLN:HE21	1.54	0.71
1:B:354:ARG:HG3	1:B:393:TYR:CE2	2.25	0.71
1:C:30:ASN:OD1	1:C:31:SER:N	2.24	0.71
1:A:982:ASP:OD2	1:A:984:PRO:HD2	1.91	0.70
1:A:987:GLU:OE2	1:A:987:GLU:N	2.21	0.70
1:A:121:ALA:HB3	5:A:1302:NAG:H82	1.73	0.69
1:B:99:ILE:HB	1:B:239:LEU:HD13	1.73	0.69
1:B:700:ASN:OD1	1:B:701:SER:N	2.25	0.69
1:B:124:VAL:HG13	1:B:169:PRO:HA	1.74	0.69
1:B:43:PHE:HA	1:C:560:GLN:HE21	1.58	0.69
1:B:95:LYS:HB2	1:B:182:LYS:HE3	1.75	0.69
1:B:103:ILE:HG12	1:B:238:LEU:HD21	1.75	0.69
1:B:617:VAL:O	1:B:621:ILE:HG12	1.93	0.69
1:A:100:ARG:HH11	1:A:240:ALA:HB3	1.57	0.69
1:A:96:SER:O	1:A:98:ILE:HD12	1.93	0.68
1:A:32:PHE:HE2	1:A:215:GLN:HE22	1.40	0.68
1:A:368:LEU:HD21	2:H:75:SER:HB2	1.76	0.68
1:C:1025:LYS:O	1:C:1029:CYS:HB2	1.93	0.68
1:B:350:TRP:O	1:B:463:ARG:NH1	2.26	0.68
1:A:967:PHE:CE1	1:A:996:GLY:HA3	2.27	0.68
1:B:446:TYR:OH	1:B:495:ARG:NH1	2.27	0.67
1:A:363:SER:HA	1:A:366:TYR:HB3	1.77	0.67
1:C:81:VAL:HB	1:C:234:ARG:HH12	1.59	0.67
1:B:99:ILE:HD11	1:B:237:THR:HB	1.75	0.67
1:C:801:GLN:NE2	1:C:932:GLN:OE1	2.28	0.67
1:A:1025:LYS:O	1:A:1029:CYS:HB2	1.95	0.67
1:A:451:ARG:NH1	1:A:466:SER:O	2.28	0.66
2:H:39:GLN:HB2	2:H:45:LEU:HD23	1.77	0.66
1:A:400:ARG:HB2	1:A:492:TYR:CE1	2.29	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:434:ASN:HD21	1:A:503:GLN:HG3	1.59	0.66
1:B:616:GLU:OE1	1:B:616:GLU:N	2.28	0.66
1:C:97:ASN:OD1	1:C:100:ARG:NE	2.28	0.66
1:B:183:ASN:ND2	1:B:185:ARG:HE	1.94	0.66
1:B:607:VAL:HG21	1:B:632:VAL:HG21	1.78	0.66
1:B:180:ASN:HD21	1:B:207:VAL:HA	1.61	0.65
1:C:120:ASN:ND2	1:C:123:ASN:O	2.30	0.65
1:A:64:TRP:CZ3	1:A:66:HIS:HB2	2.31	0.65
1:A:106:THR:HG23	1:A:107:THR:HG23	1.79	0.65
1:C:106:THR:OG1	1:C:231:ASN:O	2.14	0.65
1:A:748:ASN:HA	1:A:751:LEU:HD12	1.78	0.65
1:C:823:VAL:O	1:C:825:LEU:N	2.30	0.64
1:B:566:ILE:HD12	1:B:566:ILE:H	1.63	0.64
1:C:140:ASP:O	1:C:149:GLU:N	2.29	0.64
2:H:32:SER:O	2:H:53:VAL:HG22	1.98	0.64
1:A:314:ASN:ND2	1:C:734:ASP:OD2	2.31	0.64
1:A:401:GLY:HA2	1:A:505:TYR:HD2	1.62	0.64
1:A:413:GLY:O	1:A:417:ASP:CB	2.45	0.64
1:C:820:PHE:O	1:C:824:THR:OG1	2.08	0.63
1:B:287:ASP:HB3	1:B:290:LEU:HD22	1.80	0.63
1:B:233:THR:HG23	1:B:234:ARG:HG2	1.80	0.63
1:A:334:PRO:HB2	1:A:337:GLU:OE1	1.99	0.63
1:C:951:HIS:HB3	1:C:1011:ARG:NH1	2.14	0.63
1:A:700:ASN:OD1	1:A:701:SER:N	2.31	0.63
1:C:295:GLU:OE2	1:C:312:THR:OG1	2.11	0.63
1:C:811:LYS:HE3	1:C:811:LYS:HA	1.81	0.63
1:B:621:ILE:HD12	1:B:625:GLN:HE22	1.63	0.62
1:A:469:ILE:HD12	1:A:469:ILE:H	1.64	0.62
1:A:379:VAL:HG23	1:A:380:SER:H	1.63	0.62
1:A:1091:VAL:HG12	1:C:901:TYR:OH	1.99	0.62
1:C:535:CYS:HB3	1:C:548:VAL:HG23	1.80	0.62
1:C:624:ASP:OD1	1:C:625:GLN:N	2.31	0.62
1:A:94:GLU:OE1	1:A:98:ILE:N	2.33	0.62
1:A:134:CYS:N	1:A:154:VAL:O	2.28	0.62
1:B:109:ASP:OD2	1:B:111:LYS:HG2	1.99	0.62
1:C:790:PRO:HG2	1:C:791:ILE:HD12	1.79	0.62
1:C:139:LEU:HG	1:C:150:SER:H	1.64	0.62
1:B:495:ARG:HB2	1:B:498:TYR:CE1	2.35	0.61
1:A:223:LEU:HG	1:A:224:VAL:HG23	1.81	0.61
1:B:32:PHE:HD1	1:B:215:GLN:HB3	1.65	0.61
1:B:41:LYS:HE3	1:C:561:GLN:HE22	1.65	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:405:ARG:NH1	1:A:366:TYR:OH	2.34	0.61
1:A:119:ASN:ND2	1:A:171:LEU:H	1.99	0.61
5:C:1301:NAG:H83	5:C:1301:NAG:H3	1.83	0.61
1:B:48:LEU:HD11	1:B:275:LYS:HZ3	1.66	0.61
1:C:806:PRO:O	1:C:811:LYS:NZ	2.30	0.61
1:C:993:LEU:O	1:C:997:ARG:HG2	2.00	0.61
1:B:43:PHE:HA	1:C:560:GLN:NE2	2.16	0.61
1:A:439:ASP:OD1	1:A:445:ASN:ND2	2.34	0.60
1:B:814:PRO:O	1:B:818:LEU:HD12	2.00	0.60
1:A:199:TYR:HD2	1:A:222:PRO:HA	1.66	0.60
1:A:686:SER:OG	1:A:687:GLN:N	2.35	0.60
1:A:707:ASN:O	1:A:707:ASN:ND2	2.27	0.60
1:A:119:ASN:HD21	1:A:171:LEU:H	1.48	0.60
1:B:880:THR:HG21	1:C:702:VAL:HG13	1.84	0.59
1:A:109:ASP:OD2	1:A:111:LYS:N	2.35	0.59
1:B:325:ARG:NH1	1:B:577:GLN:OE1	2.35	0.59
1:C:182:LYS:HB3	1:C:205:ILE:HG23	1.84	0.59
1:B:613:ASN:OD1	5:B:1308:NAG:N2	2.36	0.59
1:A:228:ILE:HD12	1:A:230:ILE:HG12	1.84	0.59
1:B:295:GLU:OE2	1:B:630:TRP:NE1	2.35	0.59
1:B:388:CYS:HA	1:B:522:CYS:CB	2.26	0.59
1:A:318:GLN:HG2	1:A:625:GLN:HA	1.85	0.59
1:C:201:LYS:HD2	1:C:202:HIS:N	2.18	0.59
1:C:968:GLY:O	1:C:992:ARG:NE	2.35	0.59
3:L:79:LEU:HG	3:L:84:PHE:HE1	1.67	0.59
1:A:354:ARG:HH12	1:A:391:ASN:HA	1.68	0.59
1:A:400:ARG:HB3	1:A:403:GLU:OE1	2.03	0.59
1:A:699:GLU:OE2	1:A:700:ASN:N	2.35	0.58
1:C:67:VAL:HG12	1:C:78:ASP:HB3	1.85	0.58
1:B:336:ASP:N	1:B:336:ASP:OD1	2.35	0.58
1:C:323:ILE:HG21	1:C:530:LEU:HA	1.86	0.58
1:B:495:ARG:HB2	1:B:498:TYR:HE1	1.67	0.58
1:A:206:ILE:O	1:A:208:ARG:NH2	2.36	0.58
1:B:209:GLU:N	1:B:209:GLU:OE1	2.36	0.58
1:B:559:PHE:HD2	1:A:41:LYS:HG2	1.68	0.58
1:A:323:ILE:HD11	1:A:531:VAL:HG12	1.85	0.58
1:A:471:GLN:NE2	1:A:475:LYS:O	2.35	0.58
2:H:60:TYR:HE1	2:H:70:ILE:HD12	1.69	0.58
1:B:402:ASP:OD1	1:B:402:ASP:N	2.34	0.57
1:C:651:GLU:OE2	1:C:651:GLU:N	2.30	0.57
1:C:970:ILE:HG12	1:C:989:GLN:OE1	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:398:VAL:HG22	1:A:506:ARG:HB3	1.86	0.57
1:A:626:LEU:HD12	1:A:627:THR:HG23	1.86	0.57
1:C:1098:HIS:ND1	5:C:1309:NAG:H5	2.19	0.57
1:B:115:LEU:HD21	1:B:230:ILE:HG21	1.86	0.57
1:A:745:GLU:O	1:A:749:LEU:HD12	2.04	0.57
1:A:801:GLN:NE2	1:A:932:GLN:OE1	2.34	0.57
1:B:759:GLN:HE21	1:C:958:THR:HG21	1.68	0.57
1:B:886:GLY:HA3	1:B:1031:LEU:HD23	1.86	0.57
1:A:1098:HIS:ND1	5:A:1311:NAG:H5	2.19	0.57
1:C:967:PHE:CD1	1:C:996:GLY:HA3	2.40	0.57
1:B:32:PHE:CD1	1:B:215:GLN:HB3	2.40	0.56
1:B:543:LEU:HD21	1:B:570:THR:HG21	1.86	0.56
1:A:81:VAL:HG11	1:A:234:ARG:HH21	1.70	0.56
1:A:129:CYS:SG	1:A:130:GLU:N	2.78	0.56
1:A:333:CYS:N	1:A:358:CYS:SG	2.78	0.56
2:H:7:SER:OG	2:H:8:GLY:N	2.38	0.56
1:B:81:VAL:HA	1:B:236:GLN:OE1	2.06	0.56
1:A:53:ASP:HB3	1:A:55:PHE:CE1	2.40	0.56
1:A:123:ASN:HA	1:A:169:PRO:HD3	1.87	0.56
1:A:1104:ARG:HE	1:A:1104:ARG:HA	1.70	0.56
1:C:116:LEU:HD11	1:C:118:VAL:HG23	1.85	0.56
1:C:201:LYS:HB3	1:C:220:LEU:HD22	1.88	0.56
1:A:702:VAL:HG13	1:C:880:THR:HG21	1.88	0.56
1:C:169:PRO:HG2	1:C:172:MET:SD	2.46	0.56
1:C:798:ASN:HB3	1:C:925:ASN:ND2	2.20	0.56
1:A:31:SER:HB3	1:A:60:SER:H	1.71	0.56
1:C:106:THR:HG22	1:C:107:THR:HG23	1.86	0.56
1:C:1025:LYS:NZ	1:C:1039:PHE:O	2.39	0.56
1:B:467:THR:O	1:B:467:THR:OG1	2.22	0.56
1:B:184:LEU:HB2	1:B:205:ILE:HD11	1.87	0.55
1:A:242:HIS:CD2	1:A:243:ARG:HH21	2.24	0.55
1:B:292:PRO:HG3	1:B:630:TRP:CZ2	2.41	0.55
1:B:808:LYS:NZ	1:B:810:SER:HB3	2.22	0.55
1:C:325:ARG:HG2	1:C:325:ARG:HH11	1.71	0.55
1:A:67:VAL:HG11	1:A:239:LEU:HD21	1.88	0.55
1:B:173:ASP:O	1:B:183:ASN:ND2	2.39	0.55
1:B:749:LEU:HD13	1:B:990:ILE:HG21	1.89	0.55
1:A:615:THR:OG1	1:A:616:GLU:N	2.38	0.55
1:B:621:ILE:HB	1:B:625:GLN:OE1	2.06	0.55
1:A:459:LYS:HZ2	4:J:1:NAG:H82	1.72	0.55
1:A:149:GLU:OE1	1:A:242:HIS:ND1	2.37	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:613:ASN:OD1	1:C:614:CYS:N	2.40	0.55
1:C:171:LEU:O	1:C:171:LEU:HD23	2.07	0.55
1:C:99:ILE:HD11	1:C:237:THR:OG1	2.06	0.55
1:A:445:ASN:OD1	1:A:494:PHE:HB2	2.07	0.54
1:B:702:VAL:HG13	1:A:880:THR:HG21	1.87	0.54
2:H:91:THR:HG22	2:H:120:VAL:H	1.72	0.54
1:B:42:VAL:O	1:C:560:GLN:NE2	2.40	0.54
1:B:43:PHE:CA	1:C:560:GLN:HE21	2.19	0.54
1:B:809:PRO:O	1:B:811:LYS:NZ	2.40	0.54
1:C:131:PHE:HD1	1:C:155:TYR:CG	2.24	0.54
1:C:808:LYS:HD2	1:C:809:PRO:HD2	1.90	0.54
1:B:115:LEU:HD11	1:B:228:ILE:HD13	1.89	0.54
1:A:379:VAL:HG12	1:C:980:ARG:HB3	1.89	0.54
1:C:167:SER:OG	1:C:168:GLN:N	2.41	0.54
1:C:196:PHE:HB3	1:C:226:LEU:HB3	1.89	0.54
1:C:950:ASN:O	1:C:954:GLN:HG3	2.07	0.54
1:A:104:PHE:HB3	1:A:232:ILE:HD12	1.89	0.54
1:C:561:GLN:OE1	1:C:561:GLN:N	2.41	0.54
1:C:609:TYR:HE2	1:C:621:ILE:HD12	1.72	0.54
1:C:201:LYS:NZ	1:C:203:THR:OG1	2.41	0.54
1:B:180:ASN:ND2	1:B:206:ILE:O	2.41	0.54
1:B:435:SER:OG	1:B:439:ASP:OD1	2.20	0.54
1:A:564:ARG:HH11	1:A:564:ARG:HG2	1.72	0.54
1:B:324:VAL:HG22	1:B:528:THR:HG23	1.90	0.54
1:A:962:GLN:NE2	1:C:756:PHE:HE2	2.06	0.54
1:A:444:GLY:HA2	1:A:495:ARG:HH12	1.72	0.53
1:B:125:VAL:O	1:B:127:LYS:NZ	2.41	0.53
1:A:107:THR:OG1	1:A:109:ASP:OD1	2.19	0.53
1:C:745:GLU:HG3	1:C:746:CYS:N	2.23	0.53
1:C:182:LYS:HE2	1:C:182:LYS:HA	1.89	0.53
1:C:1102:THR:HG22	1:C:1109:PRO:HA	1.90	0.53
1:B:564:ARG:HG3	1:B:565:ASP:H	1.74	0.53
1:B:699:GLU:OE1	1:A:787:LYS:NZ	2.29	0.53
1:A:295:GLU:OE2	1:A:630:TRP:HZ2	1.91	0.53
1:C:196:PHE:HE1	1:C:198:ILE:HD11	1.74	0.53
1:B:867:ILE:O	1:B:871:THR:HG23	2.09	0.53
1:A:723:ILE:HG13	1:A:1058:VAL:HG22	1.91	0.53
1:B:41:LYS:HE3	1:C:561:GLN:NE2	2.23	0.53
1:A:739:ILE:O	1:A:997:ARG:NH1	2.41	0.53
1:B:110:SER:OG	1:B:132:GLN:HB2	2.09	0.53
1:B:100:ARG:HB2	1:B:119:ASN:OD1	2.09	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:709:ILE:HB	1:B:1074:THR:HG21	1.91	0.52
1:B:818:LEU:HD11	1:B:932:GLN:NE2	2.24	0.52
1:C:41:LYS:HE3	1:C:41:LYS:HA	1.92	0.52
1:C:183:ASN:HD22	1:C:185:ARG:HH22	1.56	0.52
1:B:1025:LYS:O	1:B:1029:CYS:HB2	2.09	0.52
1:C:324:VAL:HG23	1:C:539:ASN:HB3	1.92	0.52
1:C:1069:GLU:OE1	1:C:1069:GLU:N	2.42	0.52
1:A:454:ARG:NH2	1:A:457:ASN:O	2.42	0.52
1:C:295:GLU:O	1:C:299:THR:HG23	2.09	0.52
1:C:554:LYS:NZ	1:C:571:ASP:OD2	2.38	0.52
1:B:1036:ARG:HH12	1:C:1036:ARG:CZ	2.22	0.52
1:A:635:THR:OG1	1:A:638:ASN:OD1	2.20	0.52
1:B:163:PHE:HE1	1:B:165:TYR:HB2	1.75	0.52
1:A:489:LEU:HD12	1:A:490:ARG:N	2.25	0.52
1:C:115:LEU:HD23	1:C:116:LEU:N	2.25	0.52
1:B:615:THR:OG1	1:B:616:GLU:OE1	2.25	0.52
1:B:973:VAL:HG12	1:B:976:ASP:H	1.75	0.52
1:A:199:TYR:CD2	1:A:222:PRO:HA	2.45	0.52
1:C:577:GLN:O	5:C:1304:NAG:H82	2.10	0.52
1:B:126:ILE:HG23	1:B:165:TYR:HB3	1.92	0.52
1:B:171:LEU:HD21	1:B:185:ARG:HG2	1.91	0.51
1:B:81:VAL:HG11	1:B:234:ARG:HH22	1.76	0.51
1:A:149:GLU:OE1	1:A:242:HIS:HA	2.11	0.51
1:B:808:LYS:HZ2	1:B:810:SER:HB3	1.74	0.51
1:C:150:SER:HA	1:C:153:ARG:NE	2.25	0.51
3:L:40:LYS:HD2	3:L:41:PRO:HD2	1.91	0.51
1:B:401:GLY:HA2	1:B:505:TYR:HD1	1.76	0.51
1:B:560:GLN:NE2	1:A:43:PHE:HA	2.25	0.51
1:A:556:PHE:HB3	1:A:560:GLN:HB3	1.91	0.51
1:B:625:GLN:HB3	1:B:627:THR:H	1.76	0.51
1:A:1081:ASP:O	1:A:1083:LYS:HG3	2.11	0.51
1:B:134:CYS:SG	1:B:135:ASN:N	2.84	0.51
1:B:324:VAL:HG23	1:B:527:SER:HA	1.92	0.51
1:A:201:LYS:HD2	1:A:202:HIS:N	2.23	0.51
1:A:402:ASP:HB3	1:A:405:ARG:HH22	1.75	0.51
1:C:150:SER:O	1:C:154:VAL:HG13	2.10	0.51
1:A:974:LEU:HD12	1:A:974:LEU:H	1.75	0.51
1:B:53:ASP:HB3	1:B:55:PHE:CE2	2.46	0.51
1:B:383:LYS:HD2	1:A:981:LEU:O	2.11	0.51
1:C:173:ASP:OD2	1:C:202:HIS:ND1	2.43	0.51
3:L:26:SER:OG	3:L:27:GLN:N	2.44	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:323:ILE:HD12	1:A:530:LEU:HA	1.93	0.50
1:A:400:ARG:HH22	1:A:402:ASP:CB	2.17	0.50
1:A:967:PHE:CD1	1:A:996:GLY:HA3	2.46	0.50
3:L:68:SER:OG	3:L:69:GLY:N	2.44	0.50
1:B:180:ASN:HA	1:B:208:ARG:HH22	1.76	0.50
1:A:487:PHE:HE1	1:A:489:LEU:HB3	1.77	0.50
1:A:825:LEU:HD12	1:A:946:GLN:NE2	2.26	0.50
1:C:919:LEU:O	1:C:923:GLN:HG3	2.11	0.50
1:B:339:PHE:HB2	5:B:1307:NAG:H82	1.94	0.50
1:B:325:ARG:NH2	1:B:575:ASP:OD1	2.23	0.50
1:A:116:LEU:HD21	1:A:118:VAL:HG23	1.92	0.50
1:A:820:PHE:O	1:A:824:THR:HB	2.11	0.50
1:A:489:LEU:HD12	1:A:490:ARG:H	1.76	0.50
1:C:94:GLU:OE1	1:C:99:ILE:HG22	2.12	0.50
1:C:668:CYS:HB2	1:C:692:TYR:CE2	2.47	0.50
2:H:65:GLN:HB3	2:H:66:GLU:OE1	2.12	0.50
1:B:43:PHE:HB3	1:C:563:GLY:HA3	1.92	0.50
1:A:571:ASP:OD2	1:A:571:ASP:N	2.43	0.50
1:B:225:ASP:OD2	1:B:226:LEU:N	2.45	0.50
1:B:607:VAL:HG11	1:B:630:TRP:HH2	1.75	0.50
1:B:132:GLN:NE2	1:B:133:PHE:O	2.45	0.49
1:C:325:ARG:HG2	1:C:325:ARG:NH1	2.27	0.49
1:B:808:LYS:HG2	1:B:809:PRO:HD2	1.93	0.49
1:C:209:GLU:HB2	1:C:211:GLU:OE1	2.12	0.49
1:C:107:THR:OG1	1:C:109:ASP:OD1	2.29	0.49
1:C:688:SER:OG	1:C:689:ILE:N	2.46	0.49
1:B:401:GLY:HA2	1:B:505:TYR:CE1	2.48	0.49
1:A:559:PHE:HD1	1:C:41:LYS:NZ	2.11	0.49
1:B:756:PHE:O	1:B:760:LEU:HG	2.12	0.49
1:A:430:VAL:O	1:A:431:ILE:HD13	2.13	0.49
1:A:1104:ARG:HA	1:A:1104:ARG:NE	2.26	0.49
1:C:321:GLU:N	1:C:321:GLU:OE1	2.46	0.49
1:C:123:ASN:HA	1:C:169:PRO:HD3	1.95	0.49
1:C:126:ILE:HB	1:C:165:TYR:HB3	1.95	0.49
1:B:498:TYR:HB3	1:B:502:HIS:HB2	1.94	0.49
1:B:823:VAL:HG23	1:B:942:LEU:HD23	1.95	0.49
1:A:64:TRP:HZ3	1:A:66:HIS:HB2	1.75	0.49
1:B:129:CYS:HB2	1:B:131:PHE:CZ	2.48	0.49
1:B:139:LEU:HA	1:B:150:SER:HB3	1.95	0.49
1:B:354:ARG:HG3	1:B:393:TYR:HE2	1.74	0.49
1:B:451:ARG:NH2	1:B:464:ASP:OD2	2.46	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:484:ASN:HA	1:A:486:TYR:HE2	1.78	0.49
1:A:621:ILE:HD12	1:A:621:ILE:H	1.78	0.49
1:C:34:ARG:NH2	1:C:186:GLU:OE2	2.35	0.49
1:C:119:ASN:ND2	1:C:170:PHE:HB2	2.28	0.49
1:C:131:PHE:HB2	1:C:133:PHE:CE1	2.48	0.49
1:C:607:VAL:HG23	1:C:609:TYR:HE1	1.77	0.49
1:B:1104:ARG:NH1	1:A:901:TYR:CE2	2.81	0.48
1:C:81:VAL:HG23	1:C:81:VAL:O	2.13	0.48
1:B:168:GLN:HE22	1:B:172:MET:HB3	1.78	0.48
1:A:490:ARG:HA	1:A:490:ARG:NE	2.28	0.48
1:C:755:SER:O	1:C:759:GLN:HG3	2.13	0.48
1:B:184:LEU:HB2	1:B:205:ILE:CD1	2.43	0.48
1:A:119:ASN:ND2	1:A:171:LEU:HD23	2.29	0.48
1:A:130:GLU:HB3	1:A:159:ASN:O	2.14	0.48
1:A:1030:VAL:HG12	1:A:1031:LEU:HD12	1.95	0.48
1:C:225:ASP:OD1	1:C:226:LEU:N	2.46	0.48
1:C:328:ASN:HA	1:C:577:GLN:HG2	1.95	0.48
1:B:333:CYS:N	1:B:358:CYS:SG	2.86	0.48
1:A:490:ARG:HA	1:A:490:ARG:HE	1.78	0.48
1:B:131:PHE:HD1	1:B:155:TYR:CD1	2.31	0.48
1:C:95:LYS:HZ1	1:C:178:GLN:N	2.11	0.48
1:C:108:LEU:HB2	1:C:234:ARG:HH21	1.79	0.48
1:C:624:ASP:O	1:C:631:ARG:NH2	2.46	0.48
1:B:182:LYS:HE2	1:B:182:LYS:HA	1.95	0.48
1:C:93:ILE:HD12	1:C:183:ASN:O	2.13	0.48
1:C:580:GLU:N	1:C:580:GLU:OE2	2.47	0.48
1:C:1103:GLN:HE21	1:C:1106:PHE:HB3	1.78	0.48
1:B:568:ASP:HB3	1:A:964:SER:HB2	1.96	0.48
1:C:999:GLN:OE1	1:C:999:GLN:HA	2.14	0.48
1:B:81:VAL:CG1	1:B:234:ARG:HH12	2.26	0.48
1:B:182:LYS:HG2	1:B:208:ARG:NH1	2.29	0.48
1:B:292:PRO:HA	1:B:630:TRP:HE1	1.79	0.48
1:B:435:SER:OG	1:B:435:SER:O	2.32	0.48
1:A:401:GLY:N	1:A:403:GLU:OE2	2.47	0.48
1:A:466:SER:HB2	1:C:111:LYS:NZ	2.28	0.48
1:A:526:LYS:HA	1:A:526:LYS:HE2	1.96	0.48
1:A:1122:ASN:ND2	1:A:1124:ASP:OD2	2.45	0.48
1:C:719:VAL:HG22	1:C:1062:VAL:HG22	1.94	0.48
1:A:560:GLN:NE2	1:C:41:LYS:O	2.46	0.48
1:C:624:ASP:OD1	1:C:625:GLN:HG3	2.13	0.48
1:B:376:CYS:HA	1:B:429:CYS:HA	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:441:LYS:HE2	1:B:445:ASN:HA	1.95	0.47
1:C:1098:HIS:CE1	5:C:1309:NAG:H5	2.49	0.47
1:B:935:LEU:HD23	1:B:935:LEU:HA	1.77	0.47
1:A:559:PHE:HD1	1:C:41:LYS:HZ1	1.61	0.47
1:C:639:VAL:HG22	1:C:648:ILE:HG12	1.95	0.47
1:B:543:LEU:O	1:B:544:LYS:HG3	2.14	0.47
1:C:109:ASP:OD1	1:C:109:ASP:N	2.46	0.47
3:L:21:LEU:HG	3:L:103:THR:HG21	1.97	0.47
1:B:185:ARG:HB3	1:B:187:PHE:CE1	2.50	0.47
1:A:453:PHE:HB2	1:A:488:PRO:HA	1.97	0.47
1:C:324:VAL:O	1:C:528:THR:OG1	2.31	0.47
1:C:1087:PRO:HD3	1:C:1092:PHE:CE2	2.50	0.47
1:B:115:LEU:HD13	1:B:128:VAL:HG22	1.96	0.47
1:A:392:VAL:HG22	1:A:512:PHE:HB3	1.96	0.47
1:A:459:LYS:NZ	4:J:1:NAG:H82	2.29	0.47
1:A:472:ALA:HB3	1:A:484:ASN:HB3	1.96	0.47
1:B:122:THR:HG22	5:B:1302:NAG:HN2	1.79	0.47
1:B:365:LEU:O	1:B:371:PHE:HZ	1.98	0.47
1:B:517:ALA:HB1	1:B:518:PRO:HD2	1.96	0.47
1:A:602:SER:OG	1:A:603:ASN:N	2.47	0.47
1:C:60:SER:OG	1:C:61:ASN:N	2.48	0.47
1:C:154:VAL:HG23	1:C:155:TYR:HD1	1.79	0.47
1:A:415:ILE:HD12	1:A:419:ASN:ND2	2.11	0.47
1:B:787:LYS:HE2	1:B:787:LYS:HB3	1.58	0.47
1:A:434:ASN:ND2	1:A:503:GLN:HG3	2.29	0.47
1:C:139:LEU:O	1:C:241:LEU:N	2.48	0.47
1:C:719:VAL:HA	1:C:1061:HIS:O	2.15	0.47
3:L:12:SER:O	3:L:12:SER:OG	2.33	0.46
3:L:33:TYR:HD2	3:L:93:GLY:HA2	1.79	0.46
3:L:65:GLY:HA2	3:L:73:THR:O	2.15	0.46
1:A:173:ASP:HB2	1:A:185:ARG:HH12	1.80	0.46
1:C:961:LYS:HE2	1:C:961:LYS:HA	1.97	0.46
3:L:34:LEU:HD12	3:L:35:ALA:N	2.30	0.46
1:A:354:ARG:NH2	1:A:355:ILE:O	2.48	0.46
1:A:458:LEU:HD23	1:A:462:GLU:HG3	1.98	0.46
1:A:495:ARG:HG2	1:A:498:TYR:HE2	1.80	0.46
3:L:20:THR:C	3:L:21:LEU:HD12	2.36	0.46
1:A:242:HIS:HD2	1:A:243:ARG:HH21	1.62	0.46
1:A:326:PHE:O	1:A:577:GLN:NE2	2.49	0.46
1:A:875:LEU:HD23	1:A:875:LEU:HA	1.70	0.46
1:C:83:PRO:O	1:C:266:TYR:OH	2.24	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:98:ILE:O	1:B:240:ALA:N	2.45	0.46
1:B:372:PHE:HE1	1:B:404:VAL:HG11	1.81	0.46
1:B:783:LYS:NZ	1:C:697:GLY:HA2	2.31	0.46
1:A:98:ILE:HG22	1:A:239:LEU:HD11	1.97	0.46
1:A:130:GLU:OE1	1:A:131:PHE:N	2.48	0.46
1:A:432:ALA:HB2	1:A:507:VAL:HG12	1.98	0.46
1:A:971:SER:OG	1:A:972:SER:N	2.48	0.46
1:C:325:ARG:HD2	1:C:530:LEU:HB3	1.96	0.46
1:B:103:ILE:CG1	1:B:238:LEU:HD21	2.46	0.46
1:B:393:TYR:OH	1:A:227:PRO:HG3	2.16	0.46
1:A:40:ASP:OD2	1:A:40:ASP:N	2.49	0.46
1:A:64:TRP:CD1	1:A:263:TYR:HE2	2.32	0.46
1:A:192:ILE:HG13	1:A:193:ASP:OD2	2.15	0.46
1:C:32:PHE:O	1:C:34:ARG:HG3	2.15	0.46
1:B:139:LEU:HD13	1:B:150:SER:HB3	1.97	0.46
1:C:64:TRP:HB2	1:C:263:TYR:CD2	2.50	0.46
1:C:183:ASN:HD22	1:C:185:ARG:NH2	2.14	0.46
1:B:293:LEU:O	1:B:297:LYS:HG3	2.16	0.46
1:B:318:GLN:HA	1:B:318:GLN:OE1	2.15	0.46
1:B:42:VAL:C	1:C:560:GLN:HE21	2.20	0.46
1:B:405:ARG:HD2	1:B:405:ARG:C	2.36	0.46
1:A:128:VAL:O	1:A:128:VAL:HG12	2.16	0.46
1:A:651:GLU:N	1:A:651:GLU:OE2	2.49	0.46
1:A:798:ASN:OD1	4:I:1:NAG:N2	2.50	0.46
1:B:159:ASN:ND2	1:B:160:ASN:OD1	2.49	0.45
1:B:292:PRO:HG3	1:B:630:TRP:CE2	2.51	0.45
1:A:484:ASN:HA	1:A:486:TYR:CE2	2.52	0.45
1:A:973:VAL:HB	1:A:976:ASP:HB3	1.97	0.45
1:C:120:ASN:OD1	1:C:122:THR:N	2.40	0.45
1:C:808:LYS:HD2	1:C:809:PRO:CD	2.45	0.45
1:B:64:TRP:HB2	1:B:263:TYR:CD2	2.52	0.45
1:B:292:PRO:CA	1:B:630:TRP:HE1	2.28	0.45
1:A:307:LYS:HG3	1:A:597:PRO:HA	1.99	0.45
1:C:327:PRO:O	1:C:328:ASN:HB2	2.16	0.45
1:B:267:LEU:HD23	1:B:267:LEU:H	1.82	0.45
1:B:975:ASN:HB3	1:C:544:LYS:HB3	1.98	0.45
1:B:983:PRO:HB2	1:B:984:PRO:HD3	1.98	0.45
1:A:402:ASP:O	1:A:405:ARG:NH1	2.50	0.45
1:B:435:SER:HB3	1:B:506:ARG:HG3	1.98	0.45
1:A:549:LEU:HA	1:A:583:ASP:O	2.16	0.45
1:C:202:HIS:HD2	1:C:203:THR:N	2.14	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:323:ILE:HD13	1:C:530:LEU:HA	1.99	0.45
1:C:911:ASN:O	1:C:915:GLU:HG3	2.16	0.45
2:H:53:VAL:HG23	2:H:54:GLY:N	2.32	0.45
3:L:34:LEU:HD12	3:L:35:ALA:H	1.82	0.45
1:C:82:LEU:HD12	1:C:82:LEU:H	1.82	0.45
1:C:173:ASP:HB2	1:C:202:HIS:ND1	2.32	0.45
1:C:271:THR:HG23	1:C:288:CYS:HB2	1.98	0.45
1:B:269:PRO:O	1:B:270:ARG:HG3	2.16	0.45
1:B:332:LEU:HD12	1:B:332:LEU:HA	1.81	0.45
1:B:341:ALA:HB3	1:B:344:PHE:HE1	1.81	0.45
1:A:566:ILE:HG22	1:C:961:LYS:NZ	2.31	0.45
1:A:662:PRO:HB3	1:C:861:LEU:HD11	1.99	0.45
1:A:400:ARG:O	1:A:400:ARG:HG2	2.16	0.45
1:A:825:LEU:HB2	1:A:946:GLN:HE22	1.81	0.45
1:C:53:ASP:HB3	1:C:55:PHE:CE1	2.51	0.45
1:B:173:ASP:OD1	1:B:202:HIS:ND1	2.50	0.45
1:C:967:PHE:CE1	1:C:996:GLY:HA3	2.52	0.45
1:B:203:THR:O	1:B:203:THR:OG1	2.32	0.45
1:B:208:ARG:HH11	1:B:208:ARG:HA	1.82	0.45
1:C:808:LYS:HD2	1:C:809:PRO:N	2.32	0.45
1:B:469:ILE:HG21	1:B:485:CYS:SG	2.57	0.45
1:B:557:LEU:O	1:B:560:GLN:HB3	2.17	0.45
1:B:602:SER:OG	1:B:603:ASN:N	2.50	0.45
1:B:991:ASP:HA	1:B:994:ILE:HG22	1.98	0.45
1:C:81:VAL:CB	1:C:234:ARG:HH12	2.28	0.45
1:B:29:THR:O	1:B:62:VAL:HG22	2.17	0.44
1:B:129:CYS:HB2	1:B:131:PHE:CE2	2.52	0.44
1:B:870:TYR:O	1:B:874:LEU:HG	2.17	0.44
1:B:982:ASP:OD1	1:B:984:PRO:HD2	2.17	0.44
1:C:33:THR:HA	1:C:58:PHE:CD1	2.52	0.44
2:H:53:VAL:HG23	2:H:54:GLY:H	1.82	0.44
1:B:555:LYS:HE2	1:B:555:LYS:HB2	1.76	0.44
1:A:106:THR:HG1	4:F:1:NAG:HO6	1.63	0.44
1:A:173:ASP:OD2	1:A:202:HIS:ND1	2.50	0.44
1:A:459:LYS:NZ	1:A:462:GLU:OE1	2.49	0.44
1:A:617:VAL:HG13	1:A:620:ALA:H	1.82	0.44
1:A:1009:LEU:HD23	1:A:1009:LEU:HA	1.75	0.44
1:C:776:GLN:OE1	1:C:776:GLN:HA	2.17	0.44
1:B:405:ARG:NH2	1:A:366:TYR:OH	2.50	0.44
1:A:560:GLN:HG2	1:C:43:PHE:HB2	2.00	0.44
1:C:119:ASN:HD22	1:C:170:PHE:HB2	1.83	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:278:GLU:HG2	1:C:279:ASN:OD1	2.17	0.44
1:C:806:PRO:HA	1:C:811:LYS:HE2	1.99	0.44
1:B:302:SER:OG	1:B:303:PHE:N	2.51	0.44
1:B:564:ARG:HG3	1:B:565:ASP:N	2.32	0.44
1:A:418:TYR:CE1	1:A:454:ARG:HB3	2.52	0.44
1:B:625:GLN:OE1	1:B:625:GLN:HA	2.18	0.44
1:A:343:ARG:NH2	1:A:447:ASN:HD21	2.16	0.44
1:A:916:ASN:O	1:A:920:ILE:HG13	2.17	0.44
1:C:898:GLN:OE1	1:C:902:ARG:NH1	2.51	0.44
1:B:273:LEU:HB3	1:B:286:VAL:HG12	2.00	0.44
1:B:493:SER:OG	1:B:493:SER:O	2.35	0.44
1:B:627:THR:HB	1:B:630:TRP:HB3	1.99	0.44
1:B:902:ARG:NE	1:B:1046:LEU:O	2.51	0.44
1:A:354:ARG:HD2	1:A:393:TYR:CE2	2.53	0.44
1:C:116:LEU:HB3	1:C:127:LYS:HB2	2.00	0.44
3:L:47:LEU:HD21	3:L:50:TYR:HB3	1.99	0.44
1:A:825:LEU:HD12	1:A:946:GLN:HE22	1.83	0.44
1:C:290:LEU:HD12	1:C:290:LEU:HA	1.81	0.44
1:C:1099:TRP:HB2	1:C:1132:ASN:ND2	2.33	0.44
1:B:106:THR:HA	1:B:233:THR:HG22	2.00	0.44
1:A:498:TYR:HB2	1:A:502:HIS:HB2	2.00	0.44
1:A:318:GLN:OE1	1:A:318:GLN:HA	2.18	0.44
1:C:132:GLN:HB3	1:C:156:SER:OG	2.18	0.44
1:C:562:PHE:HE2	1:C:564:ARG:HH21	1.66	0.44
1:C:938:THR:N	1:C:939:PRO:HD2	2.33	0.44
1:B:64:TRP:HH2	1:B:66:HIS:HD2	1.65	0.43
3:L:79:LEU:HG	3:L:84:PHE:CE1	2.50	0.43
1:B:150:SER:O	1:B:150:SER:OG	2.34	0.43
1:A:375:LYS:O	1:A:430:VAL:HG12	2.19	0.43
1:C:1001:LEU:HD23	1:C:1001:LEU:HA	1.79	0.43
1:A:98:ILE:HG22	1:A:239:LEU:CD1	2.48	0.43
1:A:368:LEU:HD11	2:H:75:SER:CB	2.48	0.43
3:L:59:ILE:HD13	3:L:59:ILE:HA	1.88	0.43
1:B:102:TRP:O	1:B:103:ILE:HD13	2.19	0.43
1:B:127:LYS:HB3	1:B:164:GLU:OE1	2.18	0.43
1:B:131:PHE:HB2	1:B:133:PHE:CE1	2.54	0.43
1:B:749:LEU:HD23	1:B:749:LEU:O	2.19	0.43
1:A:173:ASP:OD2	1:A:202:HIS:CG	2.71	0.43
1:A:552:SER:HB3	1:A:583:ASP:OD1	2.18	0.43
1:A:940:SER:O	1:A:940:SER:OG	2.30	0.43
1:C:641:GLN:HA	1:C:641:GLN:OE1	2.19	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:77:SER:OG	2:H:77:SER:O	2.36	0.43
1:A:307:LYS:HE2	1:A:307:LYS:HB3	1.72	0.43
1:C:911:ASN:N	1:C:911:ASN:OD1	2.52	0.43
1:B:27:ALA:HB1	1:B:64:TRP:NE1	2.34	0.43
1:B:166:VAL:O	1:B:167:SER:OG	2.32	0.43
1:B:225:ASP:C	1:B:226:LEU:HD12	2.39	0.43
1:B:1000:SER:O	1:B:1003:THR:OG1	2.30	0.43
1:A:215:GLN:OE1	1:A:215:GLN:HA	2.19	0.43
1:A:890:ALA:O	1:A:891:LEU:HD23	2.18	0.43
1:C:149:GLU:N	1:C:149:GLU:OE1	2.51	0.43
1:B:613:ASN:HA	1:B:641:GLN:HE22	1.83	0.43
1:A:79:ASN:HD21	1:A:239:LEU:HB3	1.83	0.43
1:A:136:ASP:HB2	1:A:138:PHE:CE1	2.54	0.43
1:A:230:ILE:HD11	1:A:232:ILE:HD11	2.00	0.43
1:A:937:SER:OG	1:A:939:PRO:HD2	2.19	0.43
1:C:882:GLY:HA2	1:C:898:GLN:OE1	2.18	0.43
1:B:1083:LYS:HE2	1:B:1083:LYS:HB2	1.84	0.43
1:C:323:ILE:HD11	1:C:531:VAL:HG13	2.00	0.43
1:B:764:LEU:HD23	1:B:764:LEU:HA	1.92	0.43
1:C:116:LEU:HD12	1:C:117:ILE:N	2.34	0.43
1:C:202:HIS:C	1:C:202:HIS:CD2	2.92	0.43
1:B:440:SER:OG	1:B:494:PHE:O	2.24	0.43
1:B:613:ASN:HB3	1:B:616:GLU:OE1	2.19	0.43
1:B:753:TYR:N	1:B:753:TYR:CD1	2.87	0.43
1:A:993:LEU:HD23	1:A:993:LEU:HA	1.87	0.43
1:C:232:ILE:HD13	1:C:232:ILE:HA	1.86	0.43
2:H:91:THR:O	2:H:91:THR:OG1	2.35	0.43
1:B:182:LYS:HB2	1:B:205:ILE:HB	2.00	0.42
1:B:333:CYS:SG	1:B:360:ALA:HB2	2.59	0.42
2:H:10:GLU:OE2	2:H:18:VAL:HG23	2.18	0.42
1:B:121:ALA:HB3	5:B:1302:NAG:O7	2.19	0.42
1:B:825:LEU:H	1:B:825:LEU:HD12	1.84	0.42
1:B:1089:GLU:N	1:B:1089:GLU:OE1	2.52	0.42
1:A:30:ASN:HD22	1:A:32:PHE:HE1	1.65	0.42
1:C:150:SER:HA	1:C:153:ARG:HG2	2.01	0.42
1:B:517:ALA:O	1:B:518:PRO:C	2.58	0.42
1:A:295:GLU:OE2	1:A:630:TRP:CZ2	2.71	0.42
1:A:458:LEU:HB3	1:A:462:GLU:CG	2.50	0.42
1:A:467:THR:HG23	1:A:467:THR:O	2.18	0.42
1:C:113:GLN:OE1	1:C:114:SER:N	2.52	0.42
1:C:162:THR:OG1	1:C:163:PHE:N	2.53	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:163:PHE:CE2	1:C:165:TYR:HB2	2.54	0.42
1:B:101:GLY:HA3	1:B:117:ILE:O	2.19	0.42
1:B:763:ALA:O	1:B:767:ILE:HG13	2.20	0.42
1:C:37:TYR:HA	1:C:220:LEU:H	1.84	0.42
1:C:106:THR:HG21	4:J:1:NAG:H61	2.02	0.42
1:C:111:LYS:HD3	1:C:111:LYS:C	2.40	0.42
1:C:767:ILE:O	1:C:771:GLN:HG2	2.19	0.42
1:C:226:LEU:HD12	1:C:226:LEU:HA	1.79	0.42
1:B:427:THR:HG23	1:B:427:THR:O	2.18	0.42
1:A:164:GLU:N	1:A:164:GLU:OE1	2.52	0.42
1:A:331:ASN:O	1:A:332:LEU:HD22	2.19	0.42
1:A:959:LEU:HD12	1:A:959:LEU:HA	1.82	0.42
1:C:93:ILE:HD12	1:C:93:ILE:HA	1.80	0.42
3:L:15:PRO:HA	3:L:79:LEU:HB3	2.02	0.42
1:B:116:LEU:CD2	1:B:118:VAL:HG23	2.50	0.42
1:A:151:GLU:O	1:A:154:VAL:HG22	2.20	0.42
1:A:1083:LYS:HB2	1:A:1083:LYS:HE3	1.78	0.42
1:B:103:ILE:HB	1:B:236:GLN:HB2	2.01	0.42
1:B:363:SER:HA	1:B:366:TYR:CE2	2.54	0.42
1:B:455:LYS:HD2	1:B:470:TYR:HE2	1.83	0.42
1:A:93:ILE:HG23	1:A:205:ILE:HD11	2.01	0.42
1:A:421:LYS:HG3	1:A:422:LEU:N	2.34	0.42
1:A:626:LEU:O	1:A:627:THR:OG1	2.30	0.42
1:A:861:LEU:HA	1:A:861:LEU:HD12	1.82	0.42
1:C:58:PHE:CD2	1:C:287:ASP:HB2	2.55	0.42
1:C:196:PHE:CE1	1:C:198:ILE:HD11	2.53	0.42
1:C:211:GLU:N	1:C:211:GLU:OE2	2.53	0.42
1:B:398:VAL:HG23	1:B:505:TYR:O	2.20	0.42
1:B:561:GLN:OE1	1:B:562:PHE:HB3	2.20	0.42
1:B:783:LYS:O	1:B:783:LYS:HD3	2.19	0.42
1:B:818:LEU:HD11	1:B:932:GLN:HE21	1.82	0.42
1:A:574:ARG:HD3	1:A:579:LEU:CD1	2.50	0.42
1:A:908:VAL:HG12	1:A:909:THR:O	2.19	0.42
1:A:1088:ARG:HB3	1:A:1089:GLU:OE1	2.20	0.42
1:C:230:ILE:HD11	1:C:232:ILE:HD11	2.02	0.42
1:C:529:ASN:OD1	1:C:530:LEU:N	2.53	0.42
1:C:942:LEU:HD12	1:C:942:LEU:N	2.34	0.42
1:B:343:ARG:HG3	1:B:343:ARG:HH11	1.85	0.42
1:A:63:THR:HG22	1:A:64:TRP:H	1.85	0.42
1:A:192:ILE:HG12	1:A:197:LYS:HZ1	1.85	0.42
1:A:758:THR:O	1:A:762:ARG:HG3	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:578:THR:O	1:B:580:GLU:N	2.50	0.41
1:C:128:VAL:O	1:C:161:CYS:HB2	2.20	0.41
1:C:318:GLN:HE22	1:C:588:SER:HB2	1.84	0.41
1:C:1014:GLU:HA	1:C:1014:GLU:OE2	2.20	0.41
3:L:38:GLN:HE21	3:L:87:TYR:HE1	1.67	0.41
1:B:115:LEU:HD12	1:B:126:ILE:HD11	2.02	0.41
1:B:721:THR:HA	1:B:1059:PHE:O	2.20	0.41
1:A:116:LEU:CD2	1:A:118:VAL:HG23	2.50	0.41
1:A:630:TRP:CD1	1:A:630:TRP:N	2.87	0.41
1:C:105:GLY:HA3	1:C:108:LEU:HD22	2.01	0.41
1:A:64:TRP:CD1	1:A:263:TYR:CE2	3.08	0.41
1:B:372:PHE:CE1	1:B:404:VAL:HG11	2.56	0.41
1:B:530:LEU:H	1:B:530:LEU:HD23	1.85	0.41
1:B:707:ASN:O	1:B:1073:THR:HA	2.21	0.41
1:A:631:ARG:HA	1:A:631:ARG:HD3	1.75	0.41
1:C:875:LEU:HD23	1:C:875:LEU:HA	1.86	0.41
1:B:171:LEU:HA	1:B:171:LEU:HD23	1.84	0.41
1:B:445:ASN:OD1	1:B:447:ASN:OD1	2.39	0.41
1:A:515:LEU:HG	1:A:519:ALA:HB2	2.02	0.41
1:C:93:ILE:CD1	1:C:182:LYS:HG3	2.46	0.41
1:B:434:ASN:HB2	1:B:505:TYR:CE2	2.56	0.41
1:B:1033:GLN:NE2	1:B:1045:HIS:O	2.52	0.41
1:B:1087:PRO:HD3	1:B:1092:PHE:CE2	2.56	0.41
1:A:391:ASN:HD22	1:A:513:GLU:CD	2.23	0.41
1:A:1070:LYS:NZ	1:A:1070:LYS:HB3	2.34	0.41
1:A:1071:ASN:O	1:A:1072:PHE:CG	2.74	0.41
1:B:499:GLY:O	1:B:503:GLN:HG3	2.20	0.41
1:B:773:LYS:O	1:B:777:GLU:HG2	2.20	0.41
1:A:620:ALA:O	1:A:623:ALA:N	2.51	0.41
1:C:981:LEU:HD12	1:C:985:GLU:HB3	2.03	0.41
1:B:119:ASN:ND2	1:B:171:LEU:HB2	2.36	0.41
1:B:164:GLU:OE2	1:B:165:TYR:N	2.53	0.41
1:B:186:GLU:O	1:B:200:SER:HA	2.20	0.41
1:B:1139:GLN:OE1	1:B:1139:GLN:HA	2.21	0.41
1:A:31:SER:O	1:A:32:PHE:HB2	2.20	0.41
1:A:242:HIS:HB3	1:A:243:ARG:NH2	2.36	0.41
1:A:414:ASN:OD1	1:A:415:ILE:N	2.53	0.41
1:A:487:PHE:CE1	1:A:489:LEU:HB3	2.55	0.41
1:C:1100:PHE:HZ	5:C:1309:NAG:H62	1.86	0.41
1:B:201:LYS:HG3	1:B:202:HIS:N	2.35	0.41
1:B:339:PHE:CB	5:B:1307:NAG:H82	2.50	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:880:THR:HG21	1:C:702:VAL:CG1	2.51	0.41
1:A:81:VAL:HG11	1:A:234:ARG:NH2	2.34	0.41
1:A:94:GLU:OE2	1:A:99:ILE:HG22	2.21	0.41
1:A:738:TYR:CE2	1:A:963:LEU:HD13	2.56	0.41
1:A:998:LEU:HD23	1:A:998:LEU:HA	1.70	0.41
1:C:103:ILE:CD1	1:C:238:LEU:HD11	2.51	0.41
1:C:104:PHE:HB3	1:C:232:ILE:HD12	2.03	0.41
1:C:151:GLU:H	1:C:151:GLU:CD	2.20	0.41
1:C:719:VAL:O	1:C:931:ILE:HD11	2.21	0.41
1:C:1099:TRP:HB2	1:C:1132:ASN:HD22	1.86	0.41
3:L:47:LEU:HD12	3:L:48:LEU:N	2.36	0.41
1:A:1098:HIS:CE1	5:A:1311:NAG:H5	2.56	0.41
1:C:619:VAL:C	1:C:621:ILE:H	2.25	0.41
1:C:760:LEU:HD22	1:C:1005:VAL:HG21	2.03	0.41
1:C:918:LYS:HA	1:C:918:LYS:HD2	1.78	0.41
1:C:983:PRO:HB2	1:C:984:PRO:HD3	2.03	0.41
3:L:64:SER:OG	3:L:65:GLY:N	2.54	0.41
1:B:704:TYR:HB2	1:A:880:THR:HG23	2.03	0.40
1:A:305:VAL:H	1:A:599:THR:HG23	1.86	0.40
1:A:970:ILE:HG12	1:A:989:GLN:HG2	2.03	0.40
1:B:81:VAL:HG12	1:B:234:ARG:HH12	1.87	0.40
1:B:151:GLU:H	1:B:151:GLU:CD	2.23	0.40
1:B:230:ILE:HG12	1:B:231:ASN:O	2.21	0.40
1:B:578:THR:O	1:B:578:THR:HG23	2.21	0.40
1:B:851:LYS:CG	1:B:852:PHE:H	2.34	0.40
1:A:935:LEU:HD23	1:A:935:LEU:HA	1.89	0.40
1:C:95:LYS:HD3	1:C:182:LYS:NZ	2.37	0.40
1:B:870:TYR:CE1	1:C:696:LEU:HD22	2.57	0.40
1:A:383:LYS:HB3	1:A:383:LYS:HE2	1.90	0.40
1:A:430:VAL:C	1:A:431:ILE:HD13	2.41	0.40
1:A:450:TYR:HD1	1:A:492:TYR:CZ	2.39	0.40
1:A:738:TYR:CZ	1:A:963:LEU:HD13	2.56	0.40
1:C:859:PRO:HA	1:C:860:PRO:HD3	1.93	0.40
3:L:20:THR:O	3:L:21:LEU:HD12	2.21	0.40
1:B:65:PHE:HD2	1:B:262:TYR:CZ	2.39	0.40
1:B:395:ASP:OD1	1:B:395:ASP:N	2.54	0.40
1:B:449:LEU:HD23	1:B:449:LEU:HA	1.86	0.40
1:A:346:SER:OG	1:A:449:LEU:O	2.32	0.40
1:A:372:PHE:HD2	1:A:433:TRP:HA	1.86	0.40
2:H:6:GLN:H	2:H:114:GLN:HE22	1.70	0.40
1:B:163:PHE:CE2	1:B:227:PRO:HD2	2.56	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:179:GLY:C	1:B:181:PHE:H	2.25	0.40
1:B:368:LEU:HD23	1:B:368:LEU:HA	1.90	0.40
1:B:708:SER:O	1:A:894:PRO:HD3	2.20	0.40
1:A:361:ASP:OD1	1:A:363:SER:OG	2.32	0.40
1:C:188:VAL:HG23	1:C:220:LEU:HD12	2.02	0.40
1:C:668:CYS:SG	1:C:694:MET:HG2	2.62	0.40
2:H:89:GLU:OE1	2:H:89:GLU:N	2.51	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 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	1032/1200 (86%)	936 (91%)	96 (9%)	0	100	100
1	B	1025/1200 (85%)	930 (91%)	95 (9%)	0	100	100
1	C	837/1200 (70%)	777 (93%)	60 (7%)	0	100	100
2	H	120/252 (48%)	109 (91%)	11 (9%)	0	100	100
3	L	105/235 (45%)	88 (84%)	17 (16%)	0	100	100
All	All	3119/4087 (76%)	2840 (91%)	279 (9%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains [i](#)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	920/1048 (88%)	918 (100%)	2 (0%)	92	96
1	B	915/1048 (87%)	913 (100%)	2 (0%)	92	96
1	C	750/1048 (72%)	749 (100%)	1 (0%)	92	97
2	H	101/215 (47%)	100 (99%)	1 (1%)	73	86
3	L	89/204 (44%)	89 (100%)	0	100	100
All	All	2775/3563 (78%)	2769 (100%)	6 (0%)	91	96

All (6) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	185	ARG
1	B	622	HIS
1	A	66	HIS
1	A	707	ASN
1	C	539	ASN
2	H	72	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	168	GLN
1	B	436	ASN
1	B	801	GLN
1	A	119	ASN
1	A	419	ASN
1	C	560	GLN
1	C	989	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates i

16 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
4	NAG	D	1	4,1	14,14,15	0.34	0	17,19,21	0.42	0
4	NAG	D	2	4	14,14,15	0.36	0	17,19,21	0.47	0
4	NAG	E	1	4,1	14,14,15	0.40	0	17,19,21	0.50	0
4	NAG	E	2	4	14,14,15	0.21	0	17,19,21	0.64	0
4	NAG	F	1	4,1	14,14,15	0.54	0	17,19,21	0.60	0
4	NAG	F	2	4	14,14,15	0.23	0	17,19,21	0.50	0
4	NAG	G	1	4,1	14,14,15	0.28	0	17,19,21	0.64	0
4	NAG	G	2	4	14,14,15	0.20	0	17,19,21	0.53	0
4	NAG	I	1	4,1	14,14,15	0.58	0	17,19,21	0.50	0
4	NAG	I	2	4	14,14,15	0.21	0	17,19,21	0.60	0
4	NAG	J	1	4,1	14,14,15	0.60	0	17,19,21	0.83	1 (5%)
4	NAG	J	2	4	14,14,15	0.28	0	17,19,21	0.66	1 (5%)
4	NAG	K	1	4,1	14,14,15	0.38	0	17,19,21	0.44	0
4	NAG	K	2	4	14,14,15	0.24	0	17,19,21	0.56	0
4	NAG	M	1	4,1	14,14,15	0.32	0	17,19,21	0.48	0
4	NAG	M	2	4	14,14,15	0.21	0	17,19,21	0.57	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	NAG	D	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	D	2	4	-	2/6/23/26	0/1/1/1
4	NAG	E	1	4,1	-	1/6/23/26	0/1/1/1
4	NAG	E	2	4	-	0/6/23/26	0/1/1/1
4	NAG	F	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	F	2	4	-	0/6/23/26	0/1/1/1
4	NAG	G	1	4,1	-	0/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
4	NAG	G	2	4	-	0/6/23/26	0/1/1/1
4	NAG	I	1	4,1	-	2/6/23/26	0/1/1/1
4	NAG	I	2	4	-	2/6/23/26	0/1/1/1
4	NAG	J	1	4,1	-	3/6/23/26	0/1/1/1
4	NAG	J	2	4	-	2/6/23/26	0/1/1/1
4	NAG	K	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	K	2	4	-	0/6/23/26	0/1/1/1
4	NAG	M	1	4,1	-	0/6/23/26	0/1/1/1
4	NAG	M	2	4	-	0/6/23/26	0/1/1/1

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	J	2	NAG	C1-O5-C5	2.31	115.32	112.19
4	J	1	NAG	C1-O5-C5	2.21	115.19	112.19

There are no chirality outliers.

All (16) torsion outliers are listed below:

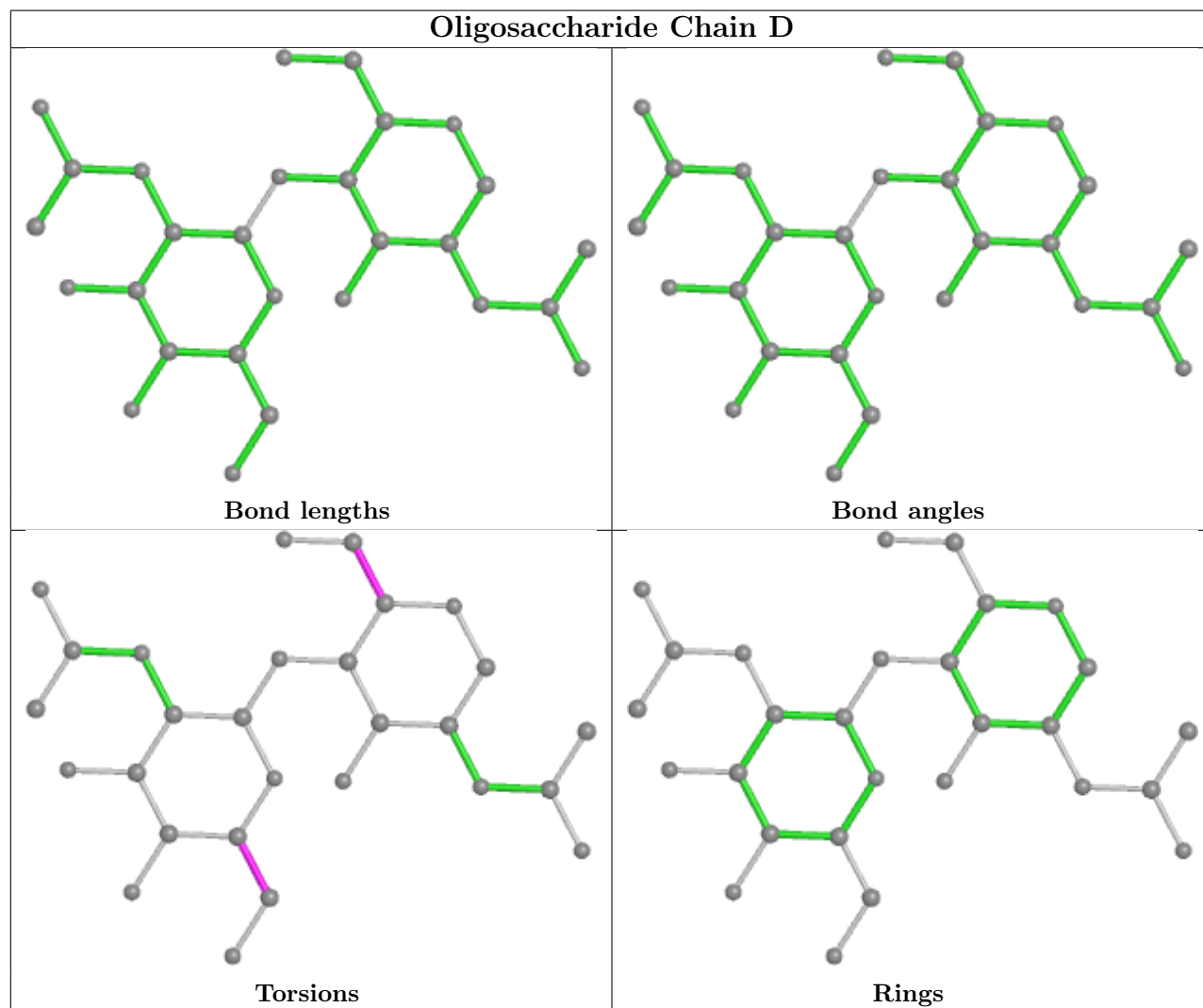
Mol	Chain	Res	Type	Atoms
4	J	2	NAG	C4-C5-C6-O6
4	F	1	NAG	O5-C5-C6-O6
4	F	1	NAG	C4-C5-C6-O6
4	J	1	NAG	O5-C5-C6-O6
4	J	1	NAG	C4-C5-C6-O6
4	J	2	NAG	O5-C5-C6-O6
4	D	2	NAG	O5-C5-C6-O6
4	I	1	NAG	C1-C2-N2-C7
4	D	2	NAG	C4-C5-C6-O6
4	D	1	NAG	C4-C5-C6-O6
4	I	2	NAG	C4-C5-C6-O6
4	I	2	NAG	O5-C5-C6-O6
4	D	1	NAG	O5-C5-C6-O6
4	I	1	NAG	C3-C2-N2-C7
4	E	1	NAG	C1-C2-N2-C7
4	J	1	NAG	C1-C2-N2-C7

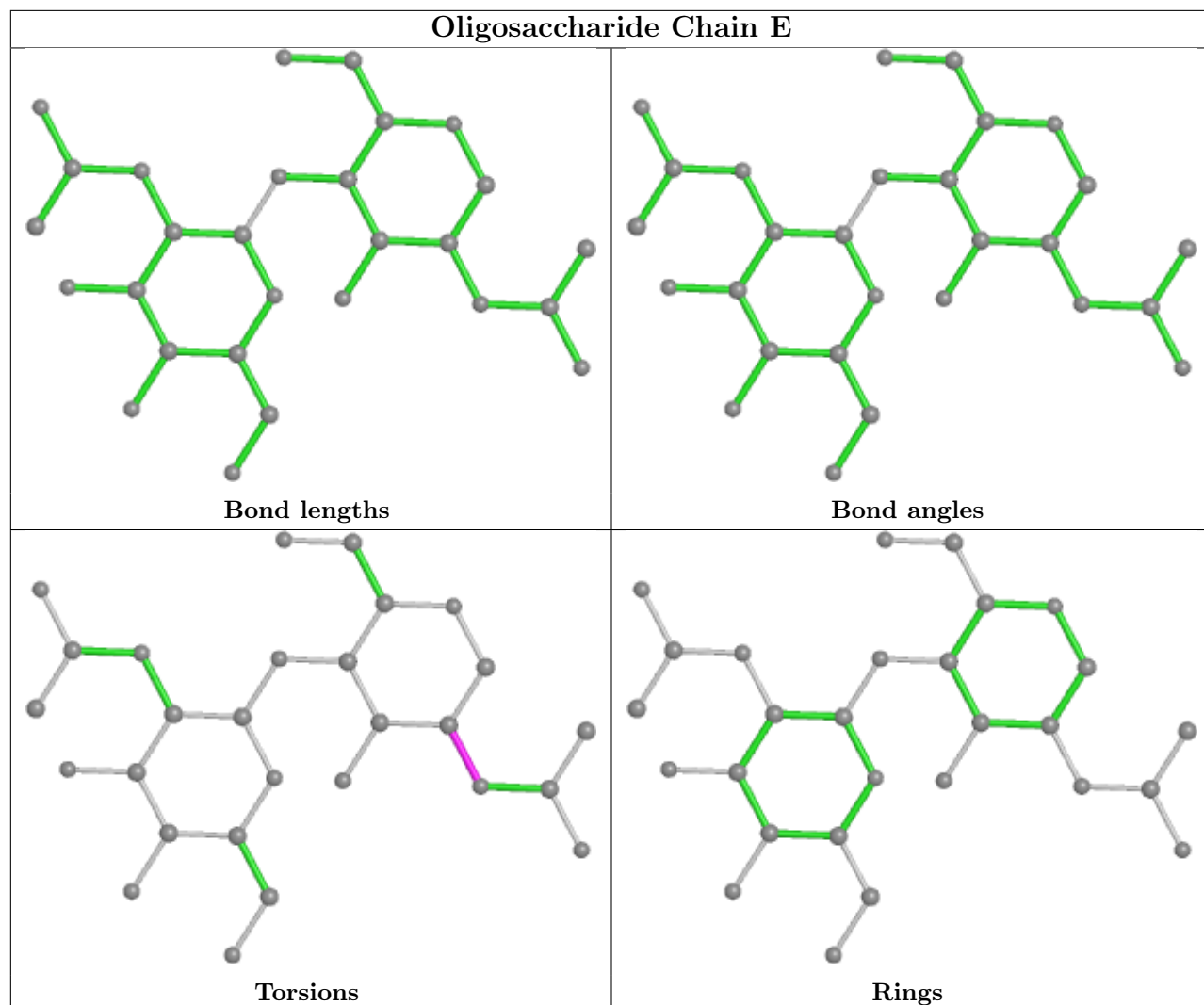
There are no ring outliers.

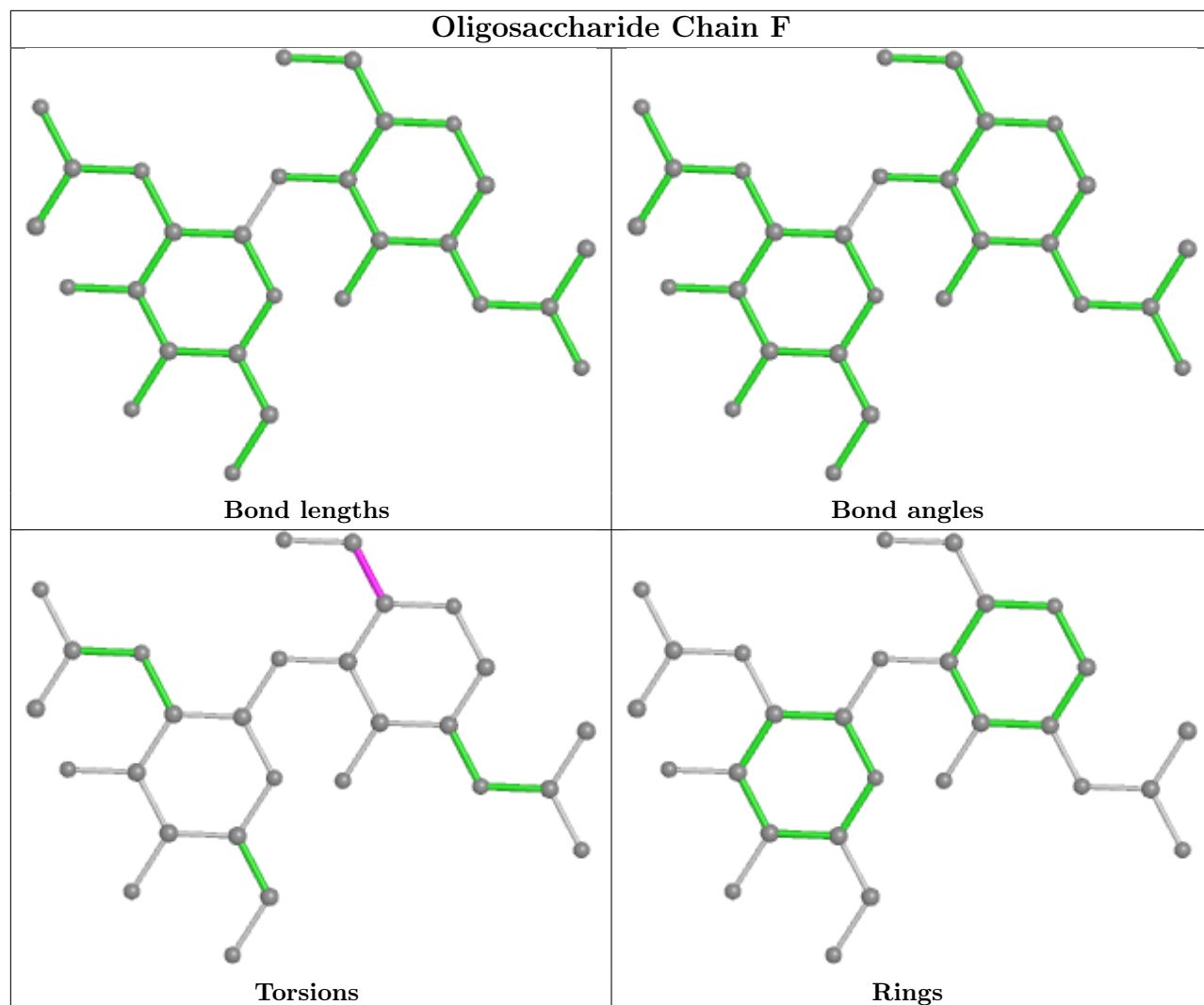
3 monomers are involved in 5 short contacts:

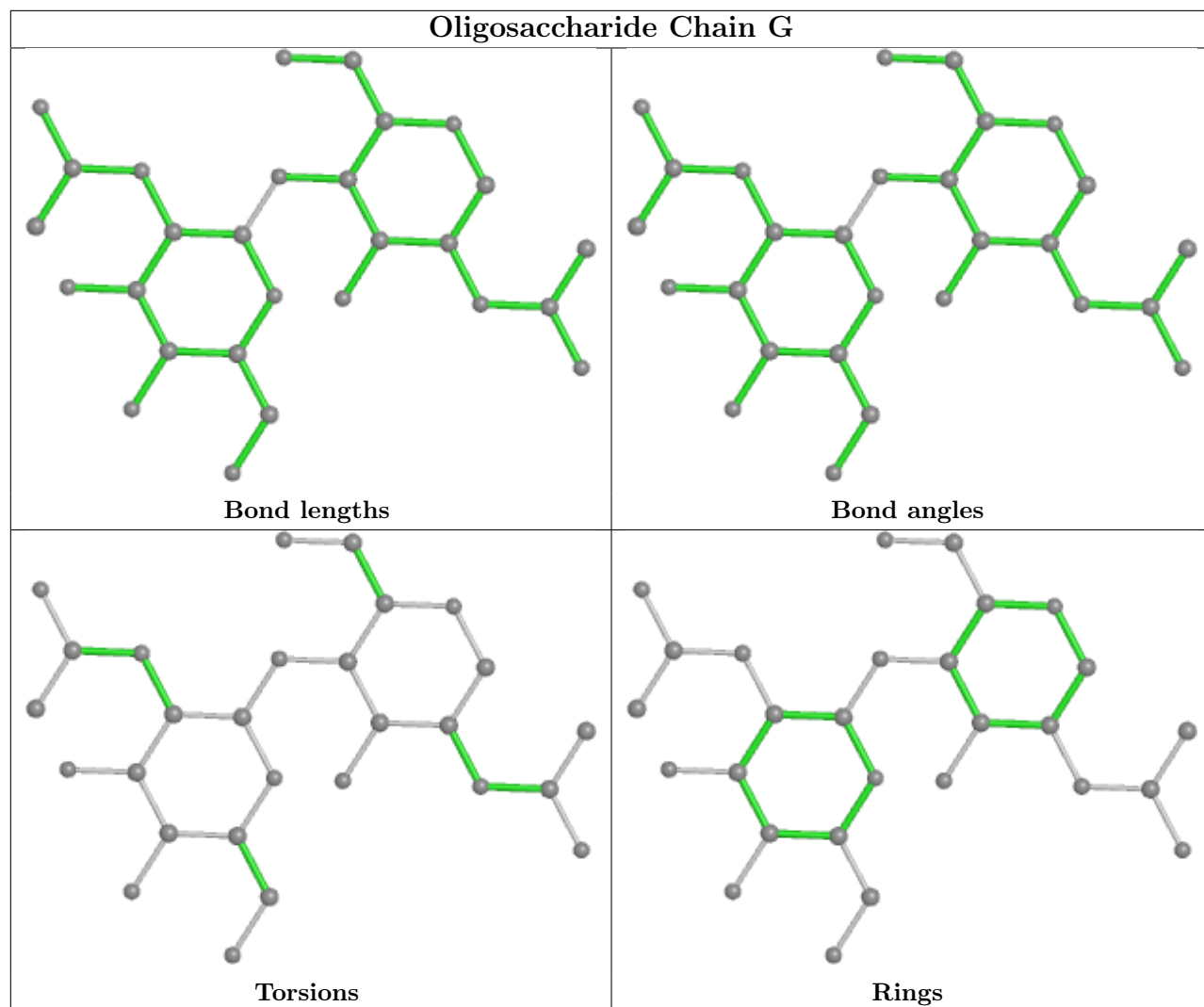
Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	I	1	NAG	1	0
4	F	1	NAG	1	0
4	J	1	NAG	3	0

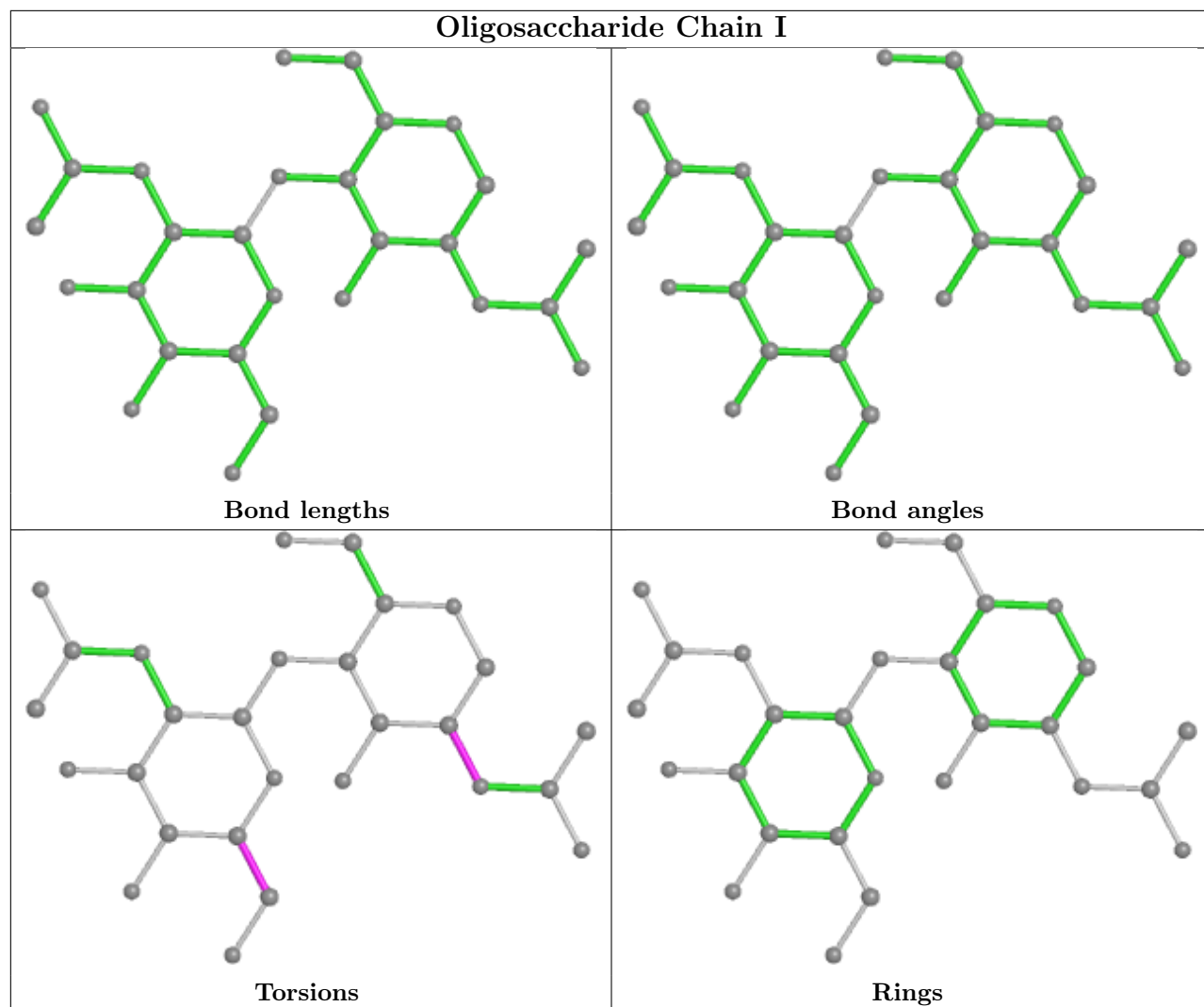
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for oligosaccharide.

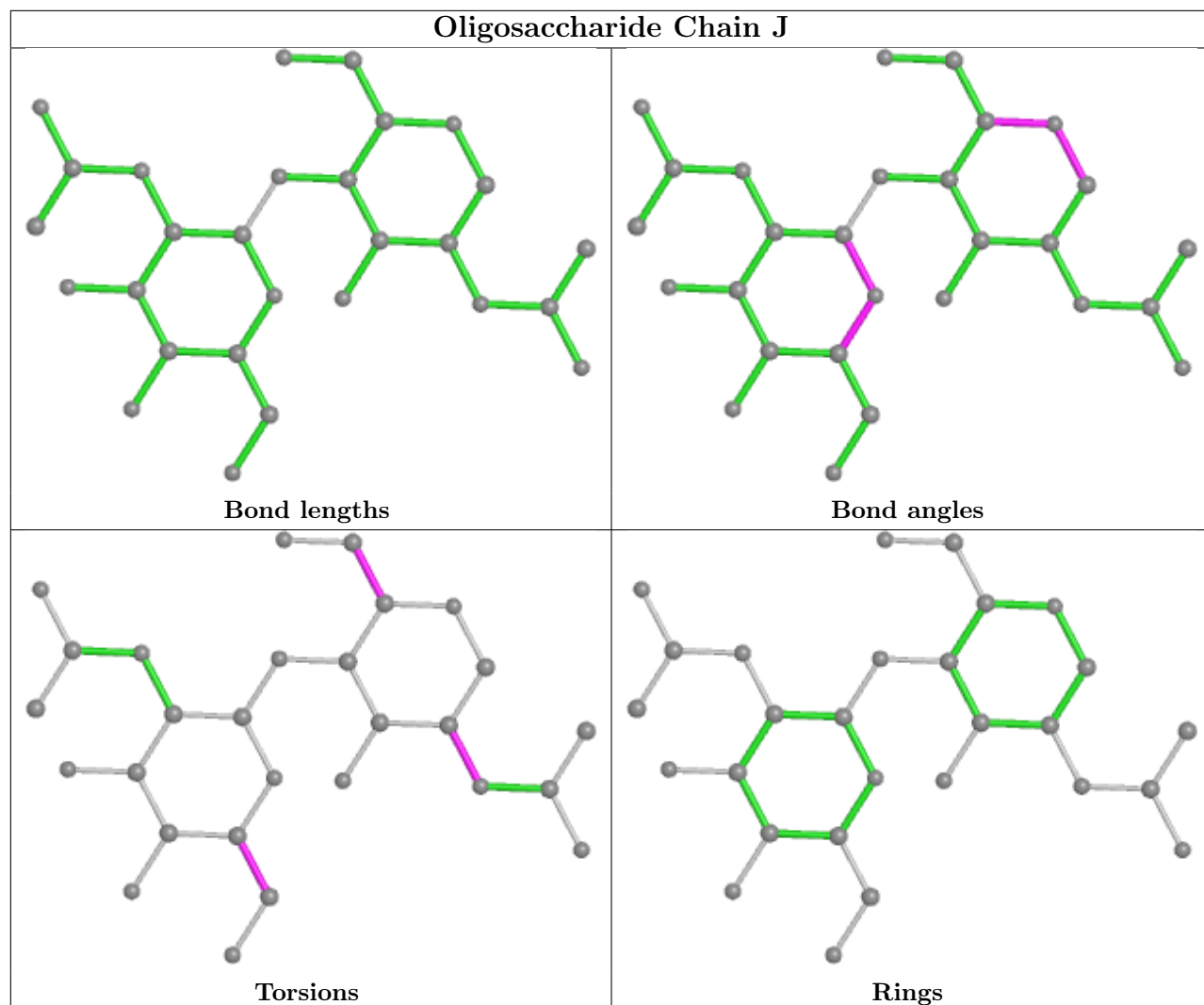


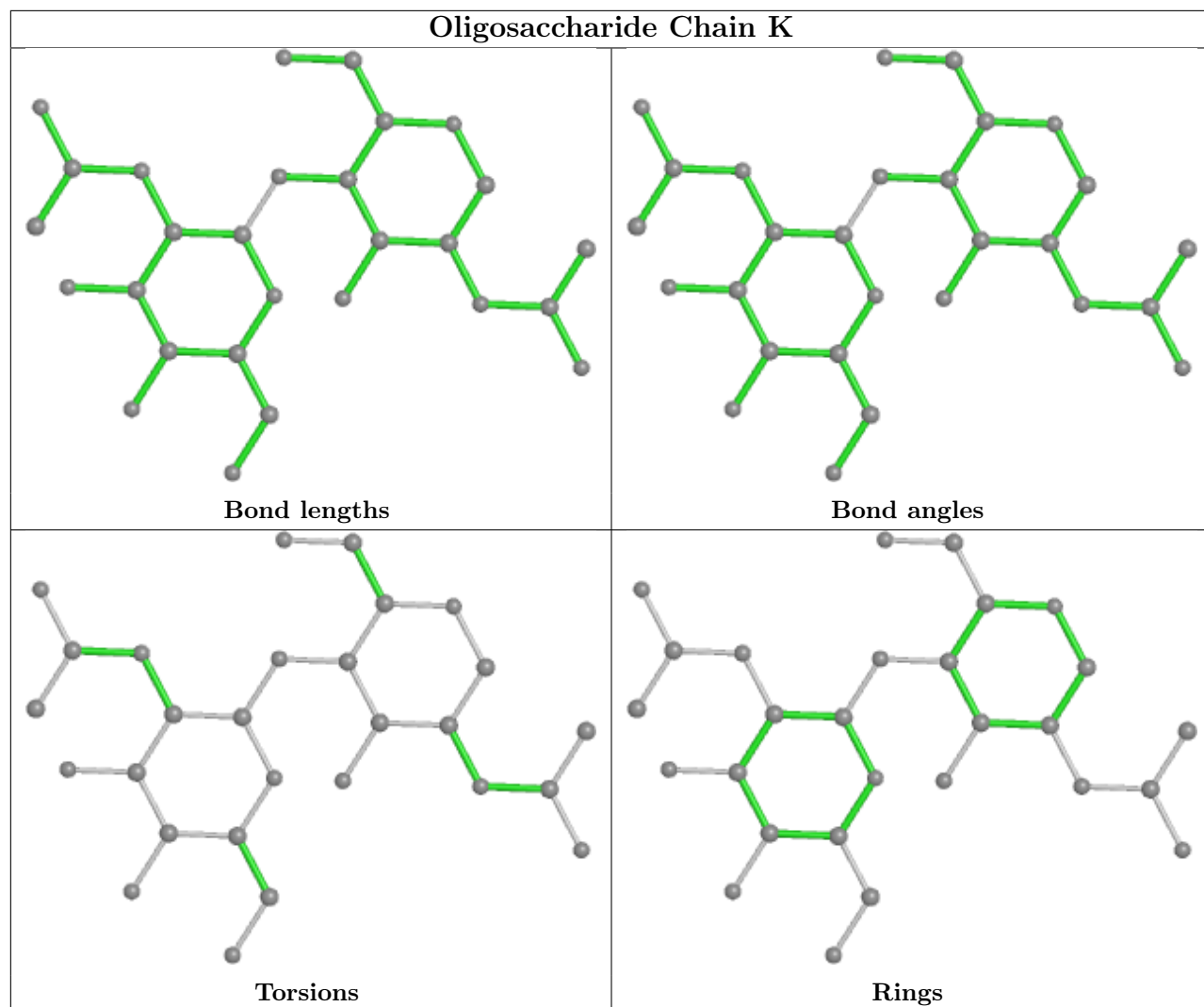


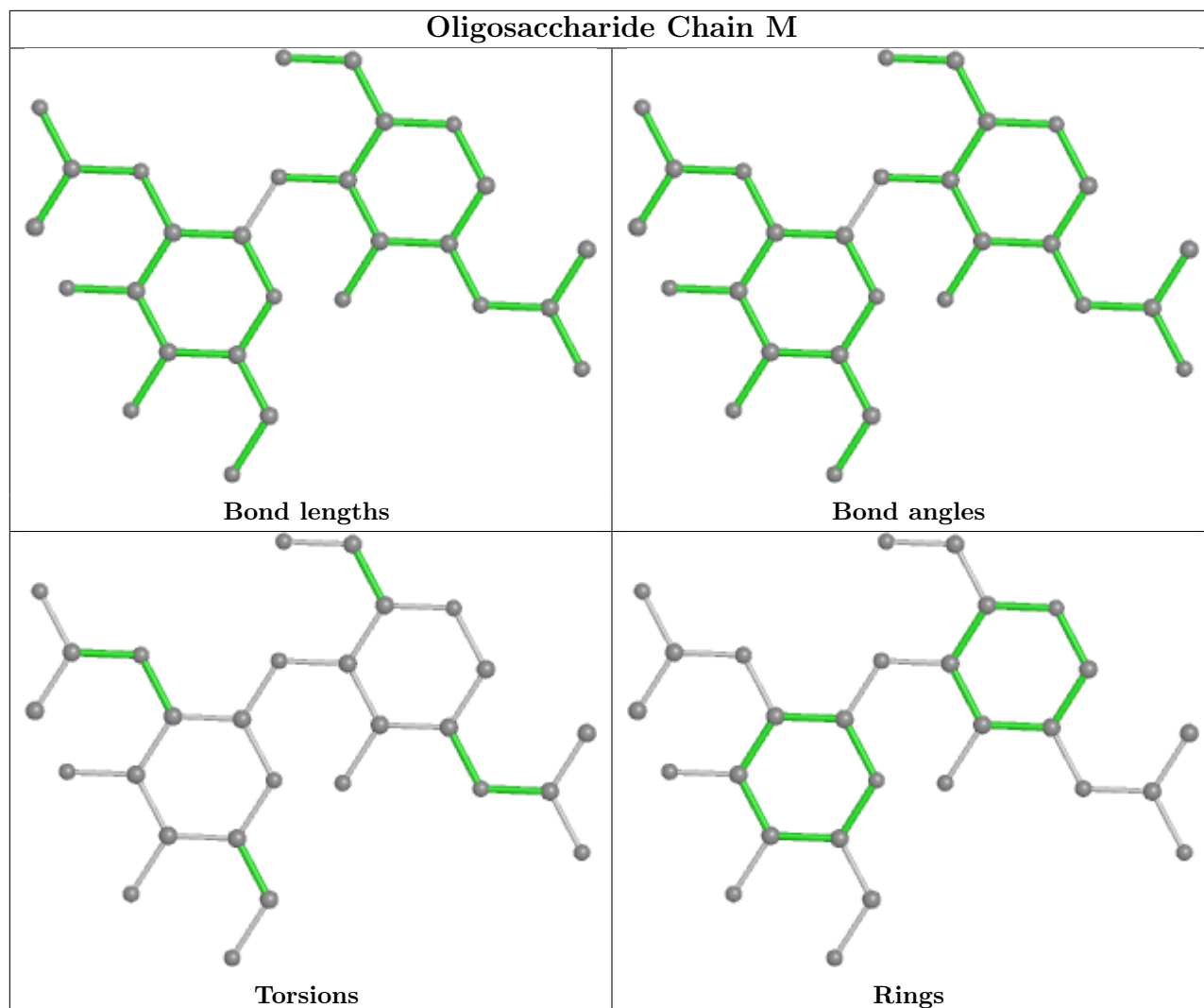












5.6 Ligand geometry [i](#)

34 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	C	1301	1	14,14,15	0.50	0	17,19,21	1.15	1 (5%)
5	NAG	A	1311	1	14,14,15	0.28	0	17,19,21	0.42	0
5	NAG	C	1304	1	14,14,15	0.27	0	17,19,21	0.43	0

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
5	NAG	C	1309	1	14,14,15	0.30	0	17,19,21	0.36	0
5	NAG	B	1304	1	14,14,15	0.18	0	17,19,21	0.47	0
5	NAG	B	1308	1	14,14,15	0.37	0	17,19,21	0.38	0
5	NAG	B	1309	1	14,14,15	0.30	0	17,19,21	0.42	0
5	NAG	A	1307	1	14,14,15	0.30	0	17,19,21	0.52	0
5	NAG	B	1312	1	14,14,15	0.41	0	17,19,21	0.47	0
5	NAG	B	1303	1	14,14,15	0.28	0	17,19,21	0.52	0
5	NAG	A	1308	1	14,14,15	0.38	0	17,19,21	0.56	0
5	NAG	B	1305	1	14,14,15	0.21	0	17,19,21	0.55	0
5	NAG	A	1306	1	14,14,15	0.24	0	17,19,21	0.57	0
5	NAG	A	1303	1	14,14,15	0.18	0	17,19,21	0.52	0
5	NAG	C	1308	1	14,14,15	0.43	0	17,19,21	0.38	0
5	NAG	B	1311	1	14,14,15	0.42	0	17,19,21	0.48	0
5	NAG	C	1303	1	14,14,15	0.19	0	17,19,21	0.57	0
5	NAG	B	1307	1	14,14,15	0.44	0	17,19,21	0.72	1 (5%)
5	NAG	A	1302	1	14,14,15	0.24	0	17,19,21	0.56	0
5	NAG	C	1306	1	14,14,15	0.34	0	17,19,21	0.50	0
5	NAG	B	1310	1	14,14,15	0.27	0	17,19,21	0.71	1 (5%)
5	NAG	B	1306	1	14,14,15	0.28	0	17,19,21	0.50	0
5	NAG	A	1310	1	14,14,15	0.41	0	17,19,21	0.41	0
5	NAG	C	1305	1	14,14,15	0.28	0	17,19,21	0.39	0
5	NAG	C	1307	1	14,14,15	0.34	0	17,19,21	0.40	0
5	NAG	B	1301	1	14,14,15	0.27	0	17,19,21	0.41	0
5	NAG	A	1301	1	14,14,15	0.21	0	17,19,21	0.51	0
5	NAG	A	1304	1	14,14,15	0.30	0	17,19,21	0.49	0
5	NAG	A	1309	1	14,14,15	0.30	0	17,19,21	0.36	0
5	NAG	A	1305	1	14,14,15	0.39	0	17,19,21	0.37	0
5	NAG	A	1312	1	14,14,15	0.41	0	17,19,21	0.68	1 (5%)
5	NAG	C	1302	1	14,14,15	0.28	0	17,19,21	0.36	0
5	NAG	B	1302	1	14,14,15	0.14	0	17,19,21	0.53	0
5	NAG	C	1310	1	14,14,15	0.22	0	17,19,21	0.41	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
5	NAG	C	1301	1	-	5/6/23/26	0/1/1/1
5	NAG	A	1311	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1304	1	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
5	NAG	C	1309	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1304	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1308	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1309	1	-	4/6/23/26	0/1/1/1
5	NAG	A	1307	1	-	0/6/23/26	0/1/1/1
5	NAG	B	1312	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1303	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1308	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1305	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1306	1	-	1/6/23/26	0/1/1/1
5	NAG	A	1303	1	-	1/6/23/26	0/1/1/1
5	NAG	C	1308	1	-	4/6/23/26	0/1/1/1
5	NAG	B	1311	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1303	1	-	3/6/23/26	0/1/1/1
5	NAG	B	1307	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1302	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1306	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1310	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1306	1	-	4/6/23/26	0/1/1/1
5	NAG	A	1310	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1305	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1307	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1301	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1301	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1304	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1309	1	-	0/6/23/26	0/1/1/1
5	NAG	A	1305	1	-	2/6/23/26	0/1/1/1
5	NAG	A	1312	1	-	0/6/23/26	0/1/1/1
5	NAG	C	1302	1	-	2/6/23/26	0/1/1/1
5	NAG	B	1302	1	-	2/6/23/26	0/1/1/1
5	NAG	C	1310	1	-	1/6/23/26	0/1/1/1

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	C	1301	NAG	C2-N2-C7	4.03	128.64	122.90

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	B	1307	NAG	C1-O5-C5	2.35	115.37	112.19
5	A	1312	NAG	C1-O5-C5	2.24	115.23	112.19
5	B	1310	NAG	C1-O5-C5	2.12	115.07	112.19

There are no chirality outliers.

All (63) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
5	A	1301	NAG	O5-C5-C6-O6
5	B	1312	NAG	C4-C5-C6-O6
5	A	1311	NAG	O5-C5-C6-O6
5	B	1303	NAG	O5-C5-C6-O6
5	C	1302	NAG	O5-C5-C6-O6
5	C	1305	NAG	O5-C5-C6-O6
5	B	1312	NAG	O5-C5-C6-O6
5	B	1307	NAG	C4-C5-C6-O6
5	C	1304	NAG	C4-C5-C6-O6
5	B	1306	NAG	O5-C5-C6-O6
5	A	1308	NAG	O5-C5-C6-O6
5	C	1306	NAG	O5-C5-C6-O6
5	C	1302	NAG	C4-C5-C6-O6
5	C	1303	NAG	O5-C5-C6-O6
5	C	1307	NAG	O5-C5-C6-O6
5	B	1309	NAG	O5-C5-C6-O6
5	A	1301	NAG	C4-C5-C6-O6
5	C	1308	NAG	O5-C5-C6-O6
5	B	1303	NAG	C4-C5-C6-O6
5	A	1304	NAG	O5-C5-C6-O6
5	A	1311	NAG	C4-C5-C6-O6
5	C	1303	NAG	C4-C5-C6-O6
5	B	1306	NAG	C4-C5-C6-O6
5	C	1305	NAG	C4-C5-C6-O6
5	A	1304	NAG	C4-C5-C6-O6
5	C	1308	NAG	C4-C5-C6-O6
5	C	1306	NAG	C4-C5-C6-O6
5	C	1307	NAG	C4-C5-C6-O6
5	B	1302	NAG	C8-C7-N2-C2
5	B	1302	NAG	O7-C7-N2-C2
5	B	1306	NAG	C8-C7-N2-C2
5	B	1306	NAG	O7-C7-N2-C2
5	B	1309	NAG	C8-C7-N2-C2
5	B	1309	NAG	O7-C7-N2-C2

Continued on next page...

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Mol	Chain	Res	Type	Atoms
5	C	1301	NAG	C8-C7-N2-C2
5	C	1301	NAG	O7-C7-N2-C2
5	C	1308	NAG	C8-C7-N2-C2
5	C	1308	NAG	O7-C7-N2-C2
5	B	1307	NAG	O5-C5-C6-O6
5	B	1310	NAG	O5-C5-C6-O6
5	B	1301	NAG	C4-C5-C6-O6
5	A	1308	NAG	C4-C5-C6-O6
5	B	1309	NAG	C4-C5-C6-O6
5	C	1304	NAG	O5-C5-C6-O6
5	C	1301	NAG	O5-C5-C6-O6
5	A	1310	NAG	O5-C5-C6-O6
5	B	1310	NAG	C4-C5-C6-O6
5	B	1311	NAG	O5-C5-C6-O6
5	B	1308	NAG	C1-C2-N2-C7
5	B	1311	NAG	C4-C5-C6-O6
5	C	1310	NAG	O5-C5-C6-O6
5	B	1301	NAG	O5-C5-C6-O6
5	A	1303	NAG	O5-C5-C6-O6
5	C	1301	NAG	C4-C5-C6-O6
5	A	1305	NAG	C4-C5-C6-O6
5	A	1310	NAG	C4-C5-C6-O6
5	B	1308	NAG	C3-C2-N2-C7
5	C	1303	NAG	C3-C2-N2-C7
5	B	1304	NAG	C4-C5-C6-O6
5	B	1304	NAG	O5-C5-C6-O6
5	A	1306	NAG	C4-C5-C6-O6
5	C	1301	NAG	C3-C2-N2-C7
5	A	1305	NAG	O5-C5-C6-O6

There are no ring outliers.

9 monomers are involved in 14 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	C	1301	NAG	1	0
5	A	1311	NAG	2	0
5	C	1304	NAG	1	0
5	C	1309	NAG	3	0
5	B	1308	NAG	1	0
5	B	1311	NAG	1	0
5	B	1307	NAG	2	0
5	A	1302	NAG	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
5	B	1302	NAG	2	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

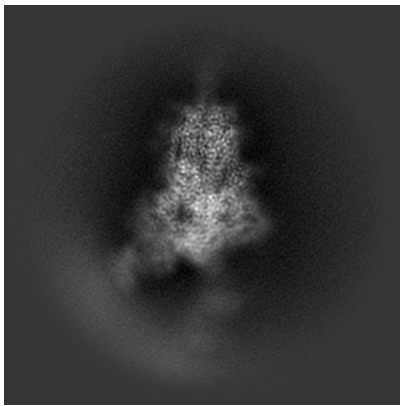
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-36906. These allow visual inspection of the internal detail of the map and identification of artifacts.

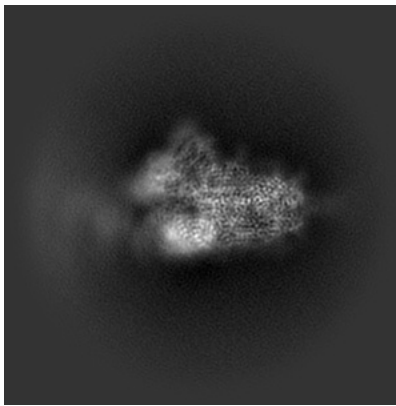
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections [i](#)

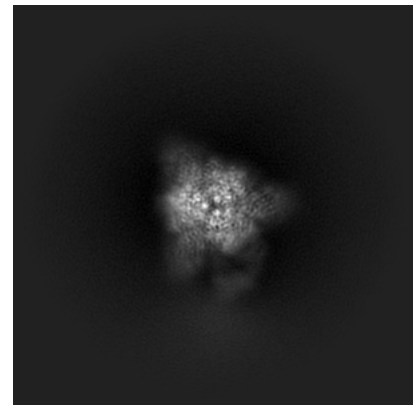
6.1.1 Primary map



X

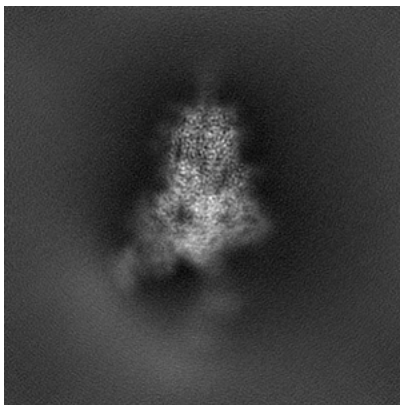


Y

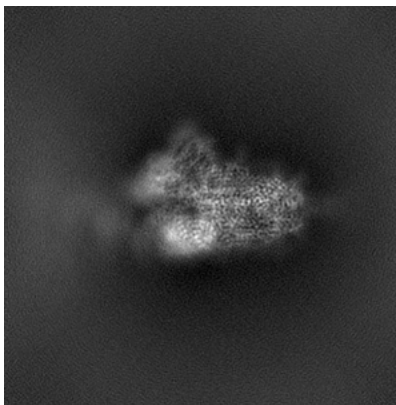


Z

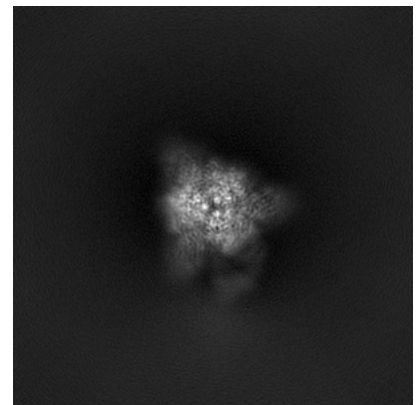
6.1.2 Raw map



X



Y

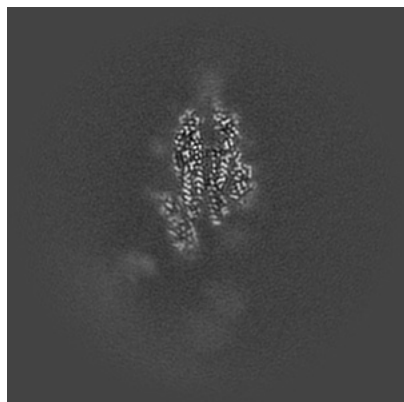


Z

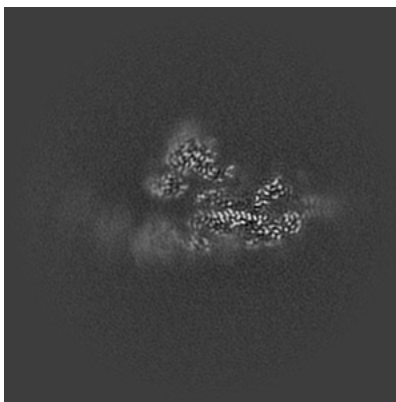
The images above show the map projected in three orthogonal directions.

6.2 Central slices [i](#)

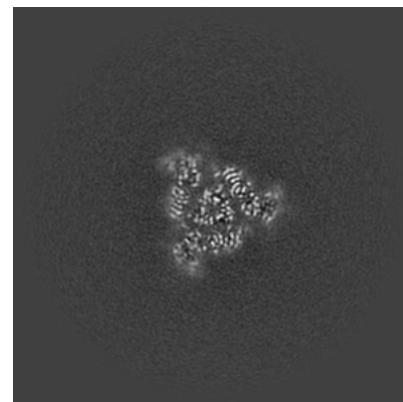
6.2.1 Primary map



X Index: 144

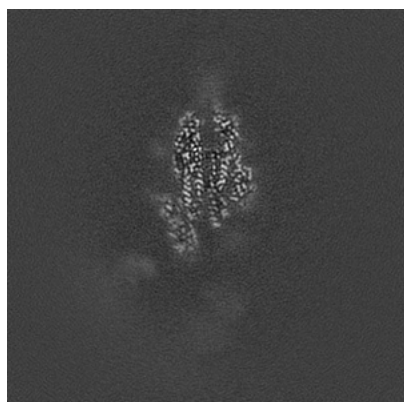


Y Index: 144

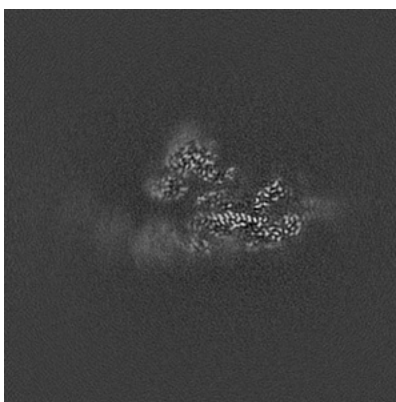


Z Index: 144

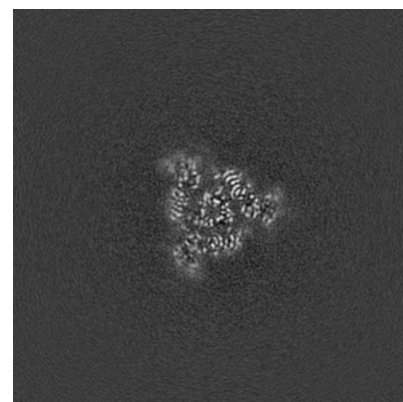
6.2.2 Raw map



X Index: 144



Y Index: 144

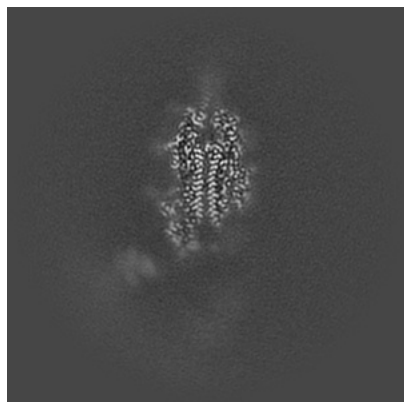


Z Index: 144

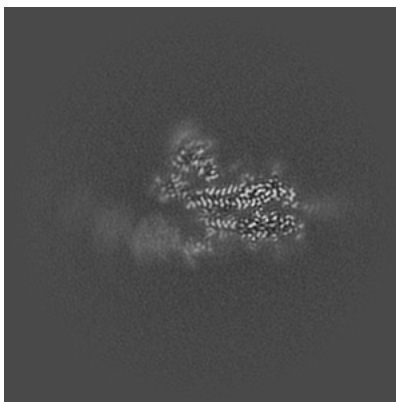
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

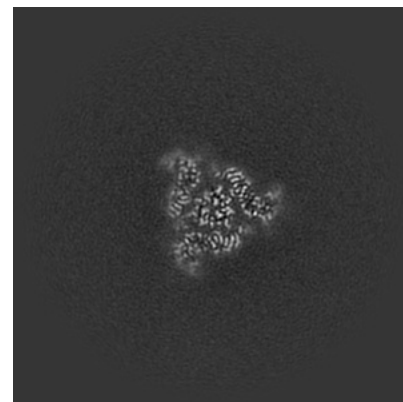
6.3.1 Primary map



X Index: 147

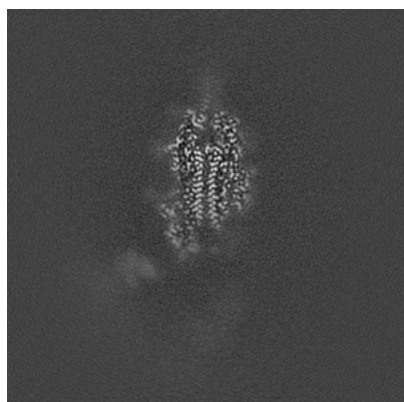


Y Index: 149

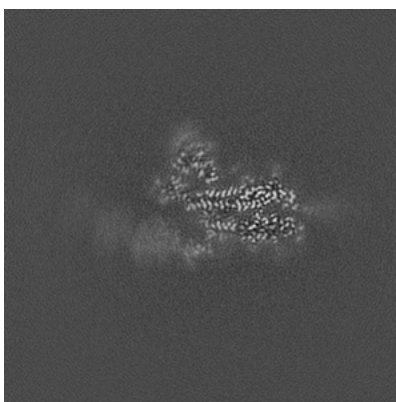


Z Index: 145

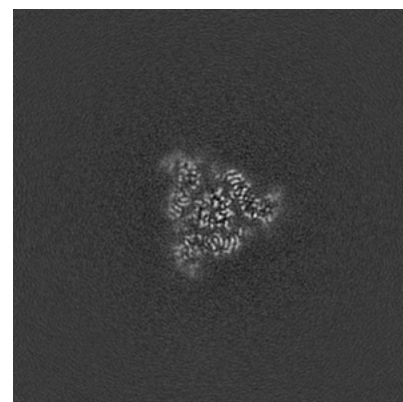
6.3.2 Raw map



X Index: 147



Y Index: 149

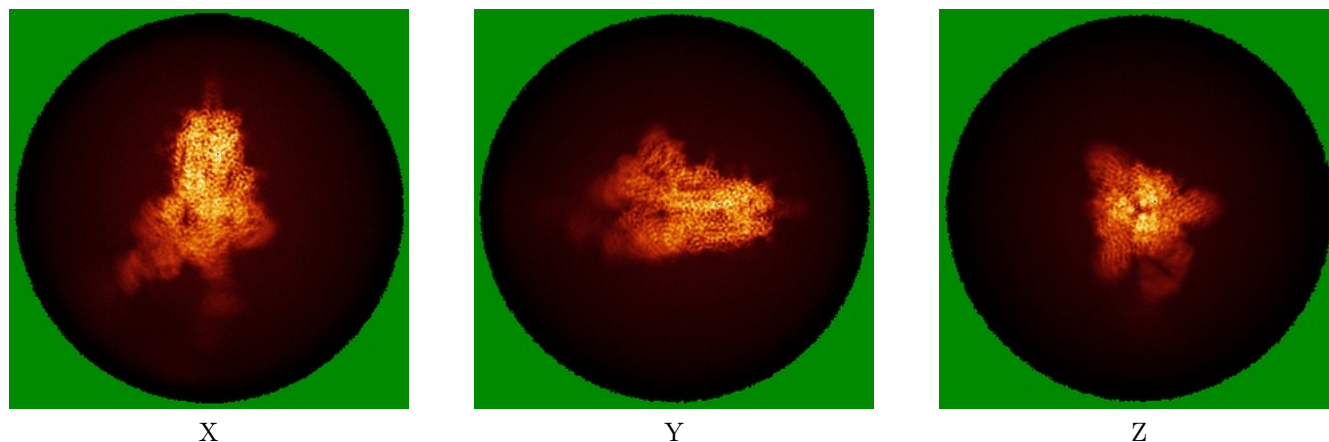


Z Index: 145

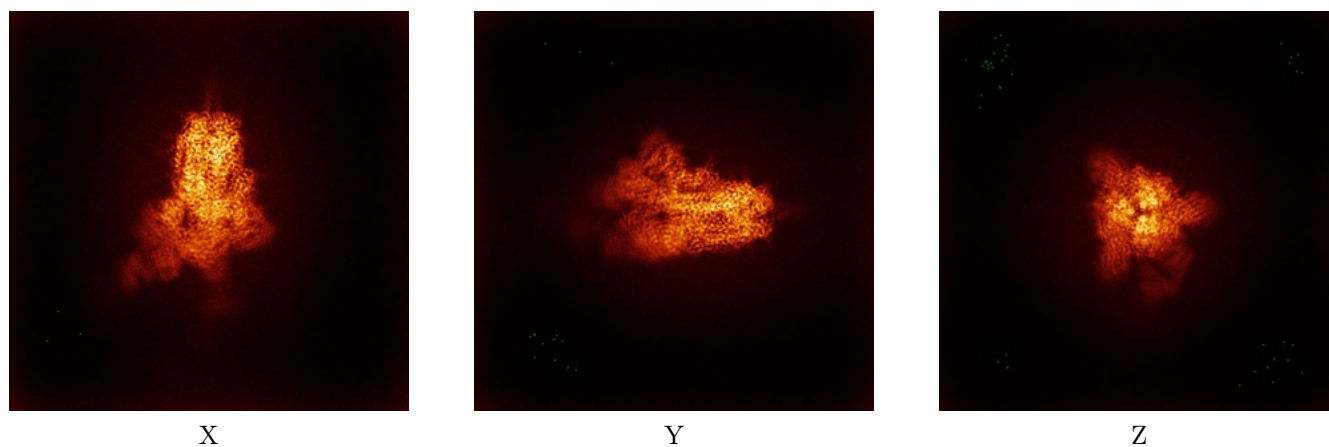
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal standard-deviation projections (False-color) [i](#)

6.4.1 Primary map



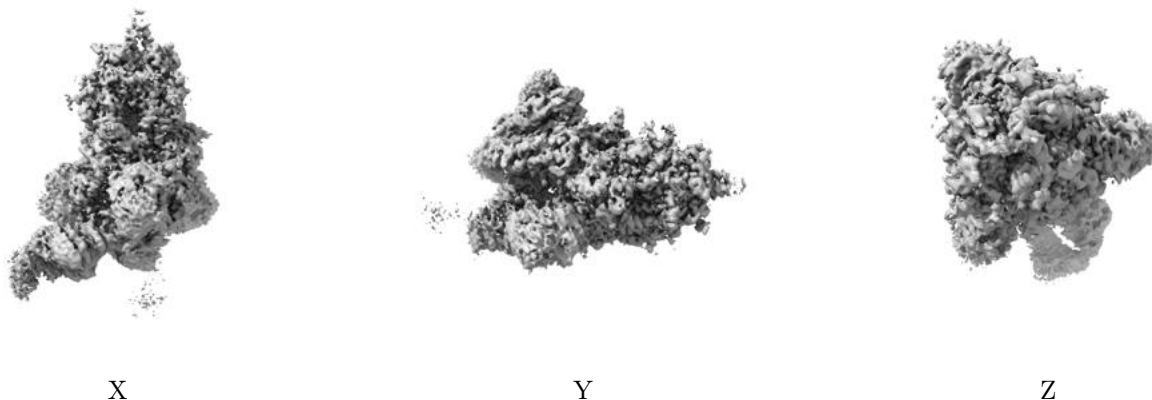
6.4.2 Raw map



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.

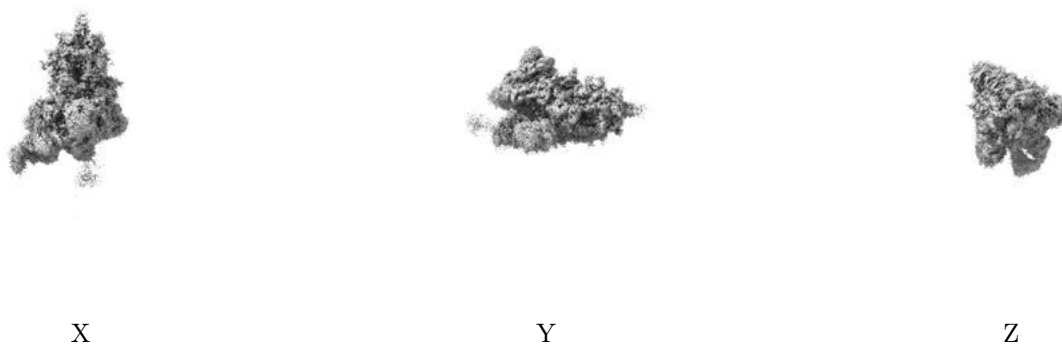
6.5 Orthogonal surface views [i](#)

6.5.1 Primary map



The images above show the 3D surface view of the map at the recommended contour level 0.119. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map



These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

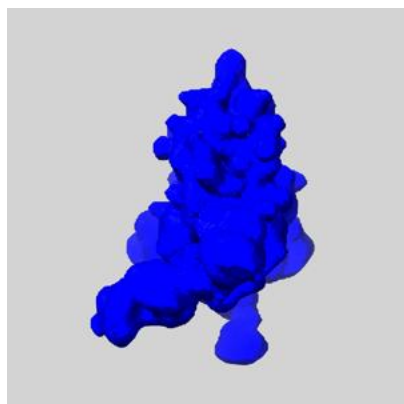
6.6 Mask visualisation [i](#)

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

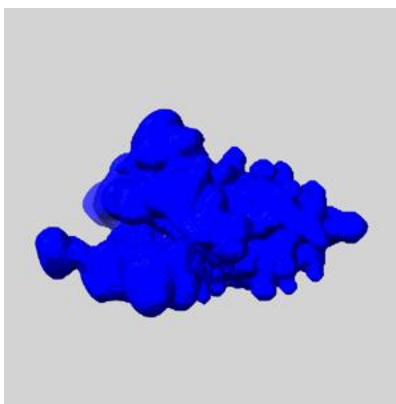
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

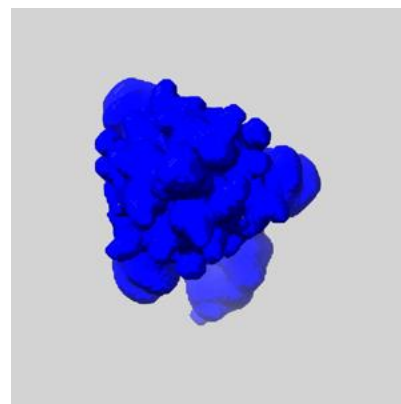
6.6.1 emd_36906_msk_1.map [i](#)



X



Y

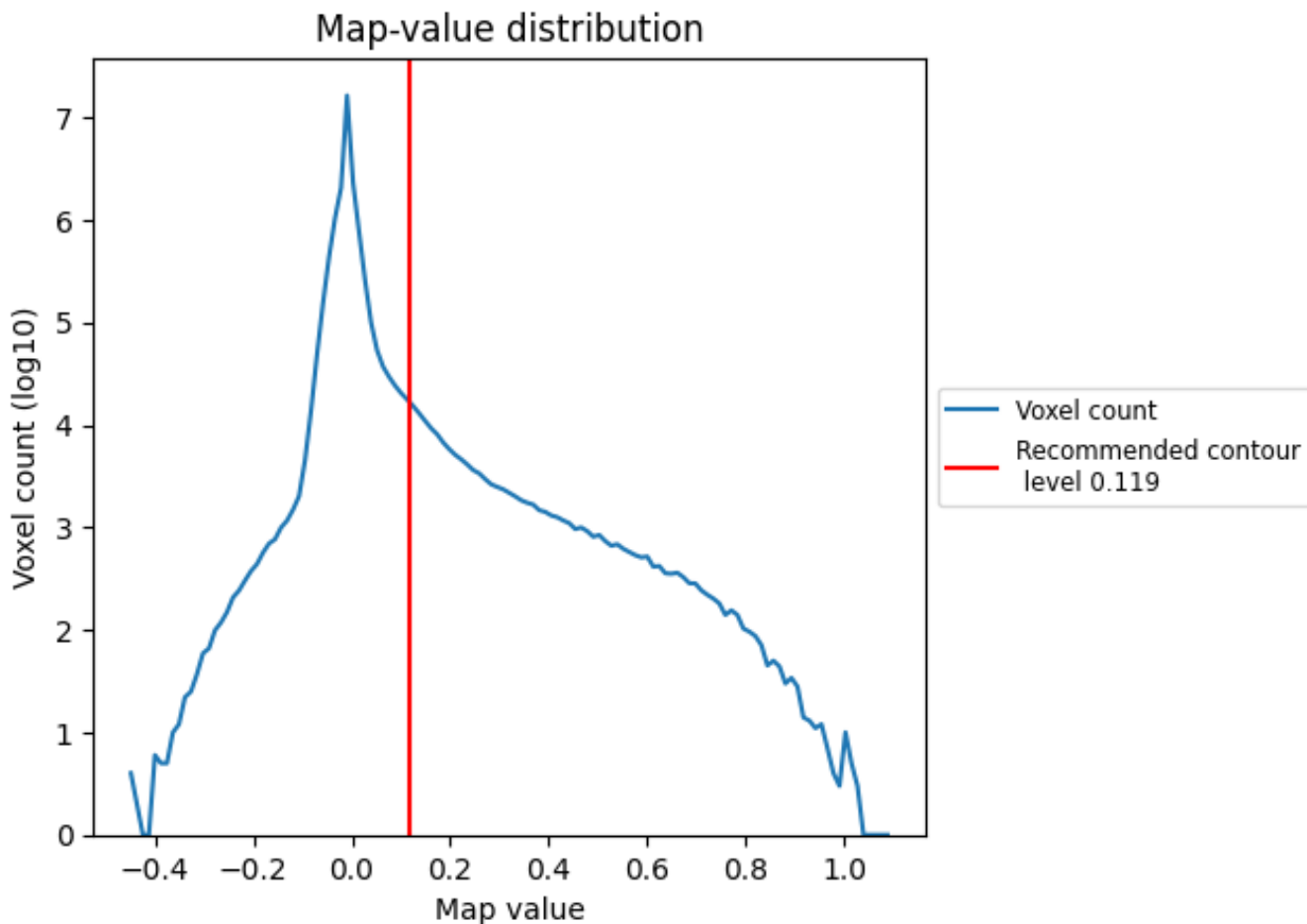


Z

7 Map analysis [i](#)

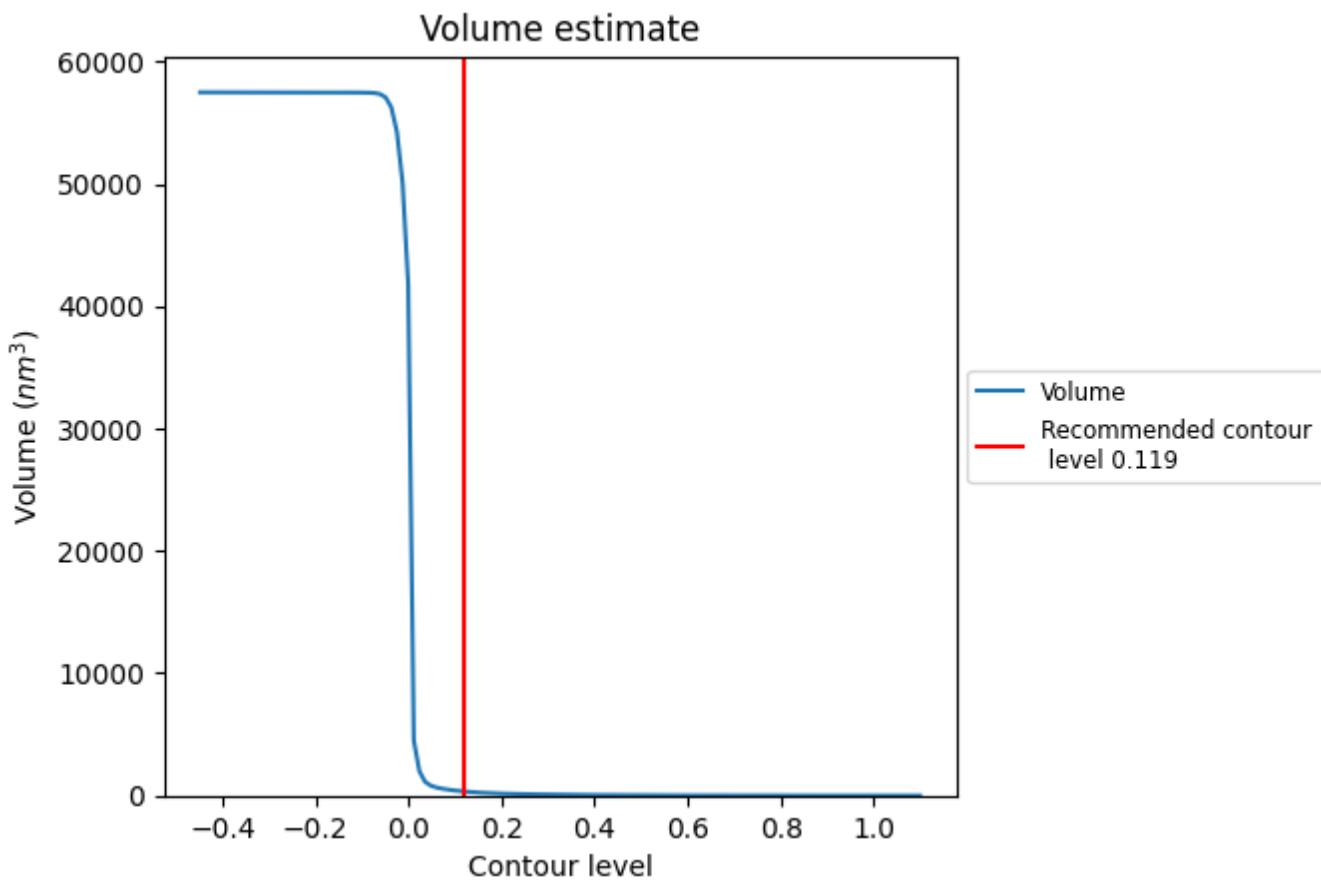
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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.

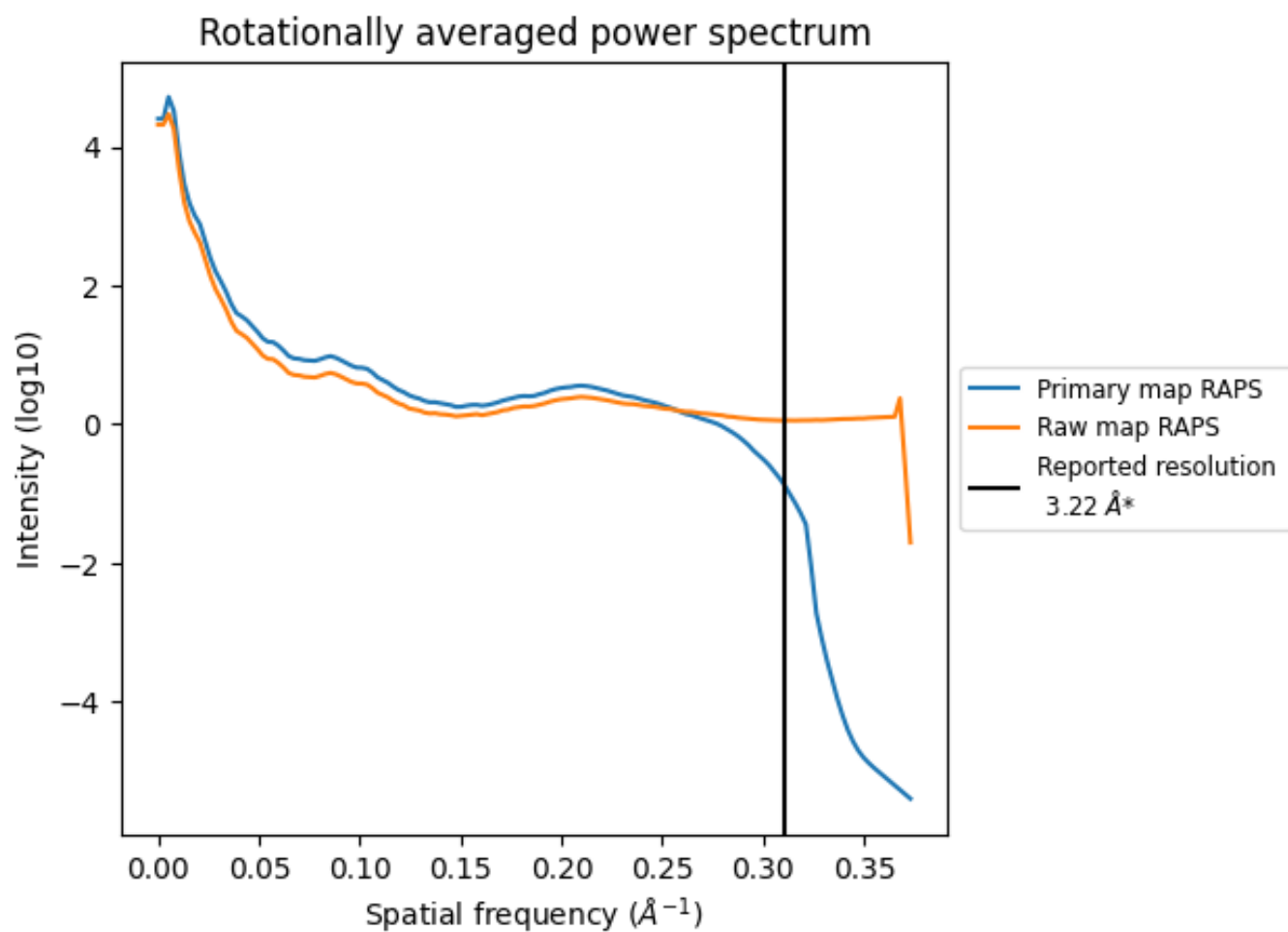
7.2 Volume estimate [i](#)



The volume at the recommended contour level is 336 nm³; this corresponds to an approximate mass of 303 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 [i](#)

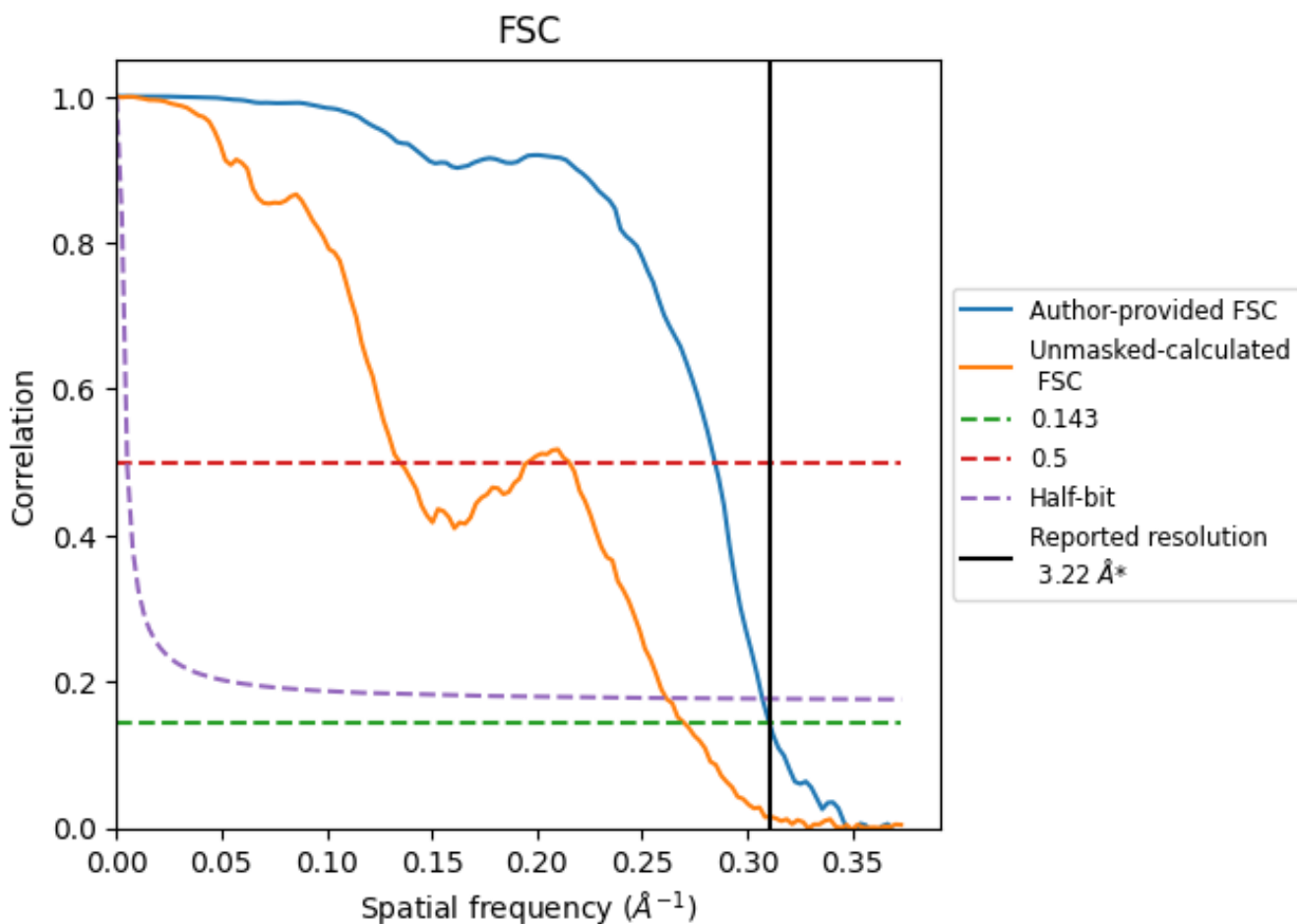


*Reported resolution corresponds to spatial frequency of 0.311 Å⁻¹

8 Fourier-Shell correlation [i](#)

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC [i](#)



*Reported resolution corresponds to spatial frequency of 0.311 Å⁻¹

8.2 Resolution estimates [i](#)

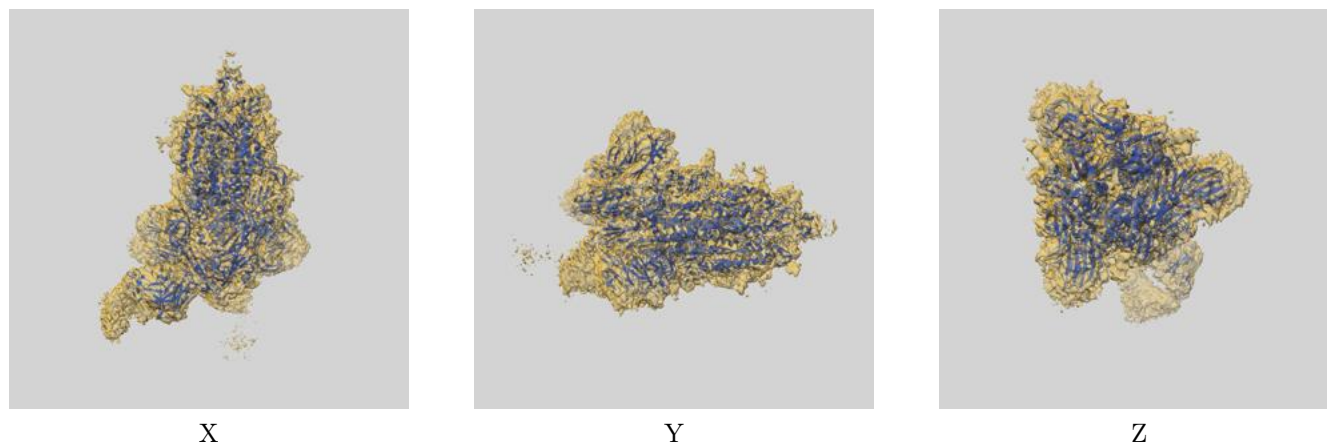
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.22	-	-
Author-provided FSC curve	3.22	3.51	3.26
Unmasked-calculated*	3.70	7.42	3.83

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 3.70 differs from the reported value 3.22 by more than 10 %

9 Map-model fit [i](#)

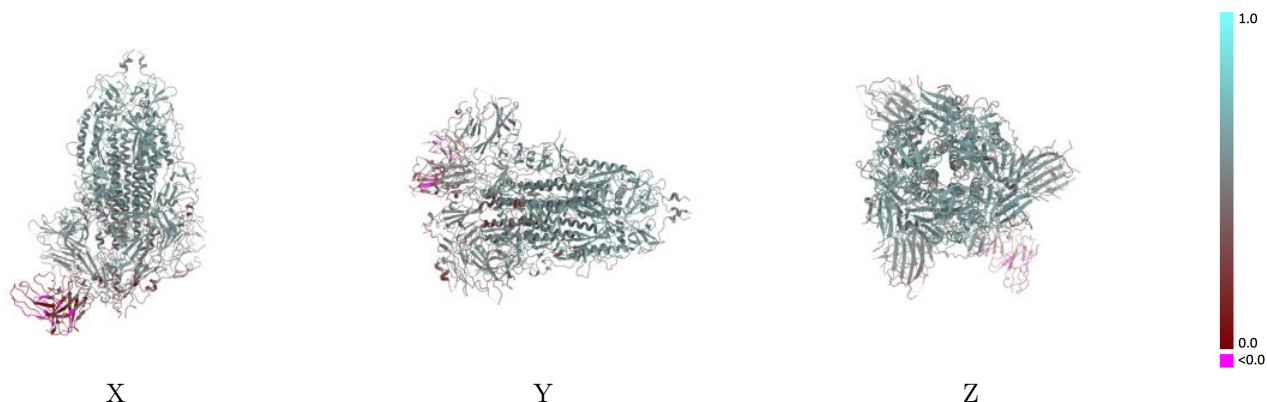
This section contains information regarding the fit between EMDB map EMD-36906 and PDB model 8K5H. Per-residue inclusion information can be found in section 3 on page 12.

9.1 Map-model overlay [i](#)



The images above show the 3D surface view of the map at the recommended contour level 0.119 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 [i](#)



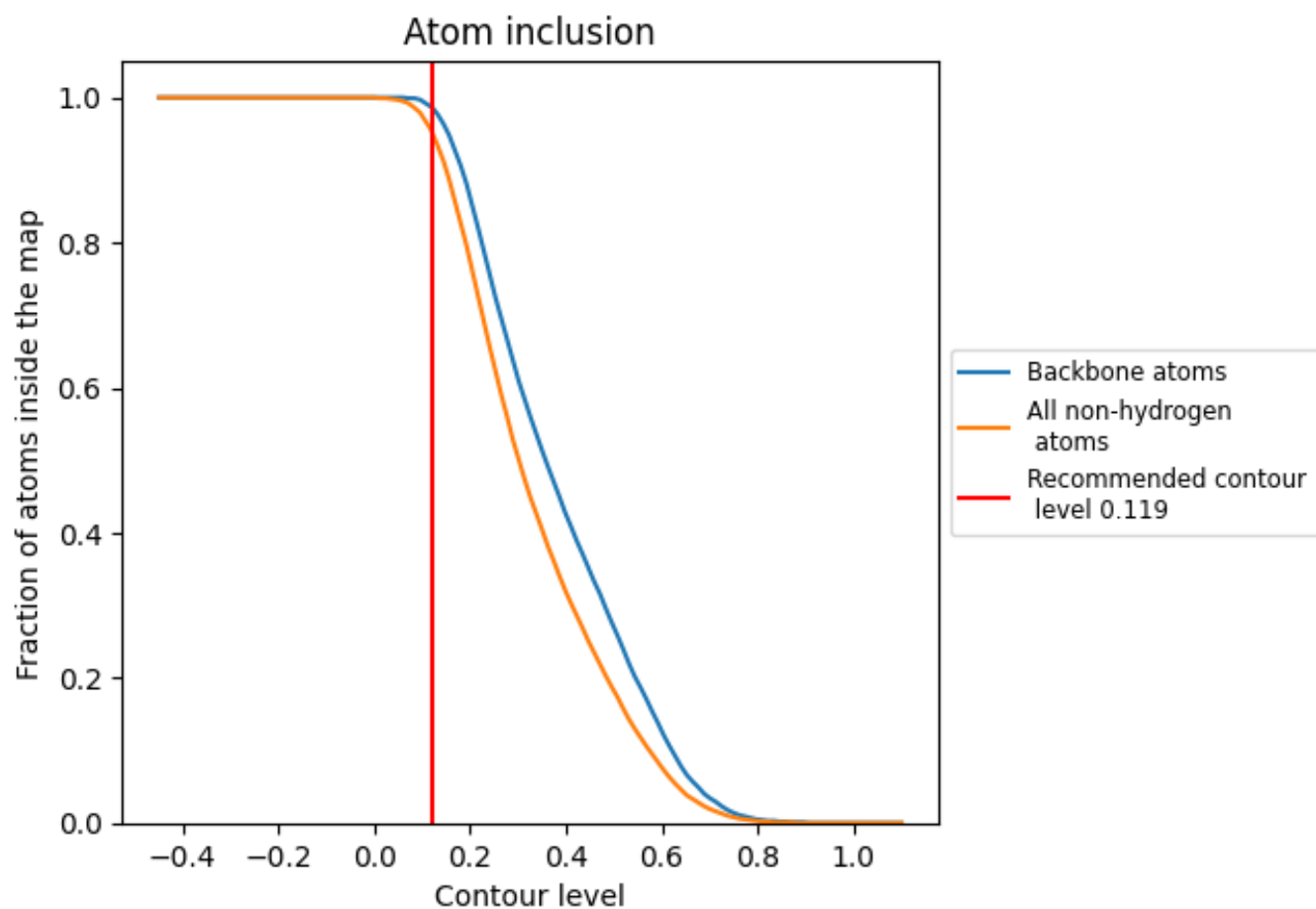
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 [i](#)



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 (0.119).





























9.4 Atom inclusion [i](#)



At the recommended contour level, 99% of all backbone atoms, 96% 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 (0.119) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.9550	 0.4970
A	 0.9700	 0.5220
B	 0.9650	 0.5090
C	 0.9660	 0.5300
D	 1.0000	 0.5410
E	 1.0000	 0.4710
F	 0.8570	 0.4590
G	 0.9640	 0.5070
H	 0.8370	 0.2150
I	 0.9640	 0.4900
J	 0.6790	 0.4170
K	 0.9640	 0.5460
L	 0.7300	 0.1650
M	 1.0000	 0.4900

