Full wwPDB EM Validation Report

Dec 31, 2024 – 06:19 PM EST

PDB ID	:	8JXE
EMDB ID	:	EMD-36698
Title	:	rat megalin RAP complex head
Authors	:	Goto, S.; Tsutsumi, A.; Lee, Y.; Hosojima, M.; Kabasawa, H.; Komochi, K.; Yun-san, L.; Nagatoshi, S.; Tsumoto, K.; Nishizawa, T.; Kikkawa, M.; Saito, A.
Deposited on	:	2023-06-30
Resolution	:	3.20 Å(reported)
Based on initial model	:	.

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:

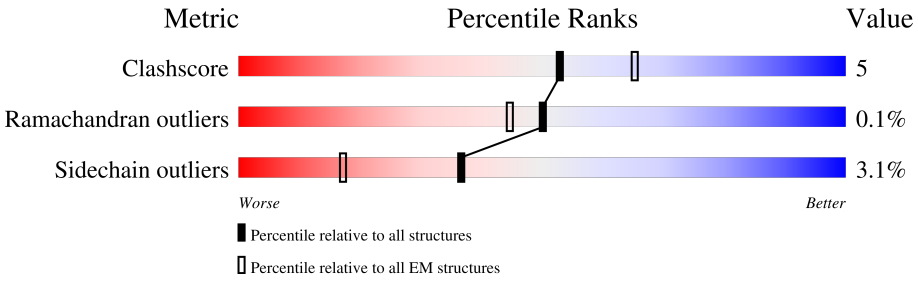
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.40

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 3.20 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 <=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	4660	26% 5% 68%
1	B	4660	27% 5% 68%
2	C	6	83% 17%
2	I	6	83% 17%
3	D	3	33% 100%
3	J	3	33% 100%
4	G	5	40% 80% 20%
4	K	5	20% 80% 20%

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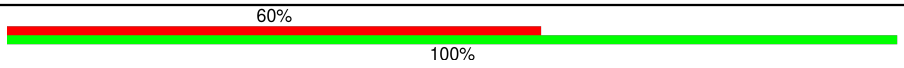
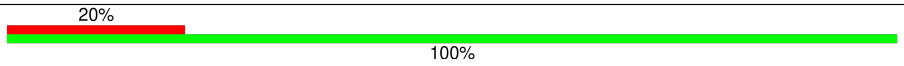
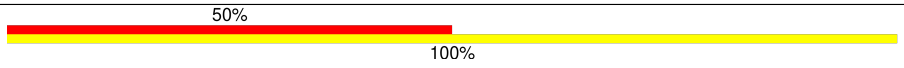
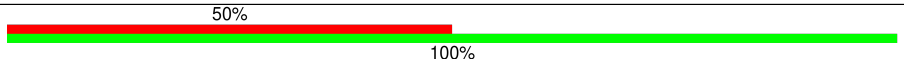
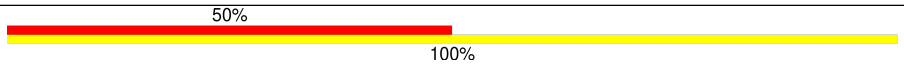
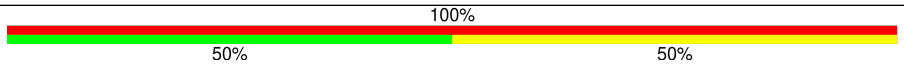
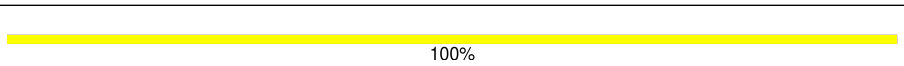
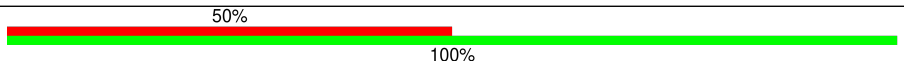
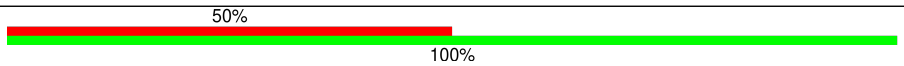
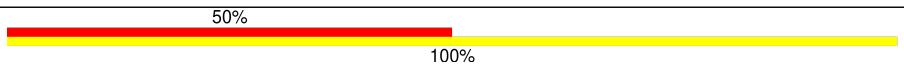
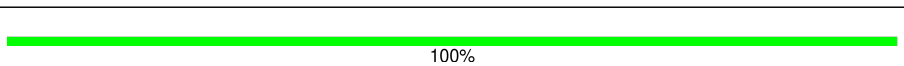
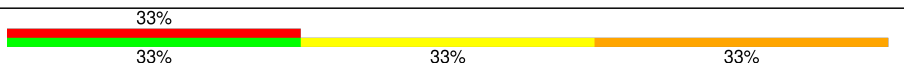
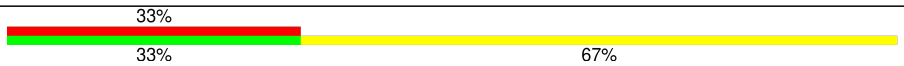
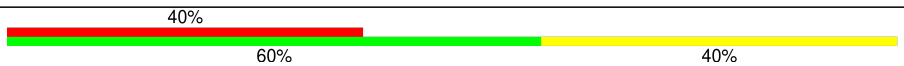
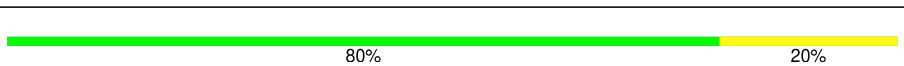
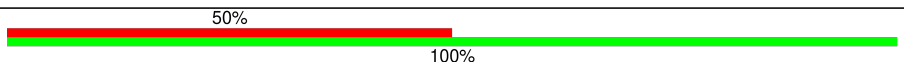
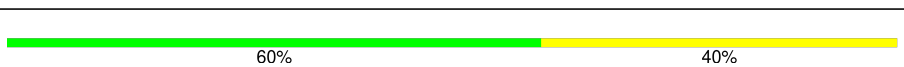
Mol	Chain	Length	Quality of chain
5	H	5	
5	L	5	
6	E	2	
6	M	2	
6	N	2	
6	P	2	
6	S	2	
6	T	2	
6	V	2	
6	W	2	
6	Y	2	
6	a	2	
6	b	2	
7	F	3	
7	U	3	
8	O	5	
8	Q	5	
8	X	5	
9	R	2	
10	Z	5	

2 Entry composition

There are 14 unique types of molecules in this entry. The entry contains 23977 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 LDL receptor related protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1469	Total	C	N	O	S	0	0
			11477	7193	2014	2187	83		
1	B	1468	Total	C	N	O	S	0	0
			11468	7187	2013	2185	83		

- Molecule 2 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
2	I	6	Total	C	N	O	0	0
			33	21	6	6		
2	C	6	Total	C	N	O	0	0
			33	21	6	6		

- Molecule 3 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	J	3	Total	C	N	O	S	0	0
			16	9	3	3	1		
3	D	3	Total	C	N	O	S	0	0
			16	9	3	3	1		

- Molecule 4 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
4	K	5	Total	C	N	O	0	0
			33	19	5	9		
4	G	5	Total	C	N	O	0	0
			33	19	5	9		

- Molecule 5 is a protein called unclear peptide.

Mol	Chain	Residues	Atoms	AltConf	Trace
5	L	5	Total C N O 28 16 6 6	0	0
5	H	5	Total C N O 28 16 6 6	0	0

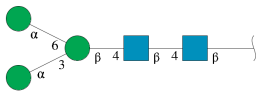
- Molecule 6 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

Mol	Chain	Residues	Atoms	AltConf	Trace
6	E	2	Total C N O 28 16 2 10	0	0
6	M	2	Total C N O 28 16 2 10	0	0
6	N	2	Total C N O 28 16 2 10	0	0
6	P	2	Total C N O 28 16 2 10	0	0
6	S	2	Total C N O 28 16 2 10	0	0
6	T	2	Total C N O 28 16 2 10	0	0
6	V	2	Total C N O 28 16 2 10	0	0
6	W	2	Total C N O 28 16 2 10	0	0
6	Y	2	Total C N O 28 16 2 10	0	0
6	a	2	Total C N O 28 16 2 10	0	0
6	b	2	Total C N O 28 16 2 10	0	0

- Molecule 7 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
7	F	3	Total 39	C 22	N 2	O 15	0	0
7	U	3	Total 39	C 22	N 2	O 15	0	0

- Molecule 8 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose.

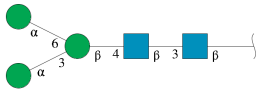


Mol	Chain	Residues	Atoms				AltConf	Trace
8	O	5	Total 61	C 34	N 2	O 25	0	0
8	Q	5	Total 61	C 34	N 2	O 25	0	0
8	X	5	Total 61	C 34	N 2	O 25	0	0

- Molecule 9 is an oligosaccharide called 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-glucopyranose.

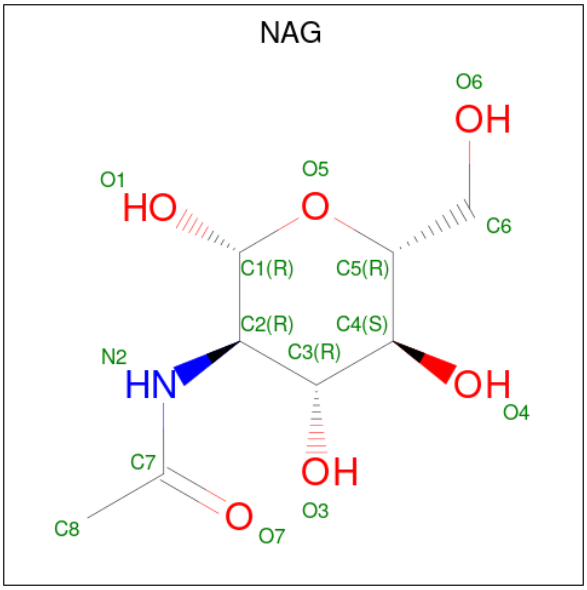
Mol	Chain	Residues	Atoms				AltConf	Trace
9	R	2	Total 28	C 16	N 2	O 10	0	0

- Molecule 10 is an oligosaccharide called alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-glucopyranose.



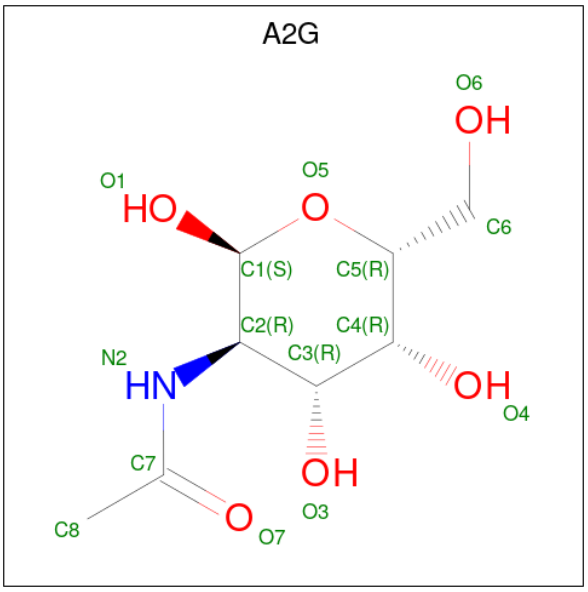
Mol	Chain	Residues	Atoms				AltConf	Trace
10	Z	5	Total	C	N	O	0	0
			61	34	2	25		

- Molecule 11 is 2-acetamido-2-deoxy-beta-D-glucopyranose (three-letter code: NAG) (formula: $C_8H_{15}NO_6$).



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

- Molecule 12 is 2-acetamido-2-deoxy-alpha-D-galactopyranose (three-letter code: A2G) (formula: $C_8H_{15}NO_6$).



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

- Molecule 13 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	AltConf
13	A	6	Total Ca 6 6	0
13	B	6	Total Ca 6 6	0

- Molecule 14 is NICKEL (II) ION (three-letter code: NI) (formula: Ni).

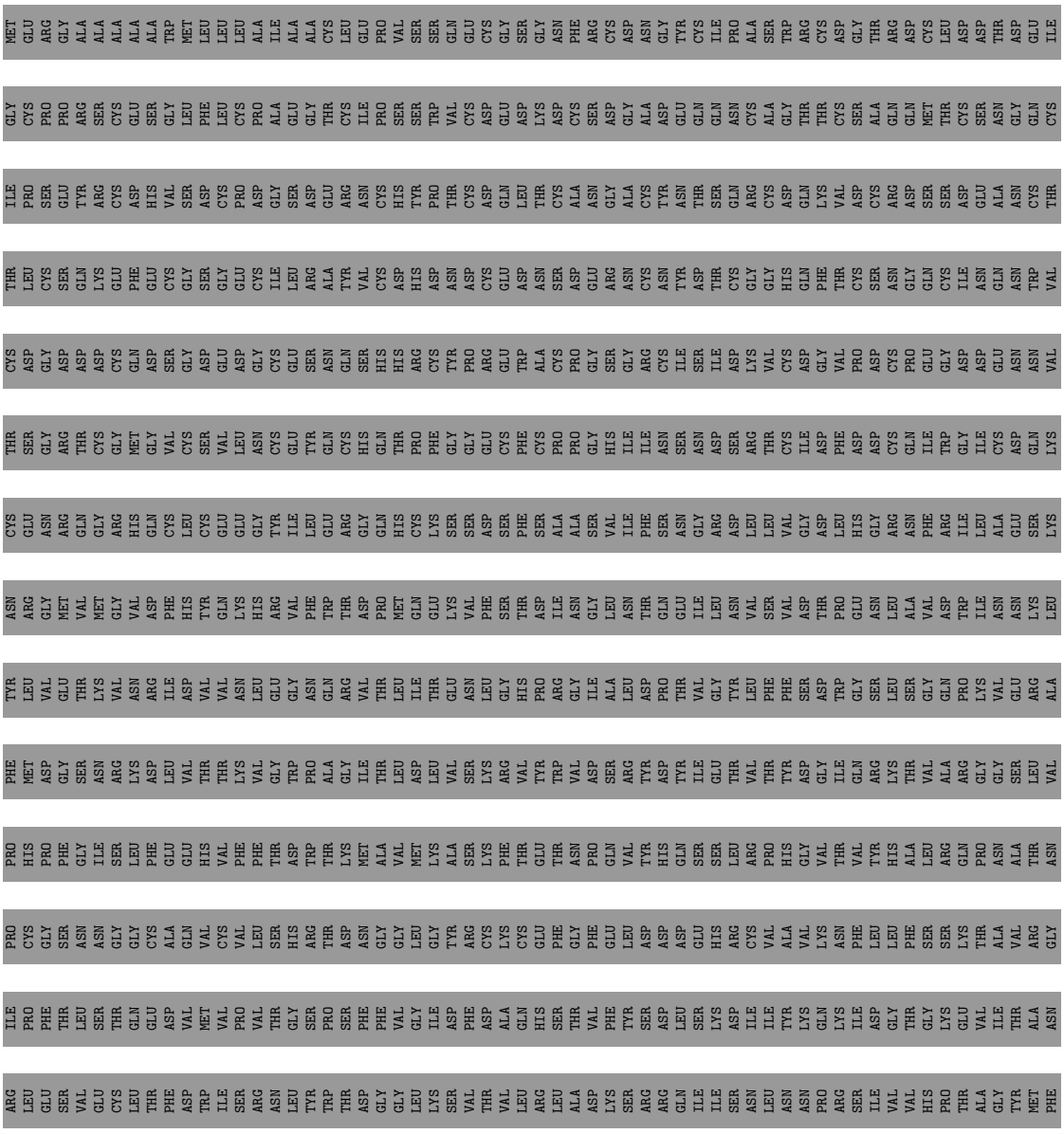
Mol	Chain	Residues	Atoms	AltConf
14	A	1	Total Ni 1 1	0
14	B	1	Total Ni 1 1	0

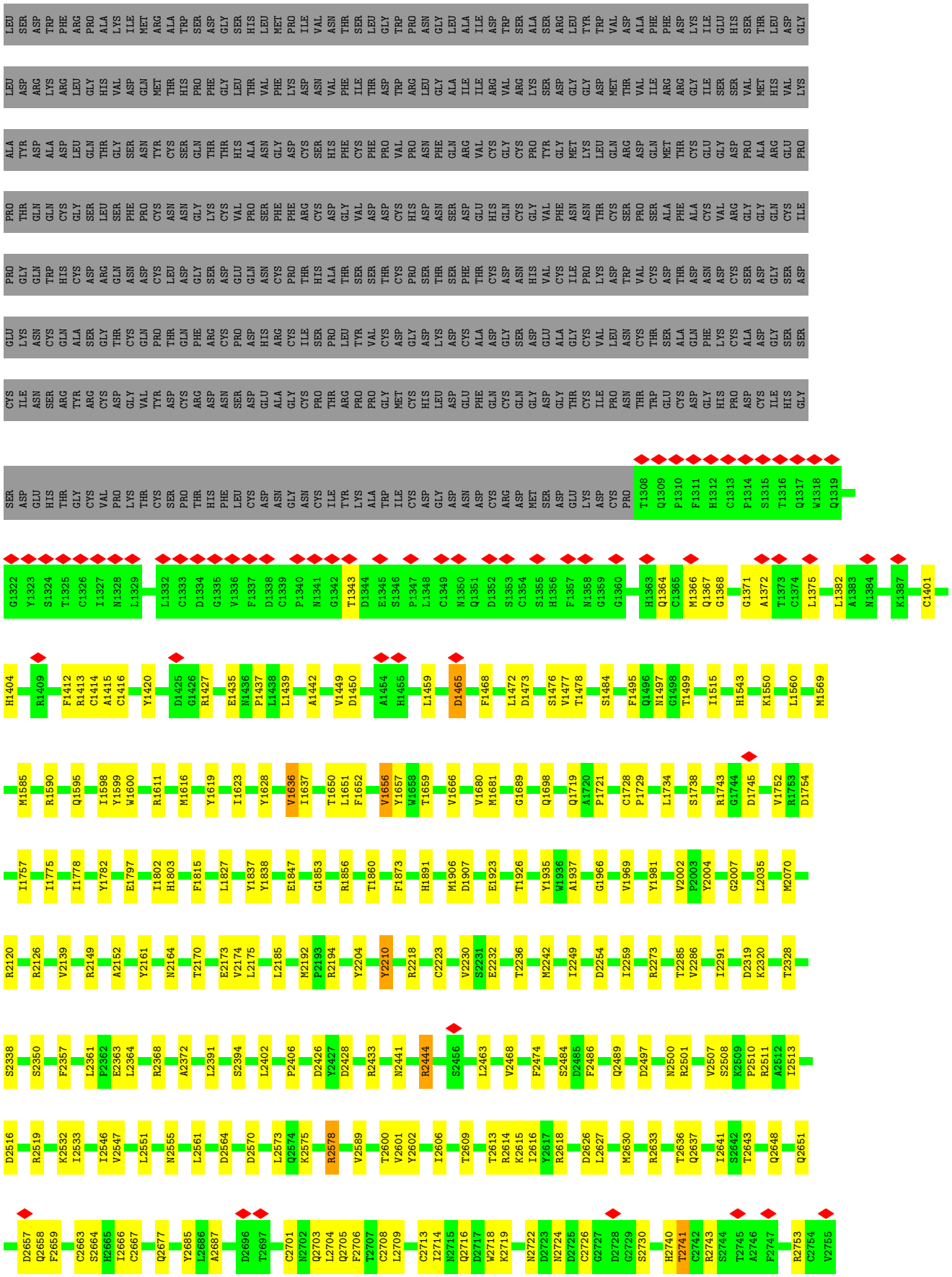
3 Residue-property plots (i)

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: LDL receptor related protein 2

Chain A:




LEU SER ASP TRP PHE ARG PRO ALA LYS ILE MET ARG ALA TRP SER ASP GLY SER HIS LEU MET PRO ILE VAL ASN THR SER LEU GLY TRP PRO ASN GLY LEU ALA ILE ILE ARG VAL ARG LYS ASP PHE LYS ASP ASN VAL PHE ILE THR ASP TRP ARG LEU GLY GLY LEU THR VAL PHE LYS ASP CYS SER HIS PHE CYS PHE PRO VAL PRO ASN PHE GLN ARG VAL CYS GLY CYS PRO TYR GLY MET LYS LEU GLN ARG GLY ASP PRO ALA ARG GLU PRO
PRO THR GLN GLN CYS GLY SER LEU SER PHE PRO CYS ASN ASN GLY LYS CYS VAL PRO SER PHE PHE ARG CYS ASP GLY ASP CYS HIS ASP ASN SER SER ASP GLU HIS CYS GLN CYS GLY VAL PHE ASN ASN THR CYS SER PRO SER ALA PHE ALA CYS VAL ARG GLY GLY GLN CYS ILE
PRO GLY GLN TRP HIS CYS ASP ARG GLN ASN ASP CYS GLU GLN ASN CYS PRO THR HIS ALA THR SER SER THR CYS PRO SER THR SER ASP PHE THR CYS ASP ASN ASP CYS ARG ASP MET SER ASP GLU LEU TYR VAL CYS GLY GLU ALA GLY CYS ILE SER PRO LEU TYR LYS ALA TRP ILE CYS ASP GLY SER ASP CYS ASP ASP CYS GLY ASP ASN CYS THR SER ASP GLU LYS ASP GLN ASP ASP ASN ASP CYS ARG ASP MET SER ASP TRP VAL CYS ASP THR SER ALA GLN LEU ASN CYS THR TRP GLU CYS ASP ASP ASN ASP
GLU LYS ASN CYS GLN PHE ARG CYS PRO ASP HIS ARG CYS ILE SER PRO LEU TYR VAL CYS ASP GLY THR CYS GLN PRO THR GLN PHE ASP GLY SER ALA ILE LEU PRO LYS ASP TRP VAL CYS GLU ALA GLY CYS SER ASP GLU ALA ASP GLY GLN CYS ASP ASP ASP ASP
CYS ILE ASN SER ARG CYS ASP GLY VAL TYR ASP CYS ARG ASP ASN SER ASP GLU GLY ALA GLY CYS PRO THR ARG PRO PRO GLY MET CYS HIS LEU ASP GLU PHE GLN CYS GLN GLY ASP ASN GLY CYS ASP ASP ASP CYS ARG ASP ASP CYS ASP ASN CYS ASP ASP ASP
SER ASP GLU HIS THR CYS VAL PRO LYS THR CYS SER PRO THR HIS PHE LEU CYS ASP ASN GLY ASN CYS ILE TYR LYS ALA TRP ILE CYS ASP GLY ASP ASN ASP CYS ASP ARG ASP MET SER ASP GLU LYS ASP CYS PRO
T1308 Q1309 P1310 F1311 H1312 C1313 P1314 S1315 T1316 Q1317 W1318 Q1319
G1322 Y1323 S1324 T1325 C1326 I1327 N1328 L1329 L1332 C1333 D1334 G1335 V1336 F1337 D1338 C1339 P1340 N1341 G1342 T1343 D1344 E1345 S1346 P1347 L1348 C1349 N1350 Q1351 D1352 S1353 C1354 S1355 H1356 F1357 N1358 G1359 G1360 H1363 Q1364 C1365 M1366 Q1367 G1368 G1371 A1372 T1373 C1374 L1375 L1382 A1383 N1384 K1387 C1401
H1404 R1409 F1412 R1413 C1414 A1415 C1416 Y1420 D1425 G1426 R1427 E1435 N1436 P1437 L1438 L1439 A1442 V1449 D1450 A1454 H1455 L1459 D1465 F1468 L1472 D1473 S1476 V1477 T1478 S1484 F1495 Q1496 N1497 G1498 T1499 I1515 H1543 K1550 L1560 M1569
M1585 R1590 Q1595 I1598 Y1599 W1600 R1611 M1616 Y1619 I1623 Y1628 V1636 I1637 T1650 L1651 F1652 V1656 Y1657 W1658 T1659 V1666 V1680 M1681 G1689 Q1698 Q1719 A1720 P1721 C1728 P1729 L1734 S1738 R1743 G1744 D1745 V1752 R1753 D1754
I1757 I1775 I1778 Y1782 E1797 I1802 H1803 F1815 L1827 Y1837 Y1838 E1847 G1853 R1856 T1860 F1873 H1891 M1906 D1907 E1923 T1926 Y1935 W1936 A1937 G1966 V1969 Y1981 V2002 P2003 Y2004 G2007 L2035 M2070
R2120 R2126 V2139 R2149 A2152 Y2161 N2164 T2170 E2173 V2174 L2175 L2185 M2192 P2193 R2194 Y2204 Y2210 R2218 C2223 V2230 S2231 E2232 T2236 M2242 I2249 D2254 I2259 R2273 T2285 V2286 I2291 D2319 K2320 T2328
S2338 S2350 F2357 L2361 P2362 E2363 L2364 R2368 A2372 L2391 S2394 L2402 P2406 D2426 Y2427 D2428 R2433 N2441 R2444 S2456 L2463 V2468 F2474 S2484 D2485 F2486 Q2489 D2497 N2500 R2501 V2507 S2508 K2509 P2510 R2511 A2512 I2513
D2516 R2519 K2532 I2533 I2546 V2547 L2551 N2555 L2561 D2564 D2570 L2573 Q2574 K2575 R2578 V2589 T2600 V2601 Y2602 I2606 T2609 T2613 R2614 K2615 I2616 Y2617 R2618 D2626 L2627 M2630 R2633 T2636 Q2637 I2641 S2642 T2643 Q2648 Q2651
D2657 Q2658 F2659 C2663 S2664 H2665 I2666 C2667 Q2677 Y2685 L2686 A2687 D2696 T2697 C2701 N2702 Q2703 L2704 Q2705 F2706 T2707 C2708 L2709 C2713 I2714 N2715 Q2716 D2717 W2718 K2719 N2722 D2723 N2724 D2725 C2726 G2727 D2728 G2729 S2730 H2740 T2741 C2742 R2743 S2744 T2745 A2746 E2747 R2753 C2754 V2755

P2756
Y2759
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Y2763
Y2764
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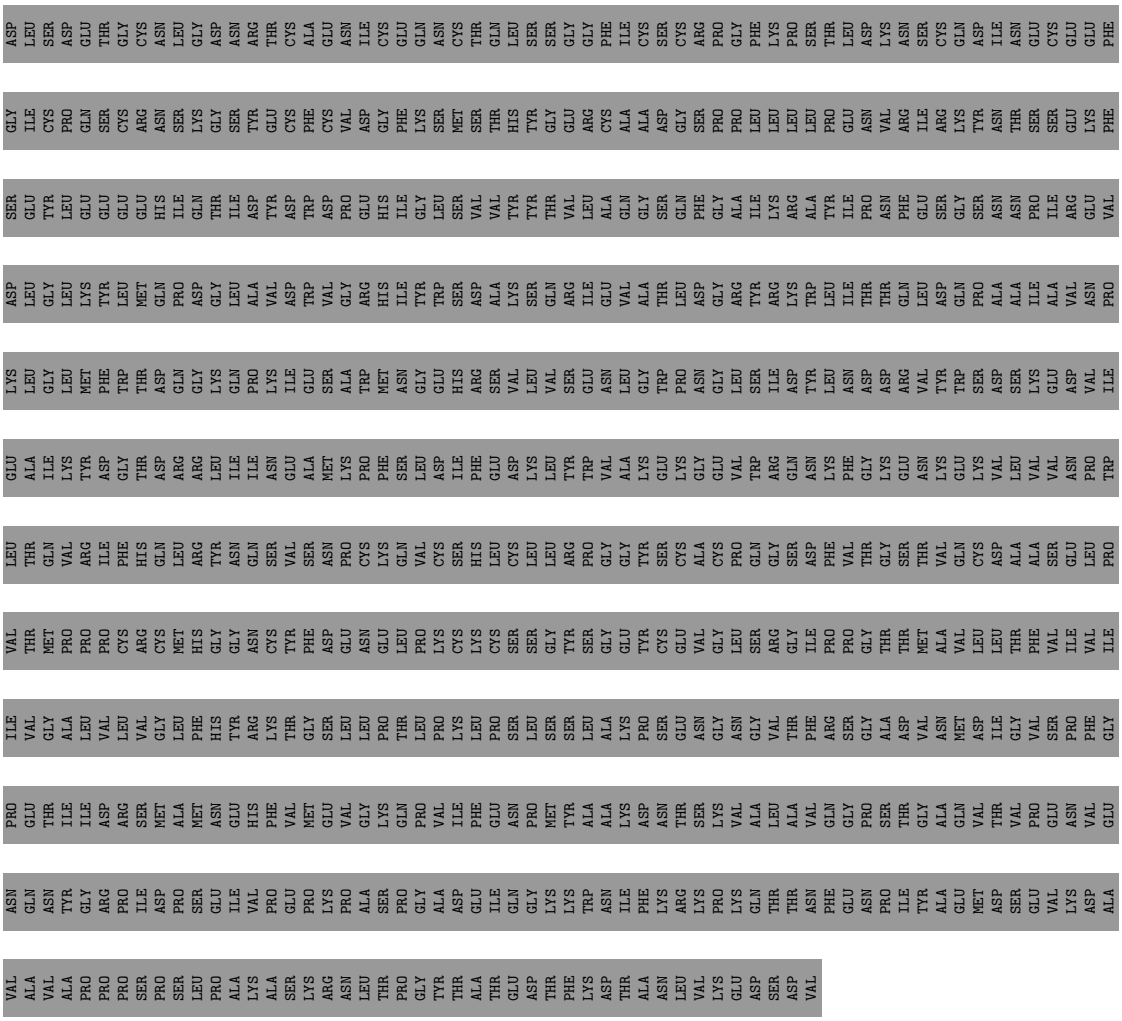
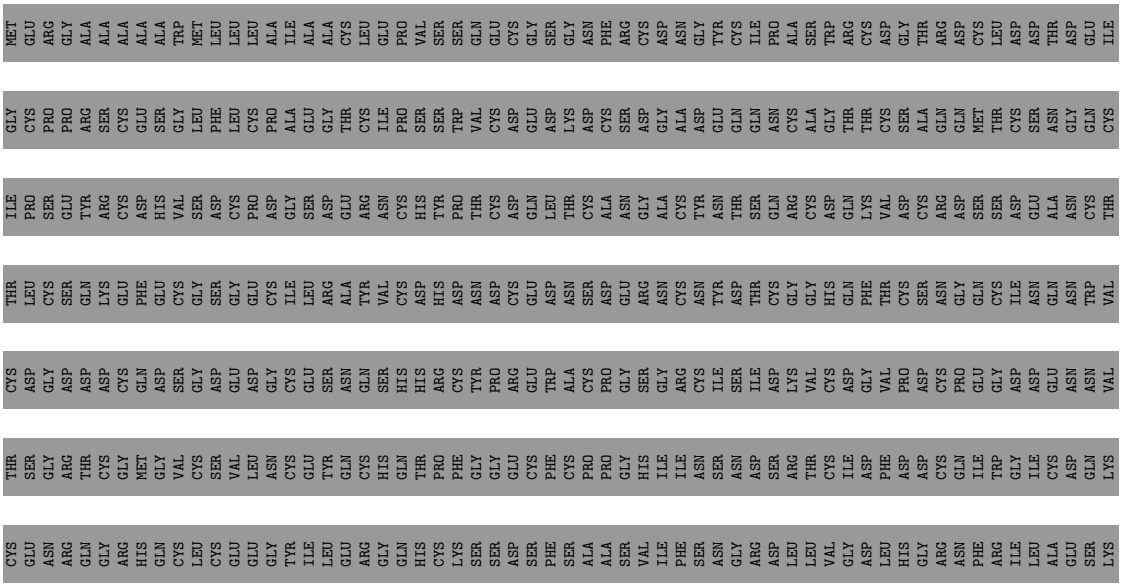
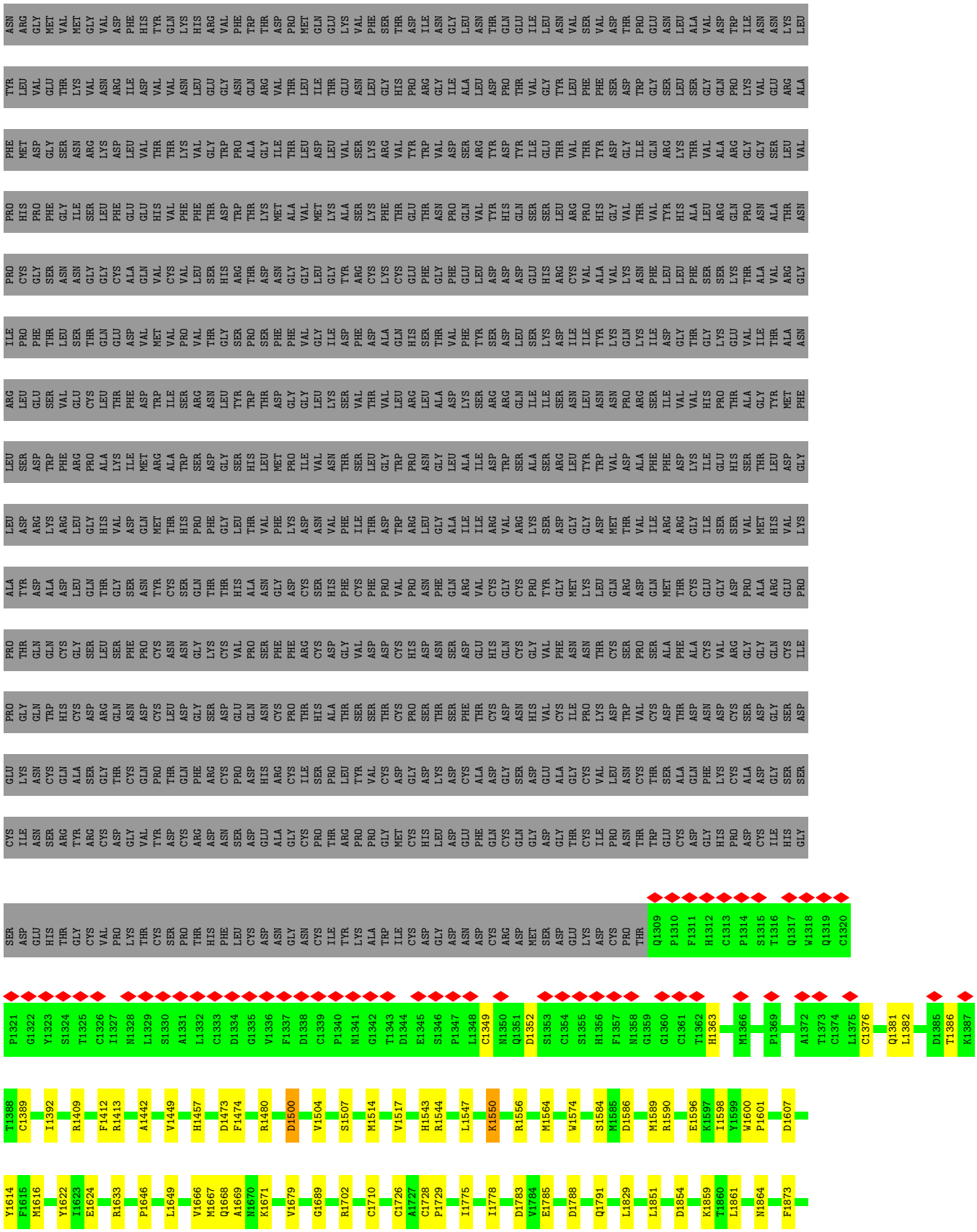


• Molecule 1: LDL receptor related protein 2

Chain B:

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TYR LEU VAL GLU THR LYS VAL ASN ARG ILE ASP VAL VAL ASN LEU GLU GLY ASN GLY LYS ARG ILE ALA LEU ASP PRO THR VAL GLY TYR LEU PHE PHE SER ASP TRP GLY SER LEU SER GLN VAL ALA ARG GLY GLY VAL GLU ARG ALA
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PRO HIS PRO PHE GLY ILE SER LEU PHE GLU GLU HIS VAL PHE PHE THR ASP TRP THR LYS MET ALA VAL MET LYS ALA SER LYS PHE THR GLU THR GLU LEU SER LEU ARG PRO HIS GLY VAL THR VAL TYR HIS ALA LEU ARG GLN PRO ASN ALA THR ASN
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ILE PRO PHE THR LEU SER THR GLN GLU ASP VAL MET VAL PRO VAL THR GLY SER PRO SER PHE PHE VAL GLY ILE ASP PHE ASP ALA GLN HIS SER THR VAL PHE TYR SER ASP LEU SER LYS ASP ILE ILE TYR LYS GLN LYS ILE ASP GLY THR GLY LYS GLU VAL ILE THR ALA ASN
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LEU SER ASP TRP PHE ARG PRO ALA LYS ILE MET ARG ALA TRP SER ASP GLY SER HIS LEU MET PRO ILE VAL ASN THR SER LEU GLY TRP PRO ASN GLY LEU ALA ASP LYS SER ARG ASP TRP SER ALA SER ILE SER ARG ASN LEU TYR TRP VAL ASP ALA PHE PHE ASP ILE GLU THR ILE ASP
LEU ASP ARG LYS ARG LEU GLY HIS VAL ASP GLN MET THR HIS PRO PHE GLY GLY LEU THR VAL PHE LYS ASP ASN VAL PHE ILE THR ASP TRP ARG LEU GLY ALA ILE ILE ARG VAL ARG LYS SER ASP GLY GLY ASP MET THR VAL ILE ARG ARG GLY ILE SER ILE LYS ILE GLU HIS SER VAL MET THR HIS VAL LYS
ALA TYR ASP ALA ASP LEU GLN THR THR HIS ALA ASN GLY ASP CYS SER HIS PHE CYS PHE PRO VAL PRO ASN PHE GLN ARG VAL CYS GLY CYS PRO TYR GLY MET LYS LEU GLN ARG ASP GLN MET THR CYS GLU GLY ASP PRO ALA ARG GLU PRO
PRO THR GLN GLN CYS GLY SER LEU SER PHE PHE PRO CYS ASN ASN GLY VAL PHE PHE ARG CYS ASP GLY VAL ASP ASP CYS HIS ASP ASN SER ASP GLN CYS GLY VAL PHE ASN ASN THR CYS SER PRO SER ALA PHE ALA CYS VAL ARG GLY GLY ILE GLN
PRO GLY GLN TRP HIS CYS ASP ARG GLN ASN ASP CYS GLN LEU ASP GLY SER ASP GLU GLN ASN CYS HIS ALA THR SER SER THR CYS PRO SER SER PHE THR HIS ALA THR SER ASP ASN ASP CYS SER THR PHE THR CYS ASP ASN ASP ASP ASP ASP SER ASP
GLU LYS ASN CYS GLN THR HIS LEU CYS ASP GLU LEU TYR VAL CYS ILE SER PRO LEU TYR LYS ALA TRP ILE CYS ASP GLY ASP ASP CYS ASP GLU ALA GLY CYS VAL LEU ASN CYS THR SER ALA GLN PHE LYS CYS ASP ASP SER ASP
CYS ILE ASN SER ARG TYR ARG CYS ASP GLY VAL TYR ASP CYS ARG CYS ASP ASN SER ASP GLU ALA GLY CYS PRO THR ARG PRO PRO GLY MET CYS HIS LEU ASP GLU PHE GLN CYS GLN GLY ASP GLY THR CYS ILE PRO ASN ASP CYS GLU ASP ASP GLY HIS PRO ASP CYS GLY ILE SER
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T1388 C1389 I1392 R1409 F1412 R1413 A1442 V1449 H1457 D1473 F1474 R1480 D1500 V1504 S1507 M1514 V1517 H1543 R1544 L1547 K1550 R1556 M1564 W1574 S1584 M1585 D1586 M1589 R1590 E1596 K1597 I1598 Y1599 W1600 P1601 D1607
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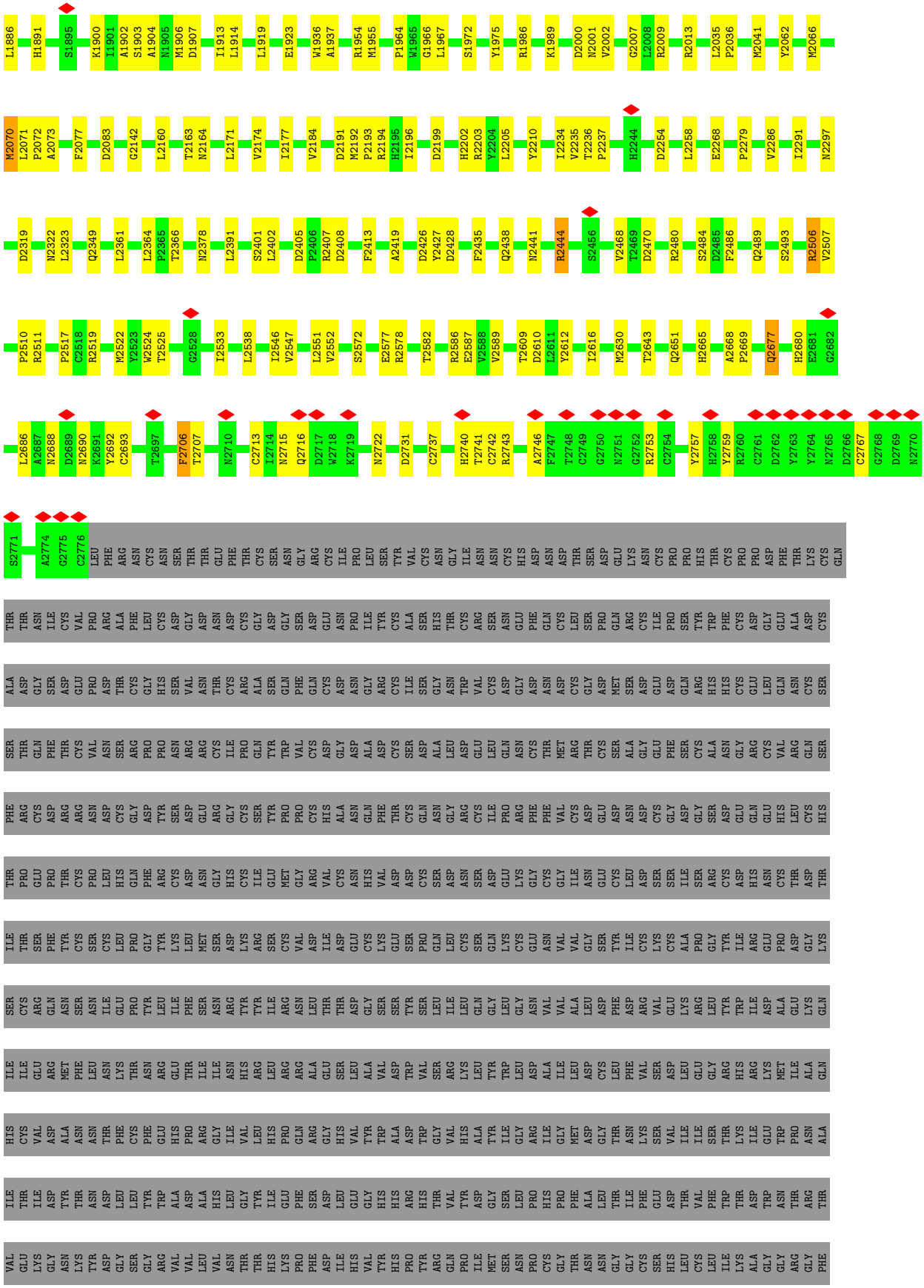
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M2070 L2071 P2072 A2073 F2077 D2083 G2142 L2160 T2163 N2164 L2171 V2174 I2177 V2184 D2191 M2192 P2193 R2194 H2195 I2196 D2199 H2202 R203 Y2204 L2205 Y2210 I2234 V2235 T2236 P237 H2244 D2254 L2258 E2268 P2279 V2286 I2291 N2297
D2319 N2322 L2323 Q2349 L2361 L2364 P2365 T2366 N2378 L2391 S2401 L2402 D2405 P2406 R2407 D2408 F2413 A2419 D2426 Y2427 D2428 F2435 Q2438 N2441 R2444 S2456 V2468 T2469 D2470 R2480 S2484 D2485 F2486 Q2489 S2493 R2506 V2507
P2510 R2511 P2517 C2518 R2519 M2522 Y2523 W2524 T2525 G2528 I2533 L2538 I2546 V2547 L2551 V2552 S2572 E2577 R2578 T2582 R2586 E2587 V2588 V2589 T2609 D2610 L2611 Y2612 I2616 M2630 T2643 Q2651 H2665 A2668 P2669 Q2677 H2680 E2681 G2682
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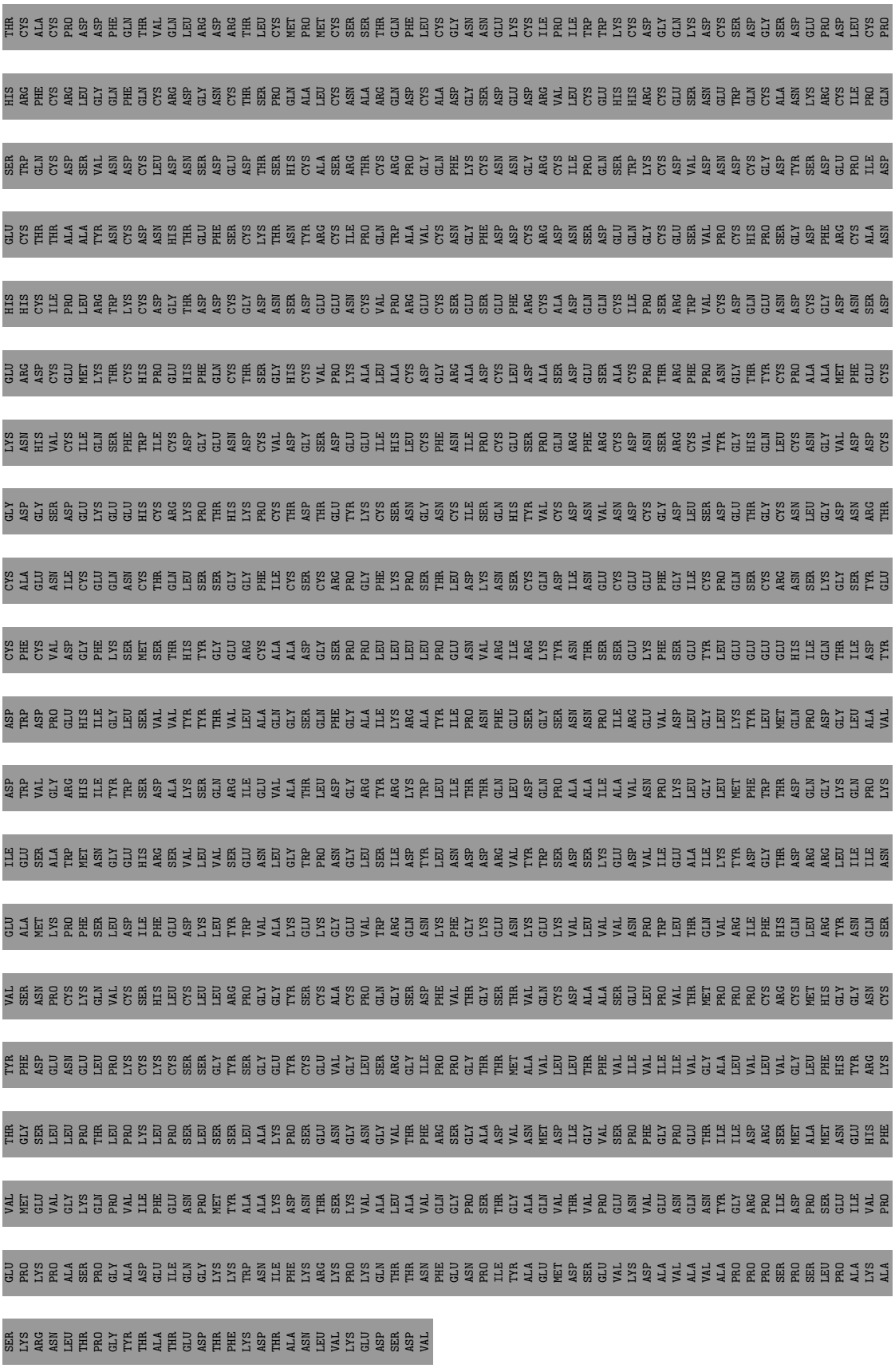
S2771 A2774 G2775 C2776 LEU PHE ARG ASN CYS ASN SER THR THR GLU PHE THR CYS SER ASN GLY ARG CYS ILE PRO LEU SER TYR VAL CYS ASN GLY ILE ASN ASN ASP THR SER ASP GLU LYS ASN CYS PRO PRO HIS THR CYS PRO PRO ASP PHE THR LYS CYS GLN
THR THR ASN ILE CYS VAL PRO ARG ALA PHE LEU CYS ASP GLY ASP ASN GLU PHE GLN ARG CYS ILE PRO SER TYR TRP PHE CYS ASP GLY GLU ALA ASP CYS
ALA ASP GLY SER ASP GLU PRO ASP THR CYS GLY HIS SER VAL ASN THR CYS ARG ALA SER GLN PHE GLN CYS ASP ASN GLY ARG CYS ILE SER GLY ASN TRP VAL CYS ASP GLY ASP ASN ASP CYS GLY ASP MET SER ASP GLU ASP GLN ARG HIS HIS CYS GLU LEU GLN ASP GLY SER
SER THR GLN PHE THR CYS VAL ASN SER ARG PRO PRO ASN ARG ARG CYS ILE PRO GLN TYR TRP VAL CYS ASP GLY ASP ALA ASP CYS SER ASP ALA LEU ASP GLU LEU GLN ASN CYS THR MET ARG THR CYS SER ALA GLY GLU PHE SER CYS ALA ASN GLY ARG CYS VAL ARG GLN SER
PHE ARG CYS ASP ARG ARG ASN ASP CYS GLY ASP TYR SER ASP GLU ARG GLY CYS SER TYR PRO PRO CYS HIS ALA ASN GLN PHE THR CYS GLN ASN GLY ARG CYS ILE PRO ARG PHE PHE VAL CYS ASP GLU ASP ASN ASP CYS GLY ASP SER ASP GLU ASP GLY SER ASP ASP GLN GLU HIS LEU CYS HIS
THR PRO GLU PRO THR CYS PRO LEU HIS GLN HIS PHE ARG CYS ASP ASN GLY HIS CYS ILE GLU MET GLY ARG VAL CYS ASN ASN HIS VAL ASP ASP CYS SER ASP ASN SER ASP CYS GLY ILE ASN GLU CYS LEU ASP SER SER ILE SER ARG CYS ASP HIS ASN CYS THR ASP THR
ILE THR SER PHE TYR CYS SER CYS LEU PRO GLY TYR LYS LEU MET SER ASP LYS LEU ASP ARG SER CYS VAL ASP ILE ASP GLU CYS LYS GLU SER PRO GLN LEU CYS SER GLN LYS CYS GLU ASN VAL VAL GLY SER TYR ILE CYS LYS CYS ALA PRO GLY TYR ILE ARG GLU PRO GLY LYS
SER CYS ARG GLN ASN SER ASN ILE GLU PRO TYR LEU ILE PHE SER ASN ARG TYR TYR ILE ARG ASN ASP LEU THR ASP GLY SER SER TYR SER LEU LEU ILE LEU GLN GLY LEU GLY ASN VAL VAL ALA LEU ASP PHE ASP ARG VAL GLU LYS LEU ARG TYR TRP ILE ASP GLU LYS GLN
ILE ILE GLU ARG MET PHE LEU ASN LYS THR ASN ARG GLU PRO ASN ARG ARG GLU SER LEU ALA VAL ASP TRP VAL SER ARG LYS LEU TYR TRP ILE ASP ALA ILE LEU ASP CYS LEU PHE PHE VAL SER ASP LEU GLU LEU GLY ARG HIS ARG LYS MET ILE ALA GLN
HIS CYS VAL ASP ALA ASN ASN THR PHE CYS PHE GLU HIS PRO ARG GLY ILE VAL LEU HIS PRO GLN ARG GLY HIS VAL TYR TRP ALA ASP TRP GLY VAL HIS ALA TYR ILE GLY ARG ILE GLY MET ASP GLY THR ASN ASN PRO ILE LYS SER VAL LEU ILE ILE VAL THR LYS ILE GLU PRO ASN ALA
ILE THR ILE ASP TYR THR ASN ASP LEU LEU TYR TRP ALA HIS LEU GLY TYR ILE GLU PHE SER ASP LEU GLU GLY HIS HIS ARG HIS THR VAL TYR ASP GLY ARG VAL VAL LEU ASP ALA ASP ALA HIS LEU GLY ILE VAL LEU HIS PRO GLN ARG GLY HIS VAL TYR ARG GLN PRO ILE MET SER ASN PRO CYS GLY THR ASN GLY GLY CYS SER HIS LEU CYS LEU ILE LYS ALA GLY GLY ARG GLY THR
VAL GLU LYS GLY ASN LYS TYR ASP GLY SER GLY ARG VAL VAL LEU VAL ASN THR HIS LYS PRO PHE ASP ILE HIS VAL TYR HIS PRO TYR ARG GLN PRO ILE MET SER ASN PRO CYS GLY THR ASN ASN GLY GLY CYS SER HIS LEU CYS LEU ILE LYS ALA GLY GLY ARG GLY PHE



• Molecule 2: unclear peptide

Chain I:

• Molecule 2: unclear peptide

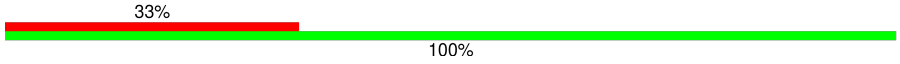
Chain C:

• Molecule 3: unclear peptide

Chain J:

• Molecule 3: unclear peptide

Chain D:

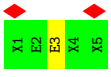


• Molecule 4: unclear peptide

Chain K:

• Molecule 4: unclear peptide

Chain G:



• Molecule 5: unclear peptide

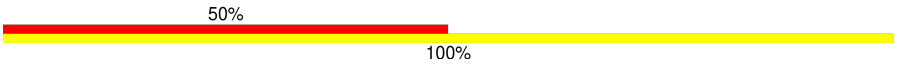
Chain L:

• Molecule 5: unclear peptide

Chain H:

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

Chain E:



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

Chain M:

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

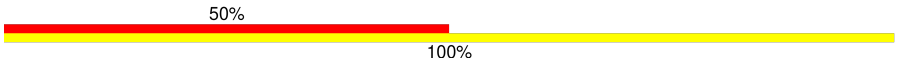
Chain N:

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

Chain P:

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

Chain S:

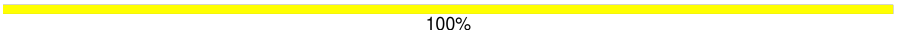


• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain T:

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

Chain V:

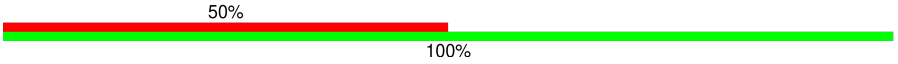


• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain W:

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

Chain Y:

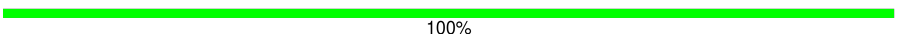


• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain a:

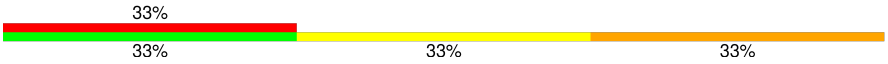
• Molecule 6: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain b:



• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain F:

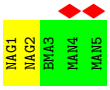


• Molecule 7: beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain U:

• Molecule 8: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain O:

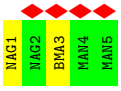


• Molecule 8: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Q:

• Molecule 8: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain X:



• Molecule 9: 2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain R:

• Molecule 10: alpha-D-mannopyranose-(1-3)-[alpha-D-mannopyranose-(1-6)]beta-D-mannopyranose-(1-4)-2-acetamido-2-deoxy-beta-D-glucopyranose-(1-3)-2-acetamido-2-deoxy-beta-D-glucopyranose

Chain Z:

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	67775	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING ONLY	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	50	Depositor
Minimum defocus (nm)	600	Depositor
Maximum defocus (nm)	1600	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor
Maximum map value	0.196	Depositor
Minimum map value	-0.098	Depositor
Average map value	0.000	Depositor
Map value standard deviation	0.004	Depositor
Recommended contour level	0.0285	Depositor
Map size (Å)	366.86002, 366.86002, 366.86002	wwPDB
Map dimensions	260, 260, 260	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.411, 1.411, 1.411	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: CA, NAG, BMA, NI, A2G, MAN

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	0.25	0/11766	0.51	0/16026
1	B	0.26	0/11757	0.52	0/16013
2	C	0.29	0/7	1.26	0/8
2	I	0.25	0/7	0.87	0/8
3	D	0.27	0/5	0.16	0/5
3	J	0.26	0/5	0.05	0/5
4	G	0.24	0/17	0.35	0/21
4	K	0.31	0/17	0.51	0/21
5	H	0.19	0/7	0.26	0/8
5	L	0.21	0/7	0.52	0/8
All	All	0.26	0/23595	0.52	0/32123

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	11477	0	10926	128	0
1	B	11468	0	10914	111	0
2	C	33	0	18	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	I	33	0	18	1	0
3	D	16	0	8	0	0
3	J	16	0	8	0	0
4	G	33	0	17	0	0
4	K	33	0	18	1	0
5	H	28	0	13	0	0
5	L	28	0	12	0	0
6	E	28	0	25	0	0
6	M	28	0	25	0	0
6	N	28	0	25	0	0
6	P	28	0	25	0	0
6	S	28	0	25	0	0
6	T	28	0	25	0	0
6	V	28	0	25	0	0
6	W	28	0	25	0	0
6	Y	28	0	25	0	0
6	a	28	0	25	0	0
6	b	28	0	25	0	0
7	F	39	0	34	1	0
7	U	39	0	34	0	0
8	O	61	0	52	0	0
8	Q	61	0	52	0	0
8	X	61	0	52	0	0
9	R	28	0	25	0	0
10	Z	61	0	52	0	0
11	A	56	0	52	0	0
11	B	56	0	52	0	0
12	A	14	0	12	0	0
12	B	14	0	12	0	0
13	A	6	0	0	0	0
13	B	6	0	0	0	0
14	A	1	0	0	0	0
14	B	1	0	0	0	0
All	All	23977	0	22656	238	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 5.

All (238) 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:B:2507:VAL:HG21	1:B:2524:TRP:HE1	1.52	0.74
1:A:2708:CYS:SG	1:A:2730:SER:OG	2.45	0.74
1:B:1900:LYS:HE2	1:B:1902:ALA:HB2	1.71	0.71
1:B:2203:ARG:NH1	1:B:2361:LEU:O	2.27	0.68
1:B:2651:GLN:N	1:B:2651:GLN:OE1	2.27	0.68
1:B:2349:GLN:OE1	1:B:2349:GLN:N	2.27	0.67
1:A:1435:GLU:OE1	1:A:1435:GLU:N	2.24	0.67
1:A:2705:GLN:HB3	1:A:2713:CYS:HB3	1.78	0.65
1:A:1719:GLN:HG3	1:A:1721:PRO:HD2	1.79	0.65
1:B:2489:GLN:O	1:B:2506:ARG:NH1	2.29	0.65
1:A:2463:LEU:HD11	1:A:2501:ARG:HD2	1.78	0.65
1:A:2391:LEU:HD21	1:A:2641:ILE:HD11	1.77	0.64
1:A:2609:THR:HG22	1:A:2616:ILE:HG12	1.78	0.64
1:B:1923:GLU:HB2	1:B:1937:ALA:HB3	1.80	0.64
1:A:2726:CYS:SG	1:A:2730:SER:OG	2.57	0.63
1:A:1595:GLN:HA	1:A:1598:ILE:HD11	1.80	0.62
1:A:2760:ARG:HA	1:A:2772:ASP:HB2	1.81	0.62
1:B:1382:LEU:HD12	1:B:1386:THR:HA	1.81	0.62
1:A:1853:GLY:O	1:A:1856:ARG:NH2	2.26	0.61
1:A:2149:ARG:NH2	4:K:2:GLU:O	2.33	0.61
1:B:2546:ILE:HD12	1:B:2582:THR:HA	1.83	0.61
1:A:2361:LEU:HD21	1:A:2368:ARG:HG3	1.81	0.60
1:B:2361:LEU:HD12	1:B:2364:LEU:HD22	1.83	0.60
1:B:1614:TYR:HB3	1:B:1649:LEU:HD21	1.83	0.60
1:A:1442:ALA:HB2	1:A:1472:LEU:HD23	1.84	0.60
1:A:2484:SER:HB3	1:A:2513:ILE:HD11	1.83	0.60
1:B:1607:ASP:OD2	1:B:1671:LYS:NZ	2.33	0.60
1:B:1543:HIS:HB3	1:B:1729:PRO:HG3	1.84	0.59
1:A:2363:GLU:OE2	1:A:2363:GLU:N	2.34	0.59
1:A:2648:GLN:HB3	1:A:2651:GLN:HE21	1.67	0.59
1:B:2062:TYR:OH	1:B:2083:ASP:OD2	2.20	0.59
1:B:1864:ASN:ND2	1:B:2319:ASP:OD1	2.35	0.59
1:A:1367:GLN:NE2	1:A:1371:GLY:O	2.30	0.58
1:A:2767:CYS:SG	1:A:2771:SER:OG	2.62	0.58
1:A:2185:LEU:HB3	1:A:2223:CYS:HB2	1.84	0.58
1:B:2525:THR:HG22	1:B:2533:ILE:HD12	1.86	0.58
1:B:2609:THR:HG22	1:B:2616:ILE:HG12	1.86	0.57
1:B:2737:CYS:HA	1:B:2740:HIS:HB3	1.85	0.57
1:B:2070:MET:HG3	1:B:2072:PRO:HD2	1.86	0.57
1:B:1550:LYS:O	1:B:1590:ARG:NH1	2.34	0.57
1:A:2285:THR:HG21	1:A:2328:THR:HA	1.87	0.56
1:B:1966:GLY:HA3	1:B:2007:GLY:HA2	1.85	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1473:ASP:OD1	1:B:1474:PHE:N	2.38	0.56
1:A:2511:ARG:NH2	1:A:2555:ASN:OD1	2.38	0.56
1:A:2484:SER:HB2	1:A:2510:PRO:HB2	1.87	0.56
1:B:2234:ILE:HD11	1:B:2237:PRO:HG3	1.87	0.56
1:A:2546:ILE:HG22	1:A:2547:VAL:HG13	1.87	0.56
1:A:2601:VAL:HB	1:A:2606:ILE:HG22	1.87	0.55
1:A:1981:TYR:HA	1:B:2279:PRO:HG3	1.88	0.55
1:A:1873:PHE:HB3	1:A:1891:HIS:HB2	1.90	0.54
1:B:2742:CYS:HB3	1:B:2746:ALA:HB3	1.90	0.54
1:A:2500:ASN:HB2	1:A:2666:ILE:HD11	1.90	0.54
1:B:1937:ALA:HB1	1:B:1964:PRO:HG2	1.89	0.54
1:A:1497:ASN:OD1	7:F:1:NAG:N2	2.41	0.54
1:B:2199:ASP:OD2	1:B:2202:HIS:ND1	2.40	0.54
1:A:2139:VAL:HG22	1:A:2175:LEU:HD13	1.90	0.53
1:A:2740:HIS:CD2	1:A:2741:THR:H	2.26	0.53
1:A:2194:ARG:HG3	1:A:2210:TYR:CZ	2.44	0.53
1:B:2722:ASN:HB2	1:B:2753:ARG:CZ	2.39	0.53
1:B:1514:MET:HG3	1:B:1556:ARG:O	2.09	0.52
1:A:1495:PHE:HD2	1:A:1499:THR:HG23	1.74	0.52
1:A:2468:VAL:HG12	1:A:2486:PHE:HB3	1.89	0.52
1:A:1550:LYS:O	1:A:1590:ARG:NH1	2.27	0.52
1:B:1363:HIS:ND1	1:B:1389:CYS:SG	2.83	0.52
1:B:1972:SER:HA	1:B:1989:LYS:HD2	1.92	0.52
1:B:1903:SER:HB3	1:B:1914:LEU:HD11	1.91	0.52
1:B:1442:ALA:HB3	1:B:1689:GLY:H	1.75	0.51
1:B:2468:VAL:HG23	1:B:2486:PHE:HB3	1.92	0.51
1:B:1598:ILE:HD11	1:B:1601:PRO:HB3	1.91	0.51
1:A:1659:THR:HG22	1:A:1666:VAL:HG22	1.91	0.51
1:A:1636:VAL:HG23	1:A:1637:ILE:HG13	1.92	0.51
1:A:2547:VAL:HG23	1:A:2551:LEU:HD11	1.92	0.51
1:B:1381:GLN:HB3	1:B:1392:ILE:HD11	1.92	0.51
1:A:2519:ARG:HG3	1:A:2519:ARG:HH11	1.76	0.50
1:A:1802:ILE:HG23	1:A:1815:PHE:HB3	1.94	0.50
1:B:1668:GLN:HG2	1:B:1669:ALA:N	2.26	0.50
1:A:2724:ASN:OD1	1:A:2724:ASN:N	2.40	0.50
1:A:1416:CYS:SG	1:A:1420:TYR:HB2	2.52	0.50
1:B:2194:ARG:HG3	1:B:2210:TYR:CZ	2.47	0.50
1:B:1667:MET:SD	1:B:1679:VAL:HG22	2.52	0.50
1:A:1926:THR:HG22	1:A:1935:TYR:HB2	1.92	0.50
1:A:2402:LEU:HD21	1:A:2630:MET:HB3	1.92	0.50
1:A:2756:PRO:HD2	1:A:2759:TYR:CD2	2.47	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:2706:PHE:HB2	1:A:2716:GLN:HA	1.94	0.49
1:B:1785:GLU:OE2	1:B:2009:ARG:NH1	2.45	0.49
1:B:2507:VAL:HG21	1:B:2524:TRP:NE1	2.24	0.49
1:A:1907:ASP:HA	1:A:2035:LEU:HD13	1.93	0.49
1:A:1966:GLY:HA2	1:A:2007:GLY:HA2	1.94	0.49
1:B:1412:PHE:O	1:B:1413:ARG:NH1	2.45	0.49
1:B:2286:VAL:HG22	1:B:2291:ILE:HG22	1.94	0.49
1:B:2506:ARG:NH1	1:B:2506:ARG:HB3	2.26	0.49
1:A:2426:ASP:OD2	1:A:2474:PHE:N	2.39	0.49
1:A:2722:ASN:HB3	1:A:2753:ARG:HG3	1.93	0.49
1:A:2740:HIS:CG	1:A:2741:THR:N	2.80	0.49
1:B:2210:TYR:HB2	1:B:2236:THR:HA	1.95	0.49
1:A:2363:GLU:HG2	1:A:2364:LEU:HD22	1.95	0.49
1:A:2573:LEU:HB3	1:A:2575:LYS:HE2	1.95	0.49
1:B:2480:ARG:NH1	1:B:2493:SER:OG	2.46	0.49
1:A:1404:HIS:HB2	1:A:1415:ALA:HB3	1.94	0.49
1:B:1616:MET:CE	1:B:1646:PRO:HB2	2.43	0.49
1:A:1616:MET:HG2	1:A:1623:ILE:HG12	1.94	0.48
1:B:2000:ASP:OD1	1:B:2001:ASN:ND2	2.41	0.48
1:A:1495:PHE:CD2	1:A:1499:THR:HG23	2.48	0.48
1:A:2663:CYS:SG	1:A:2664:SER:N	2.86	0.48
1:B:2419:ALA:O	1:B:2438:GLN:NE2	2.42	0.48
1:B:2610:ASP:OD1	1:B:2612:TYR:N	2.47	0.48
1:A:1368:GLY:H	1:A:1372:ALA:HA	1.79	0.48
1:A:1775:ILE:HG22	1:A:1778:ILE:HD11	1.96	0.47
1:A:2516:ASP:OD2	1:A:2519:ARG:NH2	2.47	0.47
1:B:1600:TRP:CG	2:C:3:LEU:HD12	2.49	0.47
1:A:2489:GLN:NE2	1:A:2508:SER:O	2.46	0.47
1:A:2766:ASP:OD1	1:A:2766:ASP:N	2.46	0.47
1:B:2210:TYR:CB	1:B:2236:THR:HA	2.44	0.47
1:A:2614:ARG:HG2	1:A:2637:GLN:HA	1.96	0.47
1:B:1616:MET:SD	1:B:1649:LEU:HD13	2.55	0.47
1:A:1734:LEU:HD11	1:A:1738:SER:HA	1.97	0.47
1:A:1754:ASP:HB2	1:A:2004:TYR:HB3	1.96	0.47
1:B:2578:ARG:HD2	1:B:2589:VAL:HG22	1.96	0.47
1:A:2210:TYR:HB2	1:A:2236:THR:HA	1.96	0.47
1:B:2441:ASN:OD1	1:B:2444:ARG:N	2.44	0.47
1:A:1477:VAL:HG23	1:A:1478:THR:HG23	1.97	0.46
1:A:1543:HIS:HB3	1:A:1729:PRO:HG3	1.95	0.46
1:A:2286:VAL:HG22	1:A:2291:ILE:HG22	1.96	0.46
1:A:1734:LEU:CD1	1:A:1738:SER:HA	2.45	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1442:ALA:HB3	1:A:1689:GLY:H	1.79	0.46
1:B:1710:CYS:HB3	1:B:1726:CYS:HB3	1.80	0.46
1:B:2547:VAL:HG12	1:B:2551:LEU:HD11	1.96	0.46
1:A:2120:ARG:HA	1:A:2120:ARG:HD3	1.75	0.46
1:B:2070:MET:HG2	1:B:2073:ALA:O	2.16	0.46
1:B:2163:THR:HG21	1:B:2193:PRO:O	2.16	0.46
1:A:2259:ILE:HB	1:A:2273:ARG:HB2	1.98	0.45
1:B:1859:LYS:HE3	1:B:1861:LEU:HD23	1.99	0.45
1:B:2066:MET:HG2	1:B:2077:PHE:O	2.16	0.45
1:A:1752:VAL:HG23	1:A:1757:ILE:HG12	1.97	0.45
1:A:1837:TYR:CZ	1:A:1906:MET:HG2	2.52	0.45
1:A:2666:ILE:O	1:A:2677:GLN:N	2.49	0.45
1:B:1788:ASP:OD2	1:B:2013:ARG:HA	2.16	0.45
1:B:2668:ALA:HB2	1:B:2677:GLN:HE22	1.80	0.45
1:B:2688:ASN:HD22	1:B:2692:TYR:HB2	1.81	0.45
1:B:2707:THR:HA	1:B:2713:CYS:HA	1.98	0.45
1:A:1923:GLU:HB2	1:A:1937:ALA:HB3	1.98	0.45
1:A:2406:PRO:HG2	1:A:2618:ARG:HH21	1.82	0.45
1:A:2600:THR:HG21	1:A:2643:THR:HG23	1.98	0.45
1:B:2470:ASP:OD2	1:B:2511:ARG:NH1	2.49	0.45
1:A:2152:ALA:O	1:A:2161:TYR:N	2.43	0.45
1:B:2402:LEU:HD21	1:B:2630:MET:HB3	1.99	0.45
1:A:1560:LEU:HD22	1:A:1585:MET:HE2	1.99	0.45
1:A:1847:GLU:HB3	1:A:1860:THR:HA	1.99	0.45
1:B:2160:LEU:HB2	1:B:2177:ILE:HD11	1.97	0.45
1:A:1484:SER:HB3	1:A:1515:ILE:HD11	1.98	0.44
1:A:2164:ASN:ND2	1:A:2173:GLU:OE2	2.51	0.44
1:A:1465:ASP:OD1	1:A:1465:ASP:N	2.51	0.44
1:A:1476:SER:HB3	1:A:1698:GLN:HG3	1.98	0.44
1:B:2715:ASN:OD1	1:B:2716:GLN:N	2.49	0.44
1:A:1623:ILE:HD12	1:A:1637:ILE:HD12	1.98	0.44
1:B:2426:ASP:OD1	1:B:2427:TYR:N	2.49	0.44
1:B:1775:ILE:HG22	1:B:1778:ILE:HD11	1.98	0.44
1:B:1596:GLU:O	1:B:1633:ARG:NH1	2.34	0.44
1:A:1599:TYR:HB3	1:A:1619:TYR:HB3	2.00	0.44
1:A:2772:ASP:OD1	1:A:2772:ASP:N	2.50	0.44
1:A:1413:ARG:HB3	1:A:1413:ARG:NH1	2.32	0.44
1:A:2685:TYR:CE2	1:A:2687:ALA:HB2	2.52	0.44
1:B:2192:MET:O	1:B:2192:MET:HG3	2.18	0.44
1:A:1412:PHE:HE2	1:A:1427:ARG:HG2	1.83	0.44
1:B:2484:SER:HB2	1:B:2510:PRO:HG2	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2235:VAL:HG12	1:B:2236:THR:HG23	2.00	0.43
1:A:2249:ILE:HD13	1:A:2249:ILE:HA	1.84	0.43
1:A:2709:LEU:HD12	1:A:2730:SER:HB2	2.01	0.43
1:A:1439:LEU:HB3	1:A:1450:ASP:HB2	2.00	0.43
1:A:2192:MET:HG3	1:A:2192:MET:O	2.18	0.43
1:B:2578:ARG:HG2	1:B:2587:GLU:HG2	2.00	0.43
1:A:1450:ASP:OD1	1:A:1459:LEU:HB3	2.18	0.43
1:A:2441:ASN:HD21	1:A:2444:ARG:HD3	1.83	0.43
1:A:2703:GLN:HE21	1:A:2704:LEU:HG	1.83	0.43
1:A:2357:PHE:HE2	1:A:2372:ALA:HB2	1.84	0.43
1:B:1975:TYR:CE2	1:B:1986:ARG:HD3	2.54	0.43
1:A:1651:LEU:HG	1:A:1656:VAL:HG12	2.01	0.43
1:B:2401:SER:HB2	1:B:2413:PHE:CZ	2.54	0.43
1:A:1600:TRP:CG	2:I:3:LEU:HD22	2.54	0.43
1:A:2740:HIS:CG	1:A:2741:THR:H	2.37	0.43
1:B:1584:SER:HB3	1:B:1589:MET:HE2	2.00	0.43
1:B:1906:MET:SD	1:B:2036:PRO:HG2	2.59	0.43
1:B:1376:CYS:SG	1:B:1382:LEU:HD22	2.59	0.42
1:B:2753:ARG:HD3	1:B:2767:CYS:HA	2.00	0.42
1:A:2152:ALA:HB3	1:A:2161:TYR:HB2	2.01	0.42
1:A:2658:GLN:HG3	1:A:2659:PHE:CD2	2.54	0.42
1:A:2319:ASP:OD1	1:A:2320:LYS:N	2.53	0.42
1:A:2602:TYR:HB2	1:A:2643:THR:HG21	2.01	0.42
1:A:2756:PRO:HD2	1:A:2759:TYR:HD2	1.83	0.42
1:B:1622:TYR:CD1	1:B:1624:GLU:HG3	2.55	0.42
1:B:2196:ILE:HD11	1:B:2205:LEU:HD21	2.00	0.42
1:A:1650:THR:HG22	1:A:1657:TYR:HB2	2.02	0.42
1:B:2142:GLY:O	1:B:2164:ASN:ND2	2.52	0.42
1:B:2391:LEU:HD23	1:B:2643:THR:HG22	2.02	0.42
1:A:1375:LEU:HA	1:A:1382:LEU:HD21	2.02	0.42
1:A:1838:TYR:CZ	1:A:1847:GLU:HG3	2.54	0.42
1:B:2686:LEU:HD21	1:B:2690:ASN:HB3	2.01	0.42
1:A:1680:VAL:HG12	1:A:1681:MET:HG2	2.02	0.42
1:A:2719:LYS:HE2	1:A:2740:HIS:CG	2.54	0.42
1:B:2428:ASP:HB2	1:B:2435:PHE:HE2	1.83	0.42
1:A:1827:LEU:HD23	1:A:1838:TYR:HB3	2.02	0.42
1:B:2071:LEU:HD12	1:B:2323:LEU:HG	2.00	0.42
1:A:2533:ILE:HB	1:A:2547:VAL:HG22	2.02	0.41
1:B:1596:GLU:HA	1:B:1596:GLU:OE1	2.20	0.41
1:B:2322:ASN:HB3	1:B:2323:LEU:HD22	2.01	0.41
1:B:2538:LEU:HD12	1:B:2669:PRO:O	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:2577:GLU:OE2	1:B:2586:ARG:NH2	2.39	0.41
1:B:2665:HIS:CD2	1:B:2693:CYS:HB2	2.55	0.41
1:A:1797:GLU:HG3	1:A:1803:HIS:CD2	2.55	0.41
1:B:1507:SER:O	1:B:1544:ARG:NH1	2.42	0.41
1:B:1547:LEU:HD11	1:B:1586:ASP:HA	2.02	0.41
1:B:1900:LYS:HD2	1:B:1913:ILE:HG23	2.01	0.41
1:A:1437:PRO:HB3	1:A:1652:PHE:CZ	2.56	0.41
1:A:2613:THR:O	1:A:2615:LYS:N	2.54	0.41
1:B:1907:ASP:HA	1:B:2035:LEU:HD13	2.02	0.41
1:A:2254:ASP:OD1	1:A:2254:ASP:N	2.41	0.41
1:A:2428:ASP:HB3	1:A:2433:ARG:HG2	2.03	0.41
1:B:1785:GLU:CG	1:B:1829:LEU:HB2	2.50	0.41
1:B:1886:LEU:N	1:B:1904:ALA:O	2.45	0.41
1:B:2517:PRO:HA	1:B:2538:LEU:HD11	2.01	0.41
1:B:1574:TRP:CE3	2:C:3:LEU:HD13	2.56	0.41
1:B:2706:PHE:HE2	1:B:2731:ASP:HB3	1.84	0.41
1:B:1564:MET:HE1	1:B:1702:ARG:HE	1.85	0.41
1:B:2405:ASP:HB3	1:B:2408:ASP:HB2	2.02	0.41
1:A:2618:ARG:O	1:A:2627:LEU:HA	2.21	0.41
1:A:1401:CYS:HB3	1:A:1414:CYS:HB3	1.98	0.40
1:A:2578:ARG:HD2	1:A:2589:VAL:HG22	2.04	0.40
1:A:2714:ILE:HB	1:A:2718:TRP:CE3	2.57	0.40
1:B:1919:LEU:HD21	1:B:1954:ARG:HH12	1.86	0.40
1:B:2552:VAL:HB	1:B:2572:SER:HB3	2.03	0.40
1:B:1480:ARG:NH2	1:B:1500:ASP:O	2.54	0.40
1:A:2204:TYR:CD1	1:A:2218:ARG:HD3	2.56	0.40
1:A:2519:ARG:NH2	1:A:2564:ASP:OD1	2.54	0.40
1:A:2663:CYS:HB3	1:A:2667:CYS:HB3	2.04	0.40
1:B:1873:PHE:HB3	1:B:1891:HIS:HB2	2.03	0.40
1:B:2171:LEU:HD22	1:B:2184:VAL:HG11	2.03	0.40
1:B:2268:GLU:OE2	1:B:2268:GLU:HA	2.22	0.40
1:A:1611:ARG:HG2	1:A:1628:TYR:CE2	2.57	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	1467/4660 (32%)	1401 (96%)	66 (4%)	0	100	100
1	B	1466/4660 (32%)	1394 (95%)	70 (5%)	2 (0%)	48	80
2	C	1/6 (17%)	1 (100%)	0	0	100	100
2	I	1/6 (17%)	1 (100%)	0	0	100	100
3	D	1/3 (33%)	1 (100%)	0	0	100	100
3	J	1/3 (33%)	0	1 (100%)	0	100	100
4	G	2/5 (40%)	2 (100%)	0	0	100	100
4	K	2/5 (40%)	1 (50%)	1 (50%)	0	100	100
5	H	1/5 (20%)	0	1 (100%)	0	100	100
5	L	1/5 (20%)	1 (100%)	0	0	100	100
All	All	2943/9358 (31%)	2802 (95%)	139 (5%)	2 (0%)	50	80

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	1500	ASP
1	B	2743	ARG

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	1274/4089 (31%)	1233 (97%)	41 (3%)	34	65
1	B	1272/4089 (31%)	1234 (97%)	38 (3%)	36	66
2	C	1/1 (100%)	1 (100%)	0	100	100
2	I	1/1 (100%)	1 (100%)	0	100	100
3	D	1/1 (100%)	1 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
3	J	1/1 (100%)	1 (100%)	0	100 100
4	G	2/2 (100%)	1 (50%)	1 (50%)	0 0
4	K	2/2 (100%)	2 (100%)	0	100 100
5	H	1/1 (100%)	1 (100%)	0	100 100
5	L	1/1 (100%)	1 (100%)	0	100 100
All	All	2556/8188 (31%)	2476 (97%)	80 (3%)	37 66

All (80) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1343	THR
1	A	1364	GLN
1	A	1366	MET
1	A	1449	VAL
1	A	1465	ASP
1	A	1468	PHE
1	A	1473	ASP
1	A	1569	MET
1	A	1636	VAL
1	A	1656	VAL
1	A	1728	CYS
1	A	1743	ARG
1	A	1745	ASP
1	A	1782	TYR
1	A	1969	VAL
1	A	2002	VAL
1	A	2070	MET
1	A	2126	ARG
1	A	2170	THR
1	A	2174	VAL
1	A	2210	TYR
1	A	2230	VAL
1	A	2232	GLU
1	A	2242	MET
1	A	2338	SER
1	A	2350	SER
1	A	2394	SER
1	A	2444	ARG
1	A	2497	ASP
1	A	2507	VAL

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Mol	Chain	Res	Type
1	A	2532	LYS
1	A	2561	LEU
1	A	2570	ASP
1	A	2578	ARG
1	A	2626	ASP
1	A	2633	ARG
1	A	2636	THR
1	A	2657	ASP
1	A	2701	CYS
1	A	2741	THR
1	A	2743	ARG
1	B	1349	CYS
1	B	1352	ASP
1	B	1409	ARG
1	B	1449	VAL
1	B	1457	HIS
1	B	1504	VAL
1	B	1517	VAL
1	B	1550	LYS
1	B	1666	VAL
1	B	1728	CYS
1	B	1783	ASP
1	B	1791	GLN
1	B	1851	LEU
1	B	1854	ASP
1	B	1936	TRP
1	B	1955	MET
1	B	1967	LEU
1	B	2002	VAL
1	B	2041	MET
1	B	2070	MET
1	B	2174	VAL
1	B	2191	ASP
1	B	2254	ASP
1	B	2258	LEU
1	B	2297	ASN
1	B	2366	THR
1	B	2378	ASN
1	B	2407	ARG
1	B	2444	ARG
1	B	2506	ARG
1	B	2519	ARG

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Mol	Chain	Res	Type
1	B	2522	MET
1	B	2677	GLN
1	B	2680	HIS
1	B	2706	PHE
1	B	2741	THR
1	B	2757	TYR
1	B	2759	TYR
4	G	3	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	1393	ASN
1	A	1891	HIS
1	A	1963	HIS
1	A	2333	HIS
1	A	2489	GLN
1	A	2651	GLN
1	A	2703	GLN
1	A	2765	ASN
1	B	1891	HIS
1	B	1980	GLN
1	B	2297	ASN
1	B	2378	ASN
1	B	2500	ASN
1	B	2665	HIS
1	B	2710	ASN

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

50 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	E	1	1,6	14,14,15	0.43	0	17,19,21	1.52	2 (11%)
6	NAG	E	2	6	14,14,15	0.34	0	17,19,21	0.74	1 (5%)
7	NAG	F	1	1,7	14,14,15	0.44	0	17,19,21	0.94	1 (5%)
7	NAG	F	2	7	14,14,15	0.31	0	17,19,21	0.73	0
7	BMA	F	3	7	11,11,12	0.24	0	15,15,17	1.01	1 (6%)
6	NAG	M	1	1,6	14,14,15	0.32	0	17,19,21	0.75	1 (5%)
6	NAG	M	2	6	14,14,15	0.32	0	17,19,21	0.67	0
6	NAG	N	1	1,6	14,14,15	0.30	0	17,19,21	0.52	0
6	NAG	N	2	6	14,14,15	0.32	0	17,19,21	0.79	0
8	NAG	O	1	8,1	14,14,15	0.42	0	17,19,21	1.51	5 (29%)
8	NAG	O	2	8	14,14,15	0.28	0	17,19,21	1.14	2 (11%)
8	BMA	O	3	8	11,11,12	0.23	0	15,15,17	0.77	0
8	MAN	O	4	8	11,11,12	0.24	0	15,15,17	0.51	0
8	MAN	O	5	8	11,11,12	0.22	0	15,15,17	0.50	0
6	NAG	P	1	1,6	14,14,15	0.31	0	17,19,21	0.86	1 (5%)
6	NAG	P	2	6	14,14,15	0.35	0	17,19,21	0.58	0
8	NAG	Q	1	8,1	14,14,15	0.32	0	17,19,21	0.56	0
8	NAG	Q	2	8	14,14,15	0.29	0	17,19,21	0.66	0
8	BMA	Q	3	8	11,11,12	0.22	0	15,15,17	0.96	1 (6%)
8	MAN	Q	4	8	11,11,12	0.22	0	15,15,17	0.58	0
8	MAN	Q	5	8	11,11,12	0.23	0	15,15,17	0.50	0
9	NAG	R	1	1,9	14,14,15	0.45	0	17,19,21	0.91	0
9	NAG	R	2	9	14,14,15	0.28	0	17,19,21	0.89	0
6	NAG	S	1	1,6	14,14,15	0.47	0	17,19,21	1.34	2 (11%)
6	NAG	S	2	6	14,14,15	0.30	0	17,19,21	0.91	1 (5%)
6	NAG	T	1	1,6	14,14,15	0.30	0	17,19,21	0.65	0
6	NAG	T	2	6	14,14,15	0.33	0	17,19,21	0.76	1 (5%)
7	NAG	U	1	1,7	14,14,15	0.40	0	17,19,21	0.79	1 (5%)
7	NAG	U	2	7	14,14,15	0.48	0	17,19,21	0.74	0
7	BMA	U	3	7	11,11,12	0.23	0	15,15,17	0.87	1 (6%)
6	NAG	V	1	1,6	14,14,15	0.64	0	17,19,21	1.58	1 (5%)
6	NAG	V	2	6	14,14,15	0.45	0	17,19,21	1.03	1 (5%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
6	NAG	W	1	1,6	14,14,15	0.39	0	17,19,21	0.80	0
6	NAG	W	2	6	14,14,15	0.31	0	17,19,21	0.63	0
8	NAG	X	1	8,1	14,14,15	0.39	0	17,19,21	0.81	1 (5%)
8	NAG	X	2	8	14,14,15	0.32	0	17,19,21	0.80	0
8	BMA	X	3	8	11,11,12	0.26	0	15,15,17	1.10	2 (13%)
8	MAN	X	4	8	11,11,12	0.26	0	15,15,17	0.52	0
8	MAN	X	5	8	11,11,12	0.24	0	15,15,17	0.63	0
6	NAG	Y	1	1,6	14,14,15	0.30	0	17,19,21	0.49	0
6	NAG	Y	2	6	14,14,15	0.31	0	17,19,21	0.69	0
10	NAG	Z	1	10,1	14,14,15	0.63	0	17,19,21	1.29	2 (11%)
10	NAG	Z	2	10	14,14,15	0.36	0	17,19,21	1.14	1 (5%)
10	BMA	Z	3	10	11,11,12	0.21	0	15,15,17	0.91	0
10	MAN	Z	4	10	11,11,12	0.22	0	15,15,17	0.49	0
10	MAN	Z	5	10	11,11,12	0.22	0	15,15,17	0.51	0
6	NAG	a	1	1,6	14,14,15	0.49	0	17,19,21	1.14	3 (17%)
6	NAG	a	2	6	14,14,15	0.30	0	17,19,21	0.88	1 (5%)
6	NAG	b	1	1,6	14,14,15	0.28	0	17,19,21	0.81	0
6	NAG	b	2	6	14,14,15	0.31	0	17,19,21	0.79	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	E	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	E	2	6	-	0/6/23/26	0/1/1/1
7	NAG	F	1	1,7	-	0/6/23/26	0/1/1/1
7	NAG	F	2	7	-	2/6/23/26	0/1/1/1
7	BMA	F	3	7	-	0/2/19/22	0/1/1/1
6	NAG	M	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	M	2	6	-	1/6/23/26	0/1/1/1
6	NAG	N	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	N	2	6	-	3/6/23/26	0/1/1/1
8	NAG	O	1	8,1	-	0/6/23/26	0/1/1/1
8	NAG	O	2	8	-	2/6/23/26	0/1/1/1
8	BMA	O	3	8	-	0/2/19/22	0/1/1/1
8	MAN	O	4	8	-	0/2/19/22	0/1/1/1
8	MAN	O	5	8	-	0/2/19/22	0/1/1/1
6	NAG	P	1	1,6	-	2/6/23/26	0/1/1/1

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
6	NAG	P	2	6	-	0/6/23/26	0/1/1/1
8	NAG	Q	1	8,1	-	0/6/23/26	0/1/1/1
8	NAG	Q	2	8	-	2/6/23/26	0/1/1/1
8	BMA	Q	3	8	-	0/2/19/22	0/1/1/1
8	MAN	Q	4	8	-	0/2/19/22	0/1/1/1
8	MAN	Q	5	8	-	0/2/19/22	0/1/1/1
9	NAG	R	1	1,9	-	0/6/23/26	0/1/1/1
9	NAG	R	2	9	-	0/6/23/26	0/1/1/1
6	NAG	S	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	S	2	6	-	0/6/23/26	0/1/1/1
6	NAG	T	1	1,6	-	1/6/23/26	0/1/1/1
6	NAG	T	2	6	-	1/6/23/26	0/1/1/1
7	NAG	U	1	1,7	-	2/6/23/26	0/1/1/1
7	NAG	U	2	7	-	3/6/23/26	0/1/1/1
7	BMA	U	3	7	-	1/2/19/22	0/1/1/1
6	NAG	V	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	V	2	6	-	0/6/23/26	0/1/1/1
6	NAG	W	1	1,6	-	3/6/23/26	0/1/1/1
6	NAG	W	2	6	-	0/6/23/26	0/1/1/1
8	NAG	X	1	8,1	-	2/6/23/26	0/1/1/1
8	NAG	X	2	8	-	2/6/23/26	0/1/1/1
8	BMA	X	3	8	-	2/2/19/22	0/1/1/1
8	MAN	X	4	8	-	0/2/19/22	0/1/1/1
8	MAN	X	5	8	-	0/2/19/22	0/1/1/1
6	NAG	Y	1	1,6	-	2/6/23/26	0/1/1/1
6	NAG	Y	2	6	-	1/6/23/26	0/1/1/1
10	NAG	Z	1	10,1	-	4/6/23/26	0/1/1/1
10	NAG	Z	2	10	-	2/6/23/26	0/1/1/1
10	BMA	Z	3	10	-	0/2/19/22	0/1/1/1
10	MAN	Z	4	10	-	1/2/19/22	0/1/1/1
10	MAN	Z	5	10	-	1/2/19/22	0/1/1/1
6	NAG	a	1	1,6	-	0/6/23/26	0/1/1/1
6	NAG	a	2	6	-	3/6/23/26	0/1/1/1
6	NAG	b	1	1,6	-	3/6/23/26	0/1/1/1
6	NAG	b	2	6	-	1/6/23/26	0/1/1/1

There are no bond length outliers.

All (33) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
6	V	1	NAG	C1-O5-C5	6.30	120.63	112.19
6	E	1	NAG	C1-O5-C5	4.57	118.31	112.19
6	S	1	NAG	C1-O5-C5	4.35	118.01	112.19
8	O	2	NAG	C1-O5-C5	3.46	116.83	112.19
6	V	2	NAG	C1-O5-C5	3.24	116.53	112.19
8	O	1	NAG	O5-C1-C2	-2.98	106.68	111.29
10	Z	1	NAG	C3-C4-C5	2.80	115.31	110.23
7	F	3	BMA	C1-O5-C5	2.67	115.76	112.19
7	F	1	NAG	C1-O5-C5	2.65	115.74	112.19
8	X	3	BMA	C1-O5-C5	2.58	115.65	112.19
8	O	1	NAG	C1-O5-C5	2.57	115.63	112.19
8	O	1	NAG	C6-C5-C4	-2.56	106.72	113.02
10	Z	1	NAG	O3-C3-C4	-2.56	104.35	110.38
8	O	2	NAG	C2-N2-C7	-2.50	119.55	122.90
6	S	2	NAG	C1-O5-C5	2.37	115.37	112.19
7	U	1	NAG	O5-C1-C2	-2.35	107.66	111.29
8	O	1	NAG	C2-N2-C7	-2.30	119.81	122.90
8	Q	3	BMA	C1-C2-C3	2.29	112.98	109.64
8	X	1	NAG	O5-C1-C2	-2.27	107.78	111.29
6	a	1	NAG	C1-O5-C5	2.25	115.20	112.19
6	E	2	NAG	C1-O5-C5	2.24	115.19	112.19
6	S	1	NAG	C2-N2-C7	-2.23	119.91	122.90
10	Z	2	NAG	O5-C1-C2	-2.21	107.88	111.29
8	O	1	NAG	C3-C4-C5	2.19	114.21	110.23
7	U	3	BMA	C1-O5-C5	2.18	115.11	112.19
6	a	2	NAG	O5-C1-C2	-2.18	107.92	111.29
6	a	1	NAG	C4-C3-C2	2.14	114.16	111.02
6	a	1	NAG	O5-C1-C2	2.14	114.60	111.29
6	M	1	NAG	C1-O5-C5	2.11	115.01	112.19
6	E	1	NAG	O5-C1-C2	2.08	114.51	111.29
6	T	2	NAG	C1-O5-C5	2.07	114.96	112.19
8	X	3	BMA	C1-C2-C3	2.07	112.65	109.64
6	P	1	NAG	O5-C1-C2	-2.04	108.14	111.29

There are no chirality outliers.

All (47) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	N	2	NAG	C1-C2-N2-C7
6	W	1	NAG	C3-C2-N2-C7
6	W	1	NAG	C8-C7-N2-C2
6	W	1	NAG	O7-C7-N2-C2
6	a	2	NAG	C1-C2-N2-C7

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms
6	b	1	NAG	C1-C2-N2-C7
10	Z	1	NAG	C1-C2-N2-C7
10	Z	1	NAG	C8-C7-N2-C2
10	Z	1	NAG	O7-C7-N2-C2
8	O	2	NAG	C8-C7-N2-C2
8	O	2	NAG	O7-C7-N2-C2
8	X	3	BMA	O5-C5-C6-O6
6	b	1	NAG	O7-C7-N2-C2
8	X	3	BMA	C4-C5-C6-O6
6	b	1	NAG	C8-C7-N2-C2
7	U	1	NAG	C8-C7-N2-C2
7	U	1	NAG	O7-C7-N2-C2
6	a	2	NAG	C8-C7-N2-C2
6	a	2	NAG	O7-C7-N2-C2
7	F	2	NAG	C8-C7-N2-C2
10	Z	1	NAG	O5-C5-C6-O6
8	Q	2	NAG	O5-C5-C6-O6
7	F	2	NAG	O7-C7-N2-C2
7	U	2	NAG	C8-C7-N2-C2
10	Z	2	NAG	O5-C5-C6-O6
7	U	2	NAG	O5-C5-C6-O6
10	Z	4	MAN	O5-C5-C6-O6
10	Z	5	MAN	O5-C5-C6-O6
7	U	3	BMA	O5-C5-C6-O6
6	M	2	NAG	O5-C5-C6-O6
6	b	2	NAG	O5-C5-C6-O6
7	U	2	NAG	O7-C7-N2-C2
6	P	1	NAG	C8-C7-N2-C2
8	X	2	NAG	C8-C7-N2-C2
6	N	2	NAG	C8-C7-N2-C2
8	X	1	NAG	C8-C7-N2-C2
6	N	2	NAG	O7-C7-N2-C2
6	P	1	NAG	O7-C7-N2-C2
8	X	2	NAG	O7-C7-N2-C2
6	T	1	NAG	C1-C2-N2-C7
6	T	2	NAG	C1-C2-N2-C7
6	Y	2	NAG	C1-C2-N2-C7
8	X	1	NAG	O7-C7-N2-C2
10	Z	2	NAG	C3-C2-N2-C7
6	Y	1	NAG	C8-C7-N2-C2
6	Y	1	NAG	O7-C7-N2-C2
8	Q	2	NAG	C4-C5-C6-O6

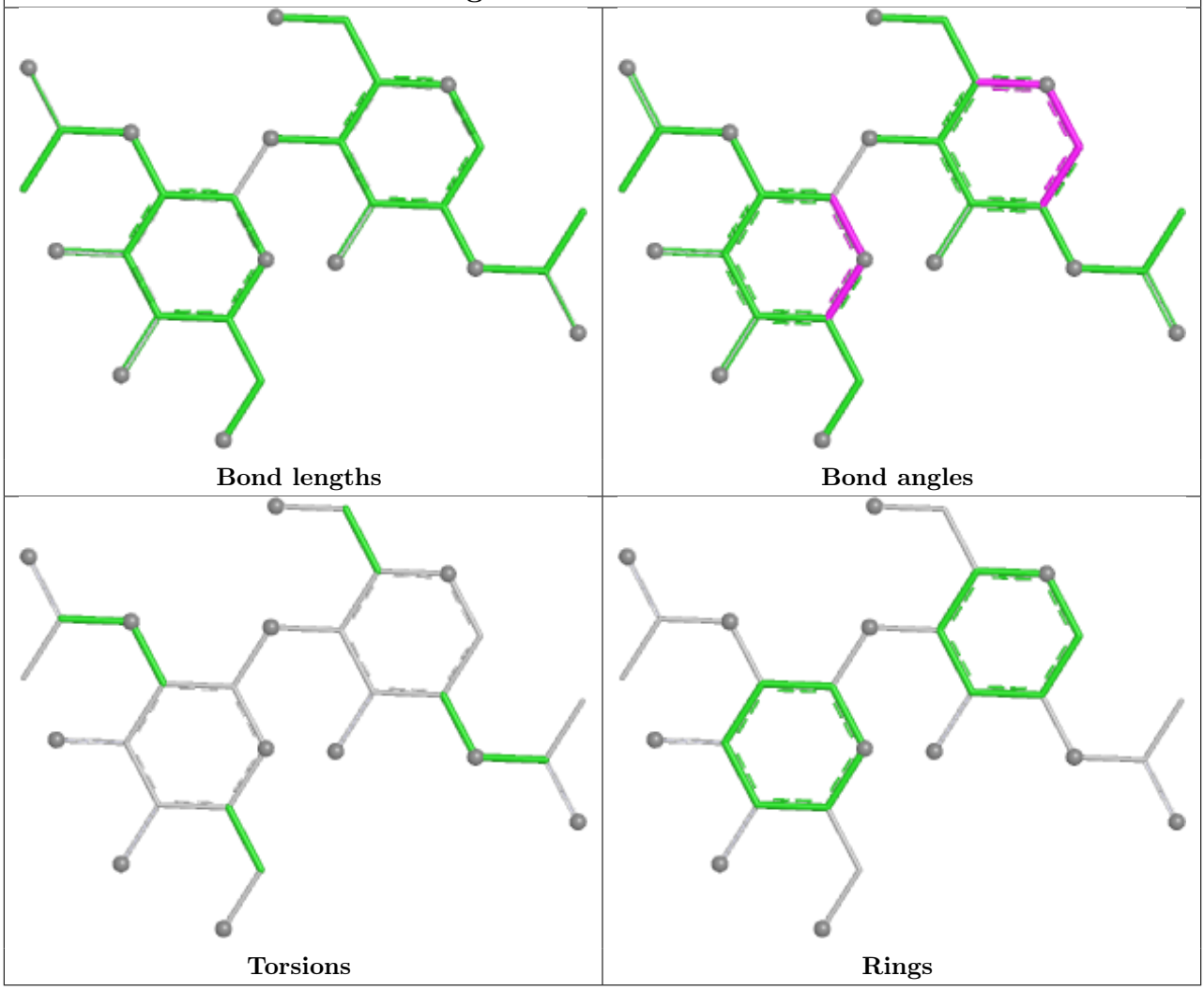
There are no ring outliers.

1 monomer is involved in 1 short contact:

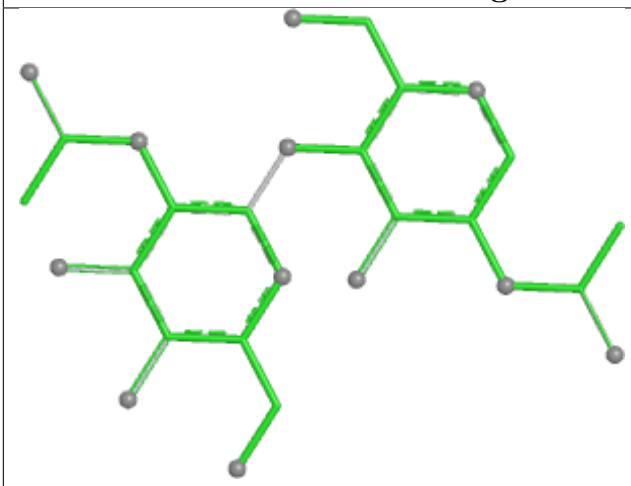
Mol	Chain	Res	Type	Clashes	Symm-Clashes
7	F	1	NAG	1	0

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

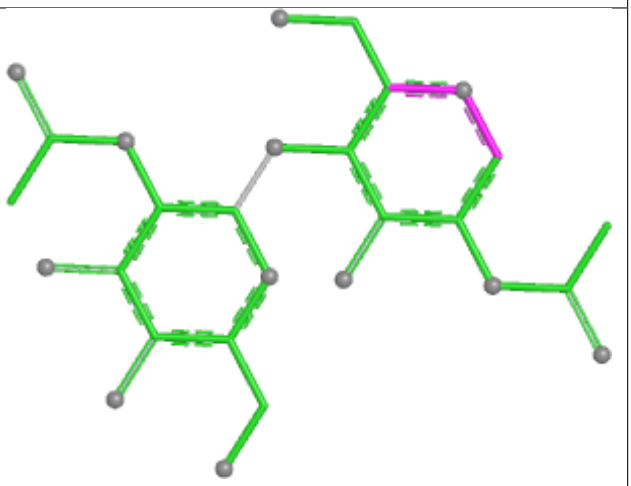
Oligosaccharide Chain E



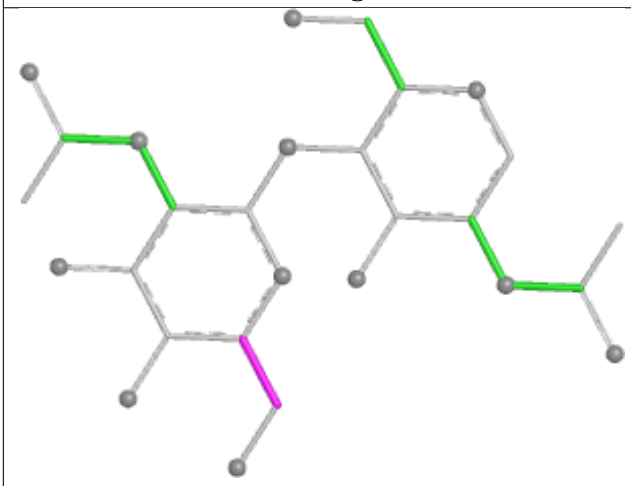
Oligosaccharide Chain M



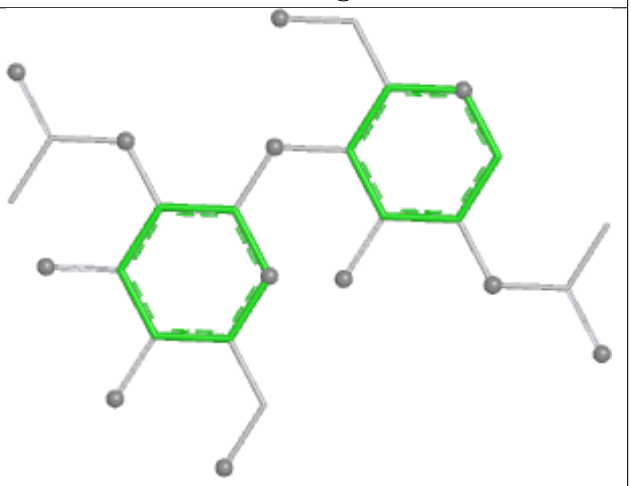
Bond lengths



Bond angles

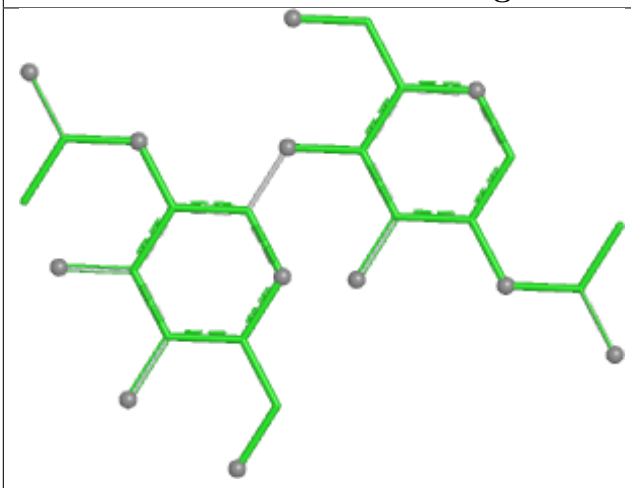


Torsions

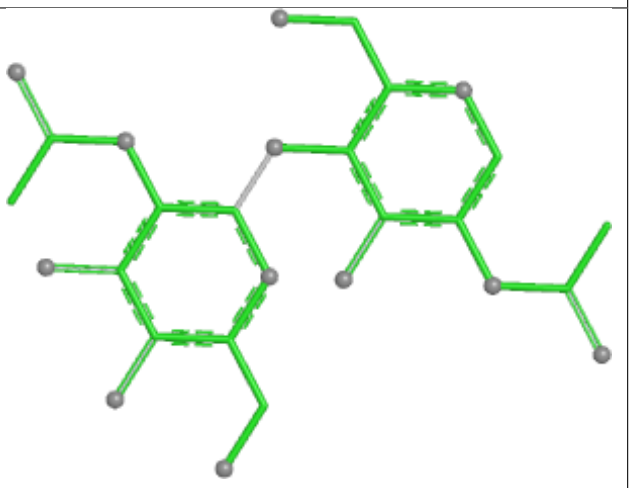


Rings

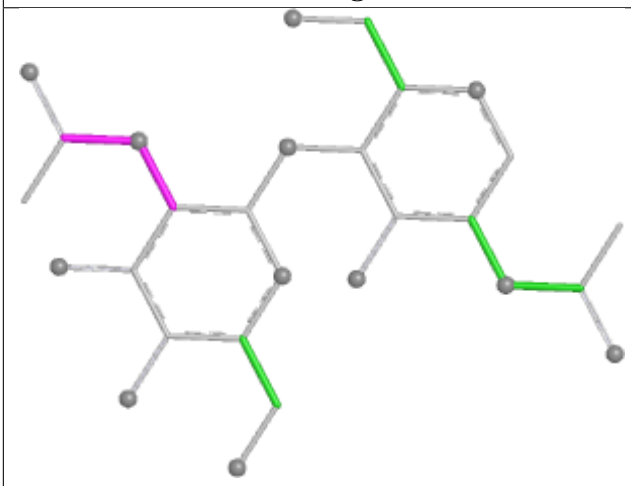
Oligosaccharide Chain N



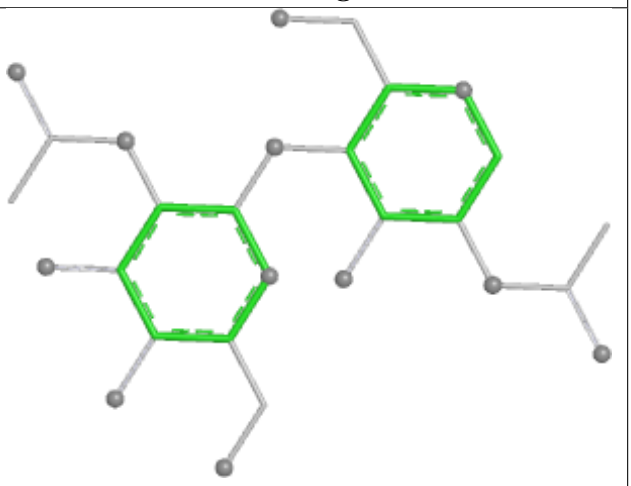
Bond lengths



Bond angles

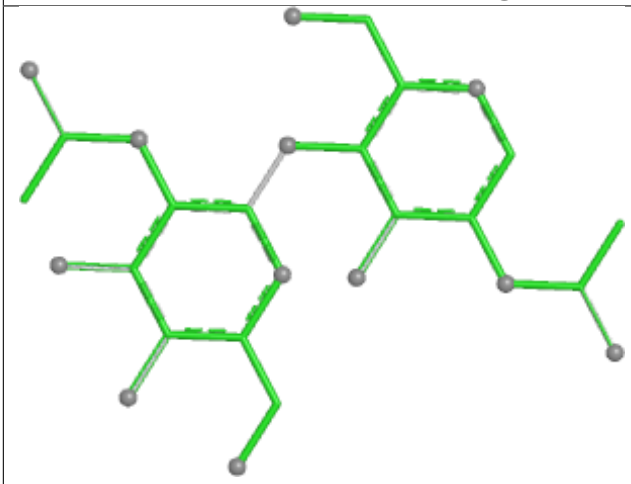


Torsions

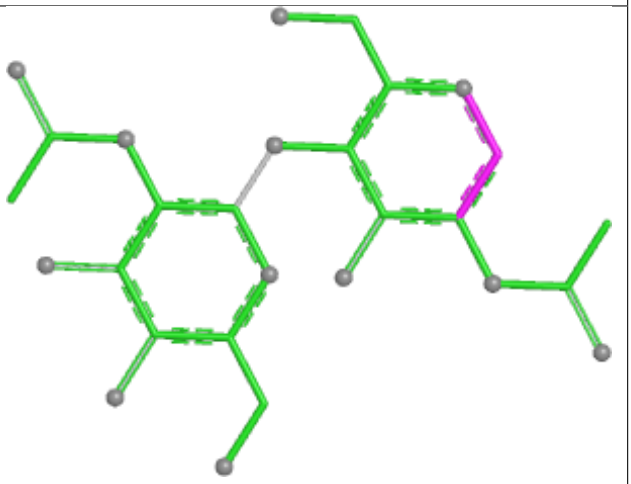


Rings

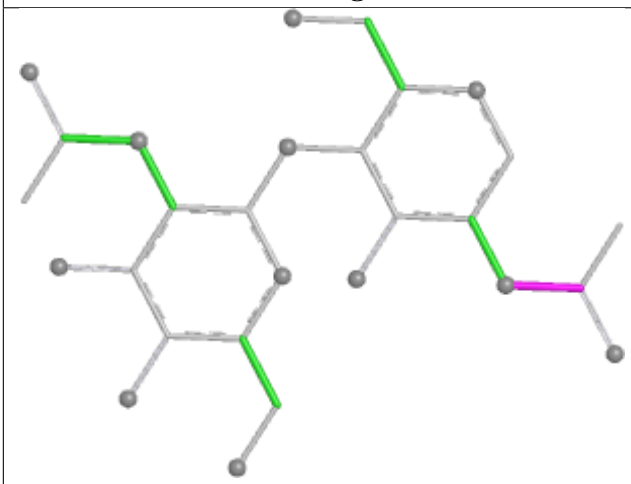
Oligosaccharide Chain P



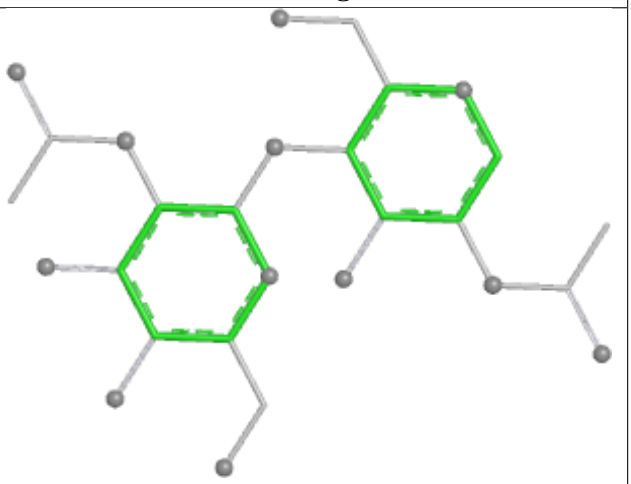
Bond lengths



Bond angles

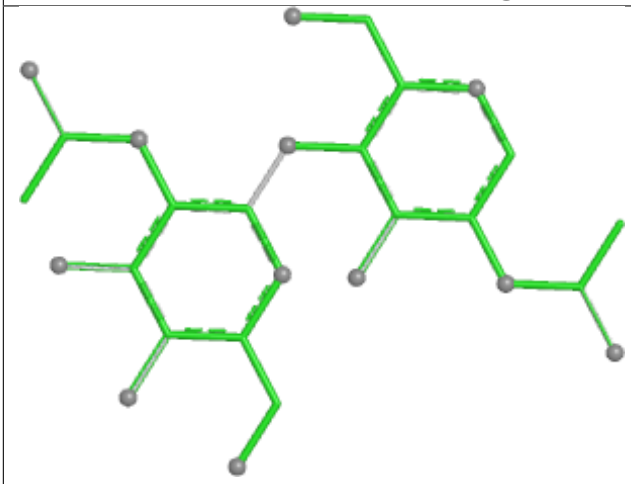


Torsions

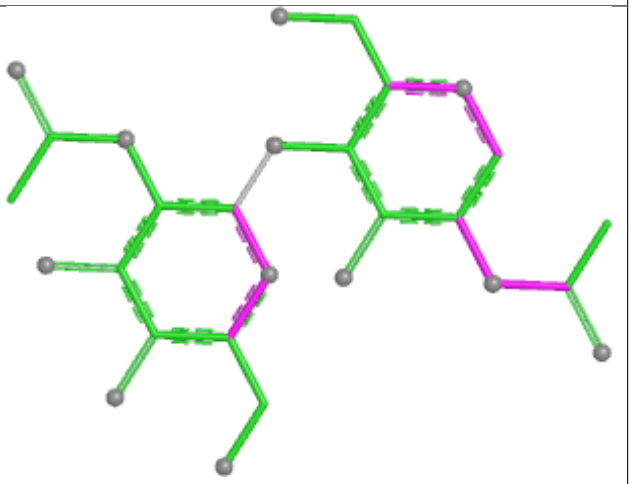


Rings

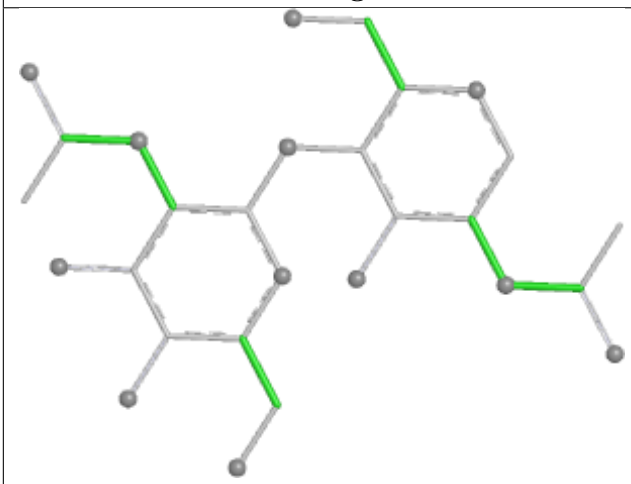
Oligosaccharide Chain S



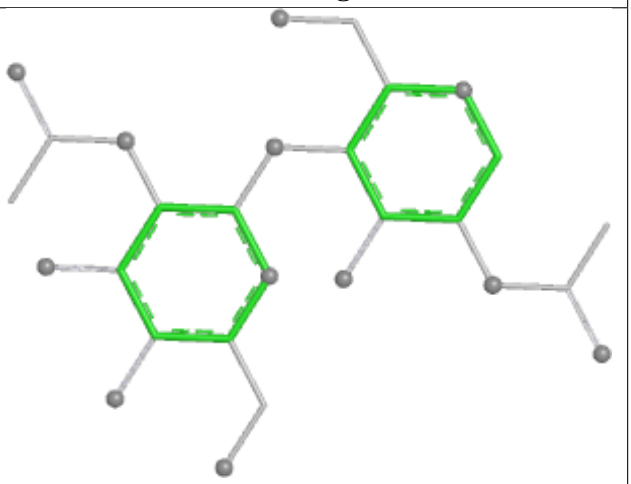
Bond lengths



Bond angles

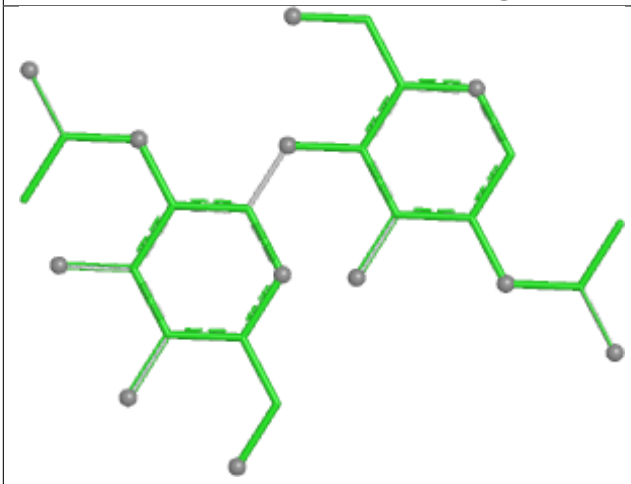


Torsions



Rings

Oligosaccharide Chain T



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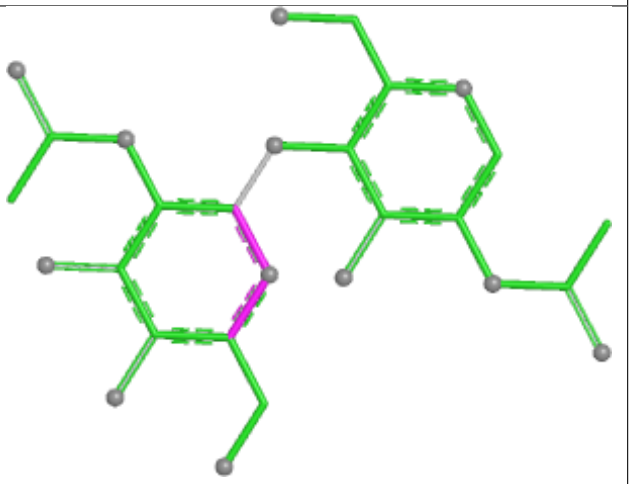

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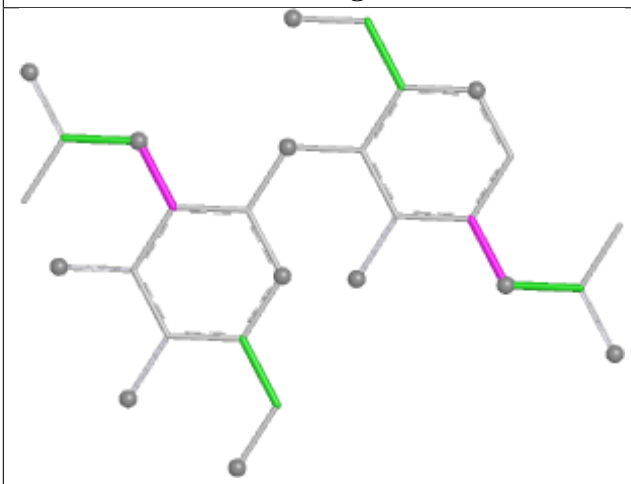

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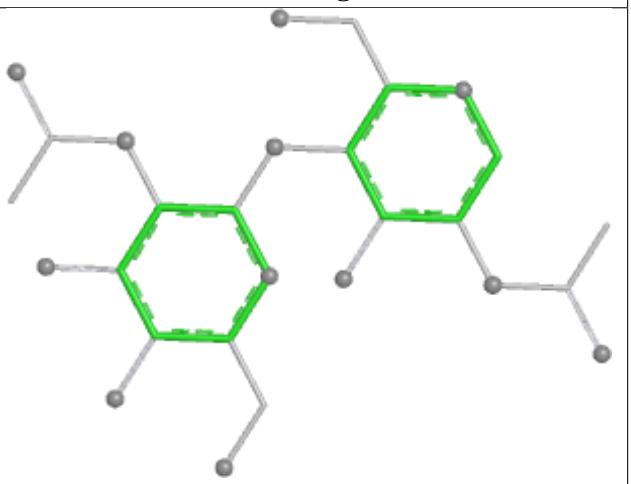
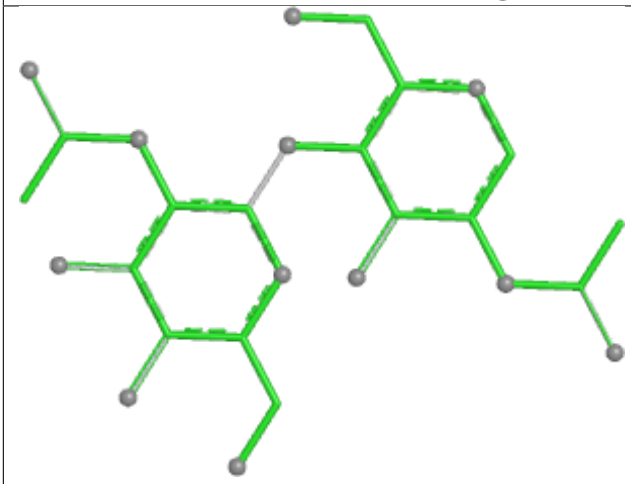


Rings

Oligosaccharide Chain V



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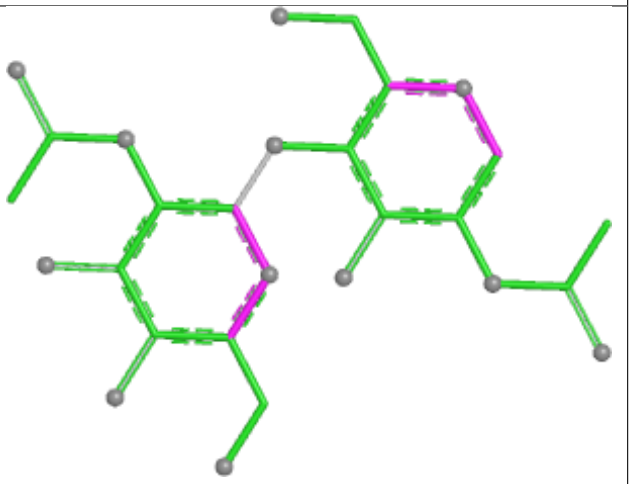

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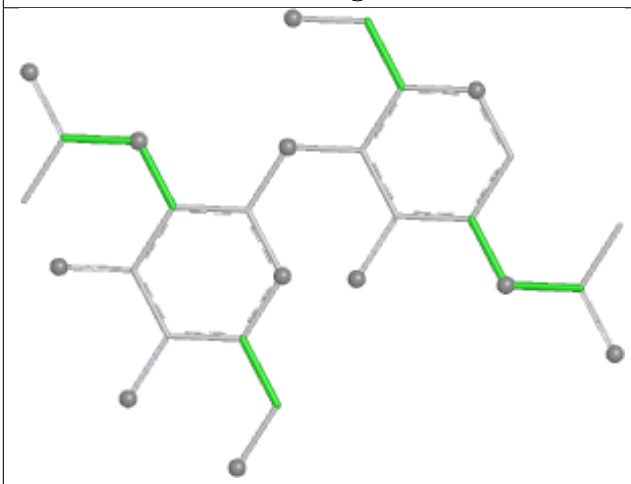

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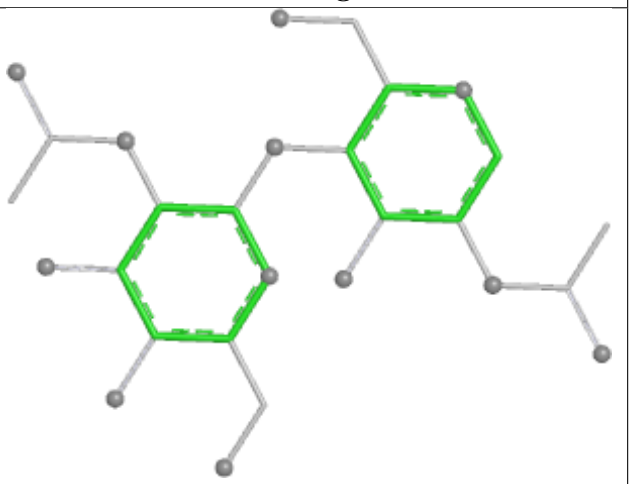
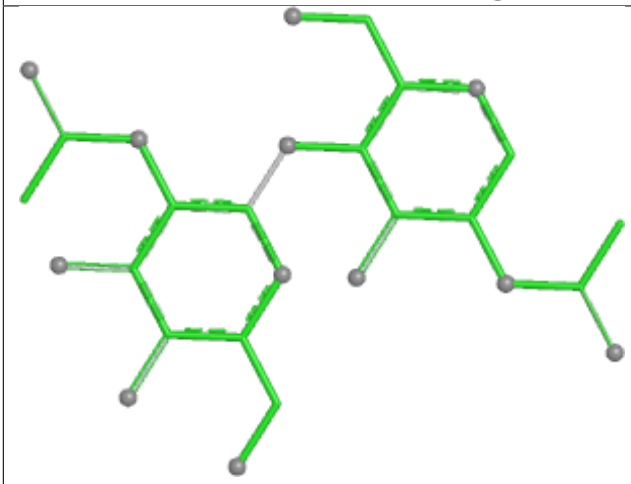


Rings

Oligosaccharide Chain W



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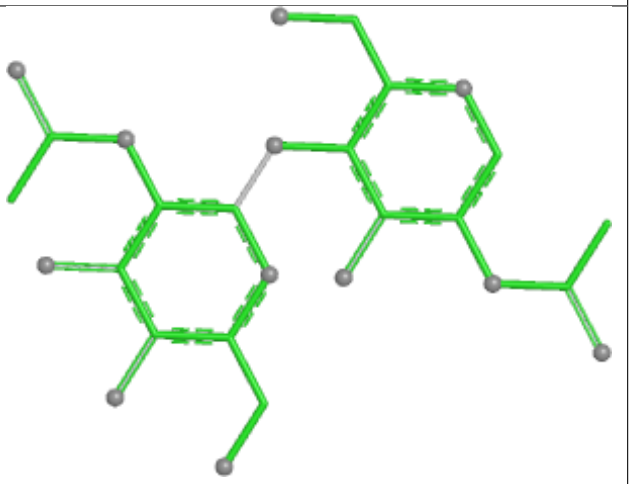
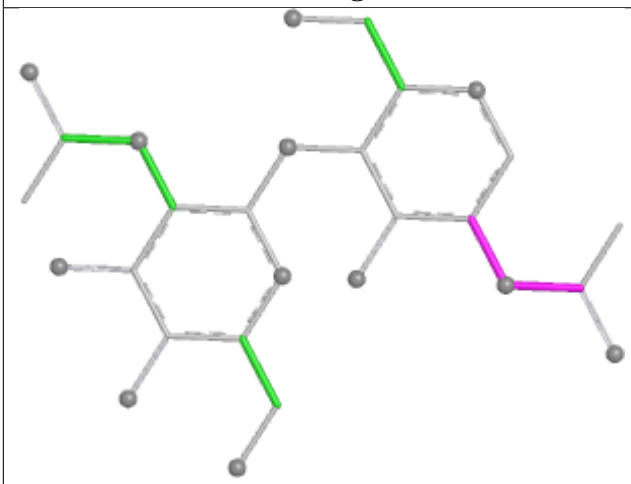


Bond angles



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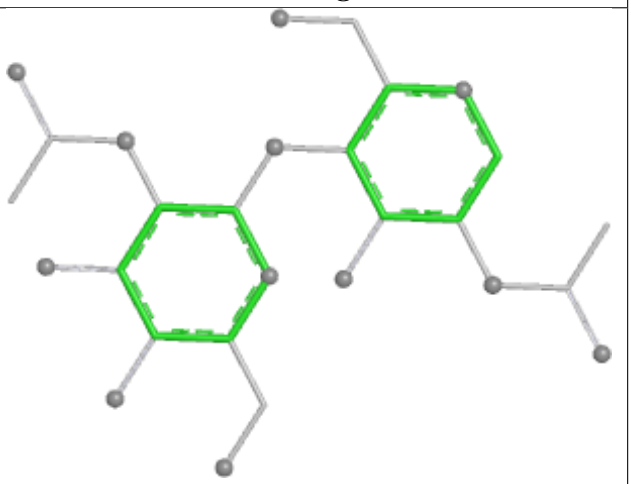
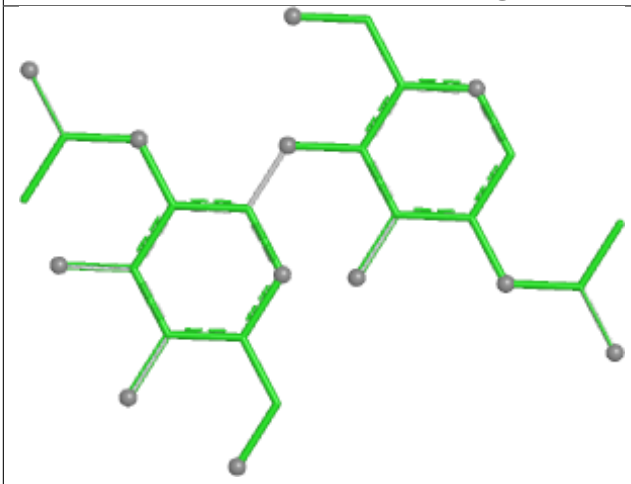


Rings

Oligosaccharide Chain Y



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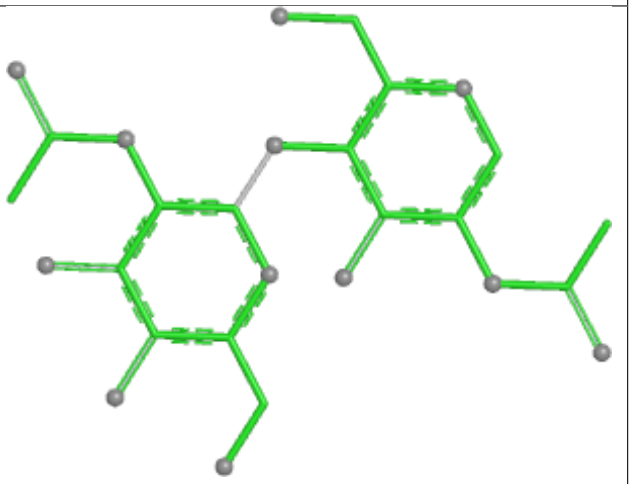
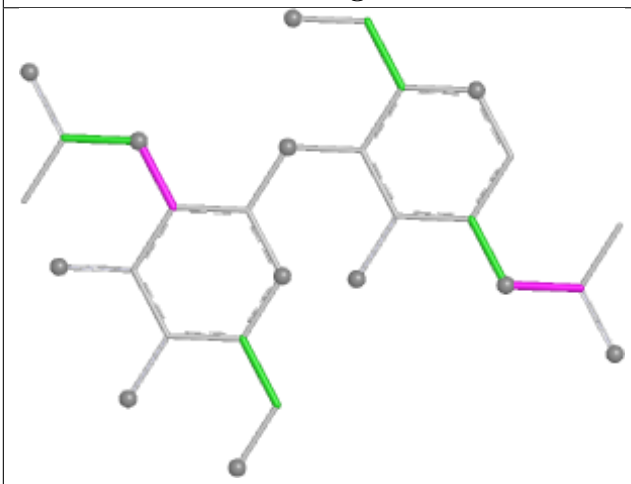


Bond angles



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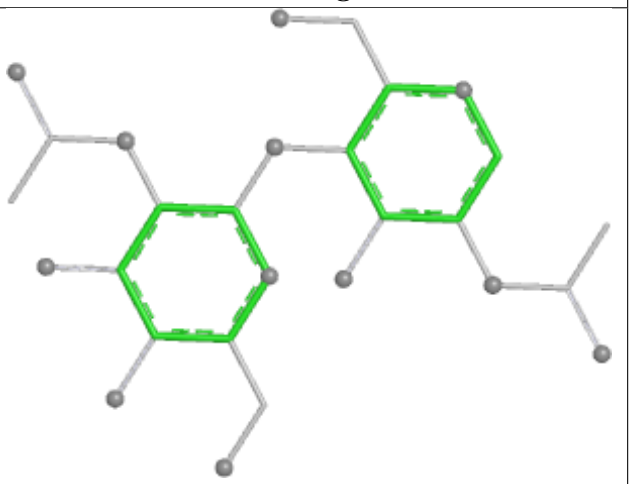
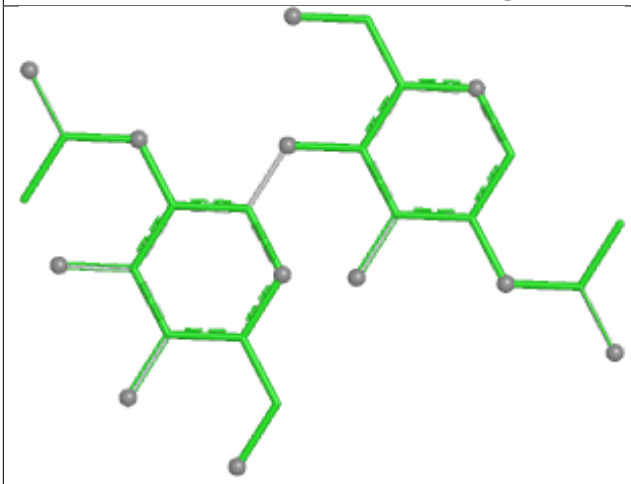


Rings

Oligosaccharide Chain a



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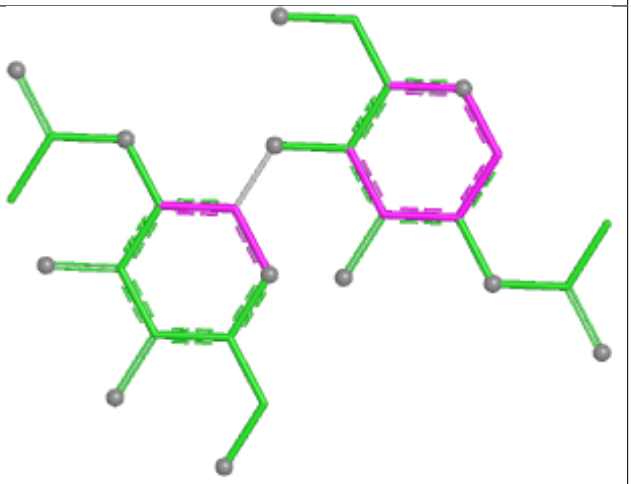

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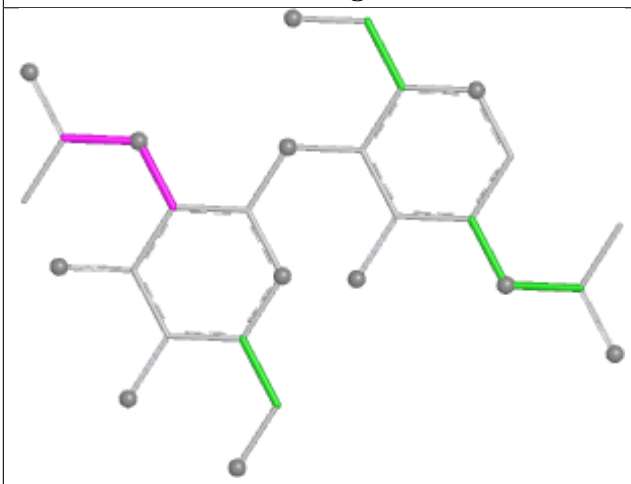

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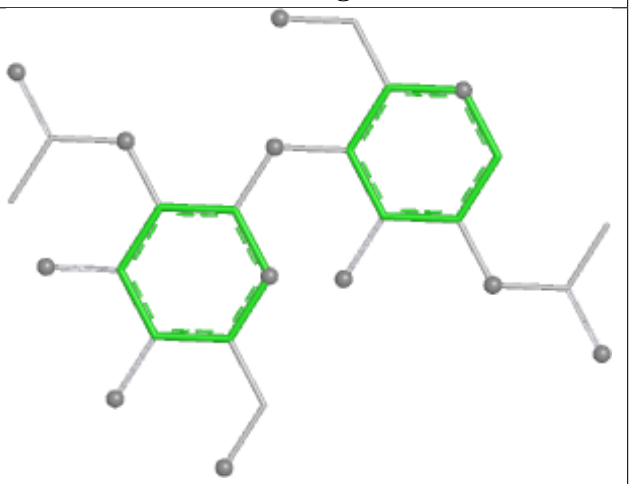
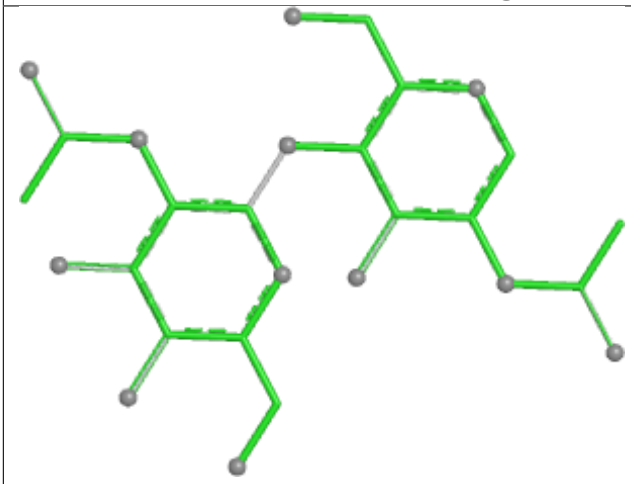


Rings

Oligosaccharide Chain b



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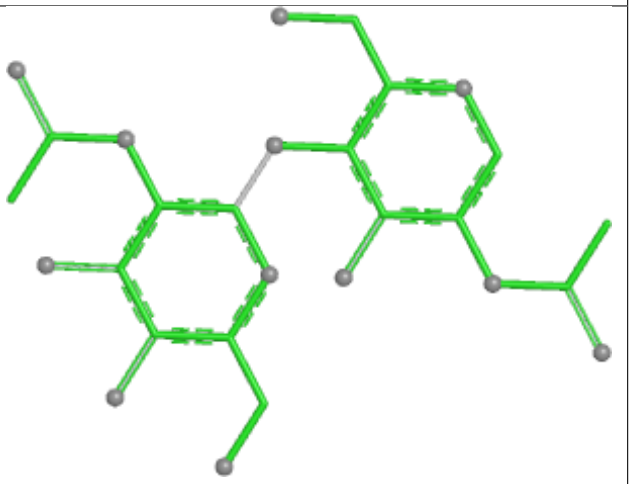
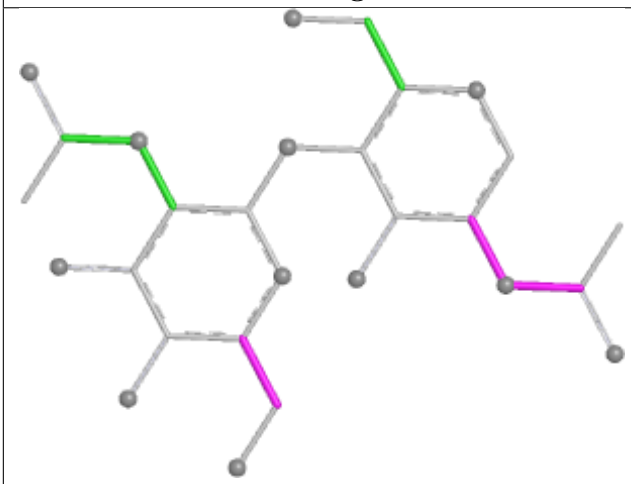


Bond angles



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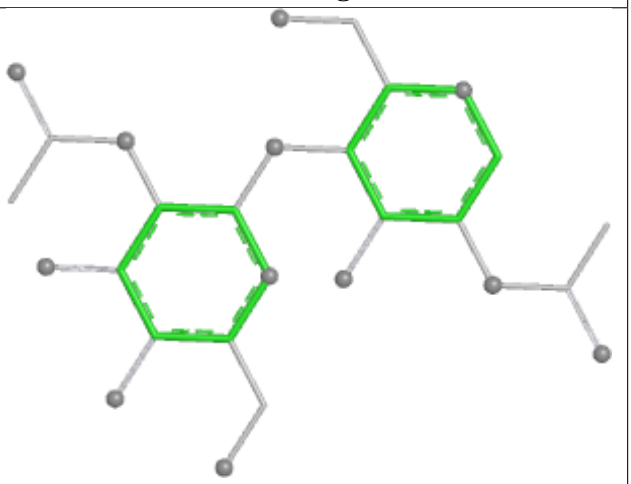
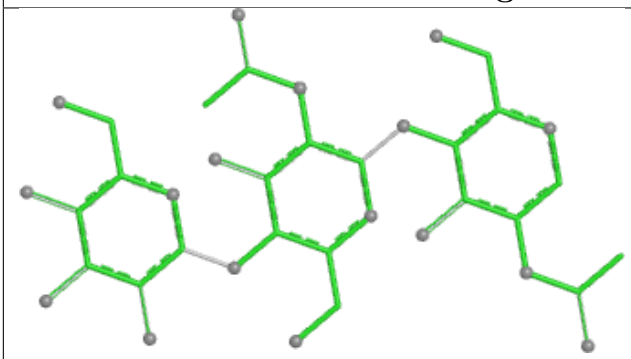


Rings

Oligosaccharide Chain F



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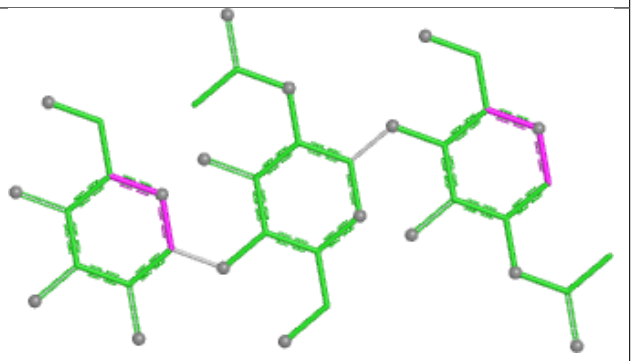
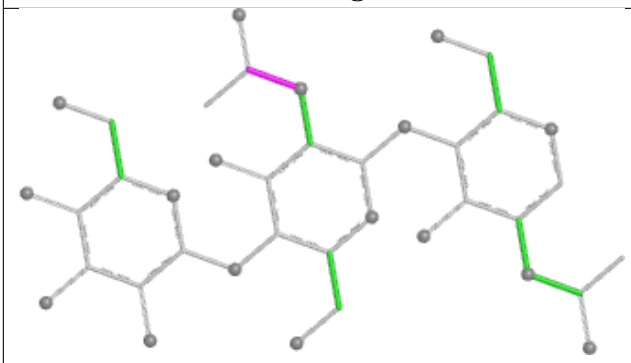


Bond angles



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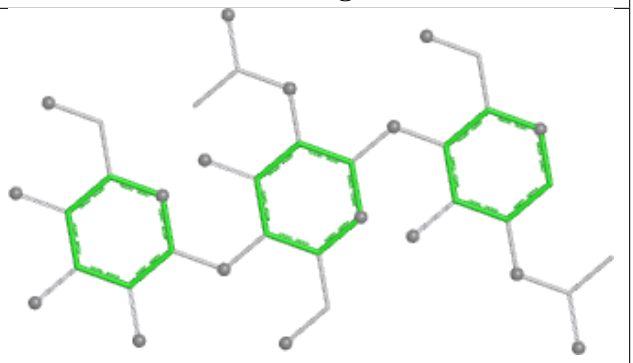
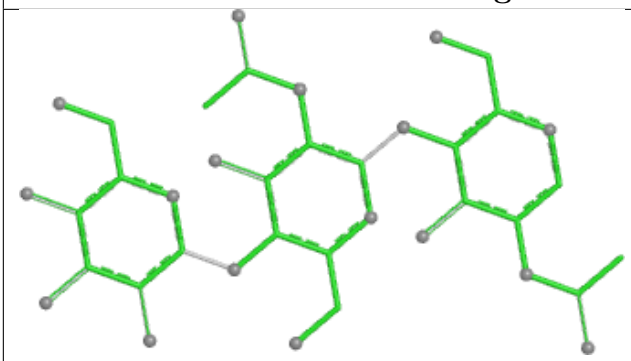


Rings

Oligosaccharide Chain U



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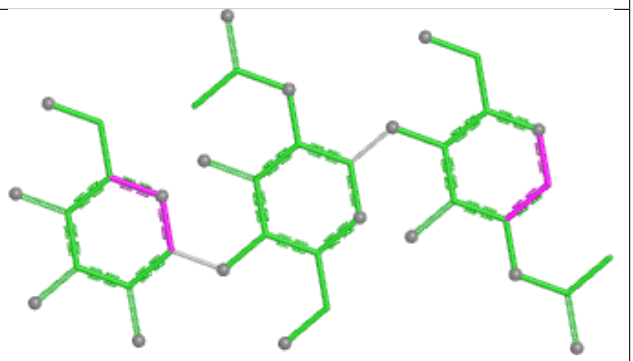
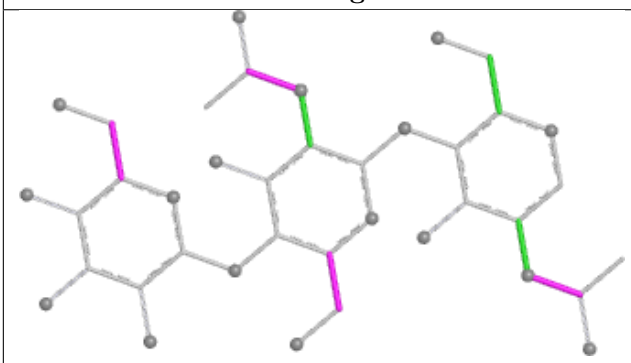
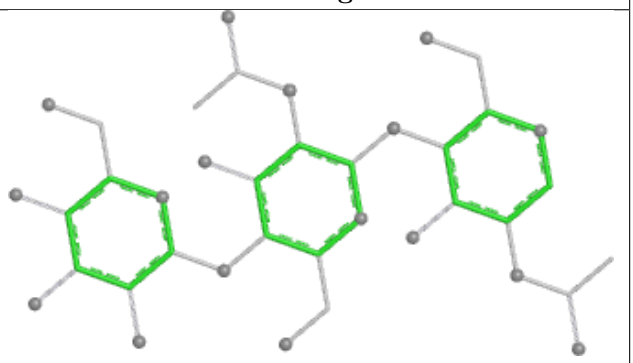


Bond angles

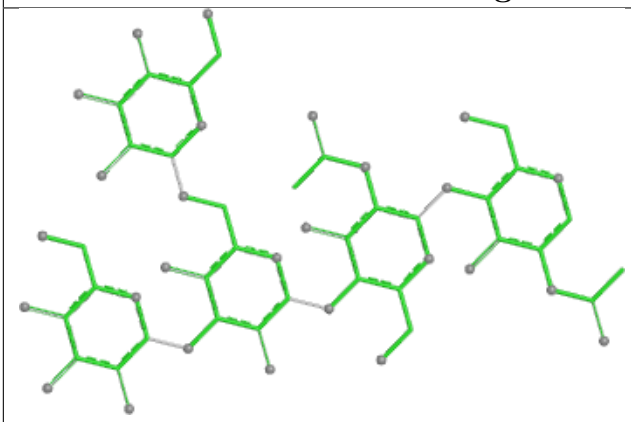


Torsions

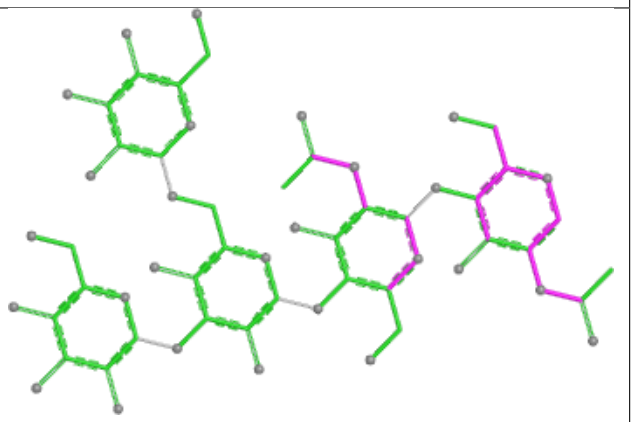


Rings

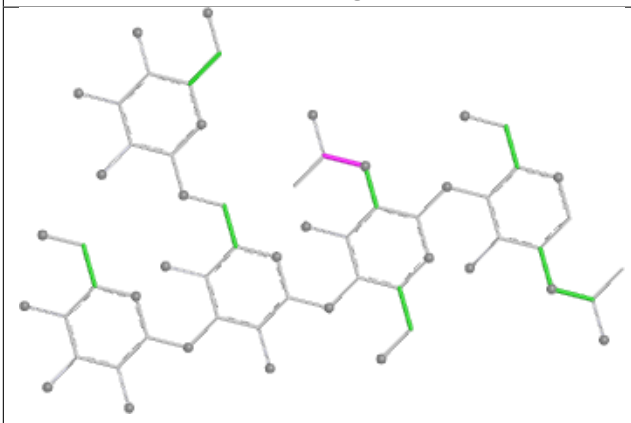
Oligosaccharide Chain O



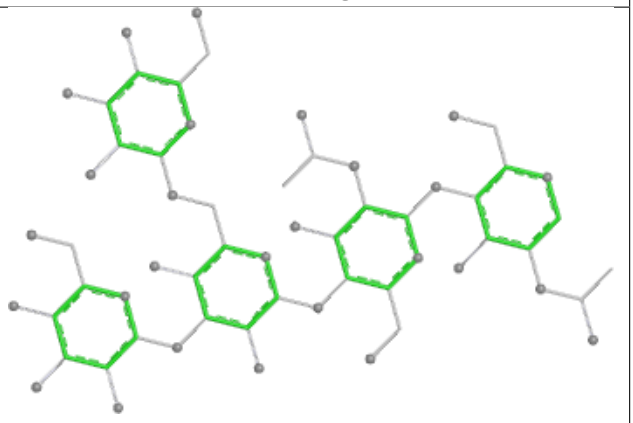
Bond lengths



Bond angles

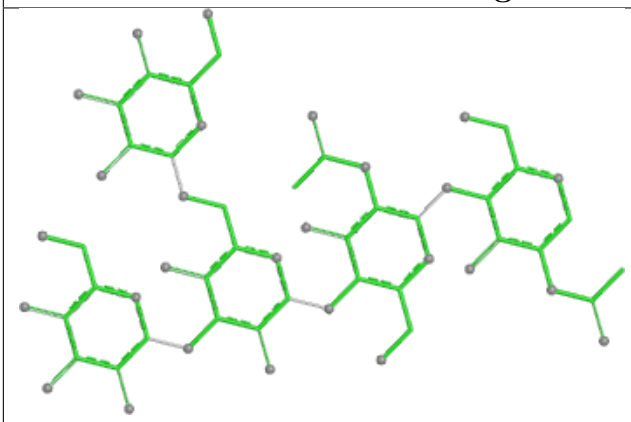


Torsions

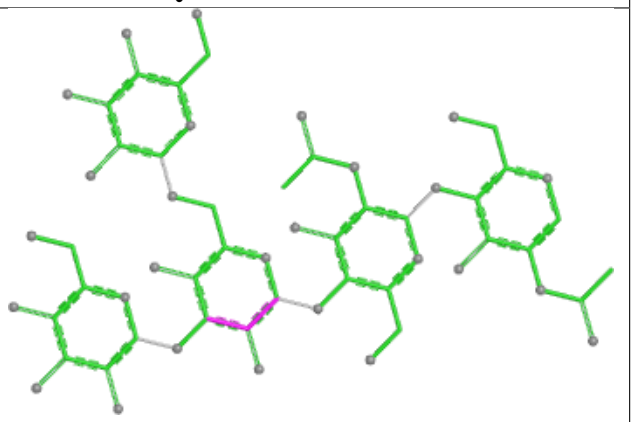


Rings

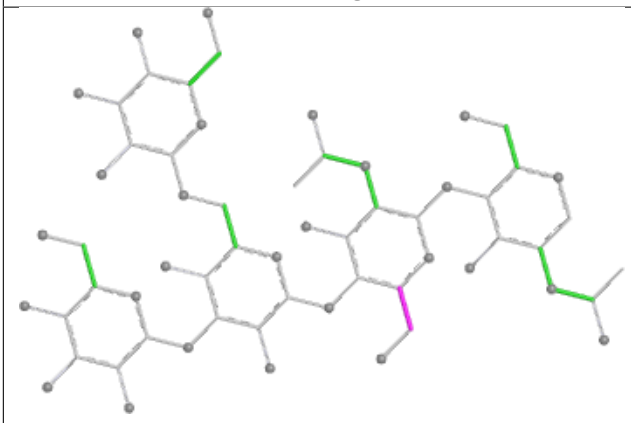
Oligosaccharide Chain Q



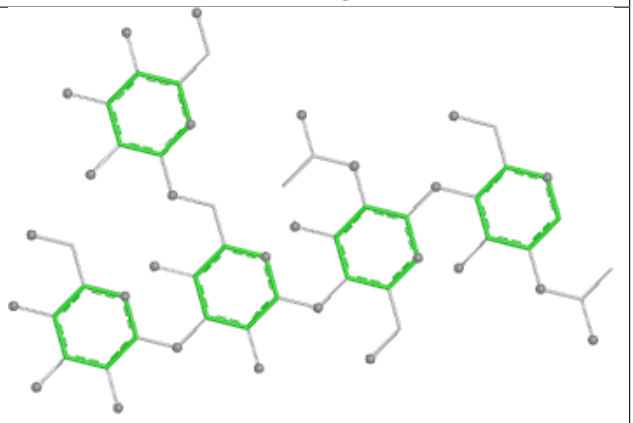
Bond lengths



Bond angles

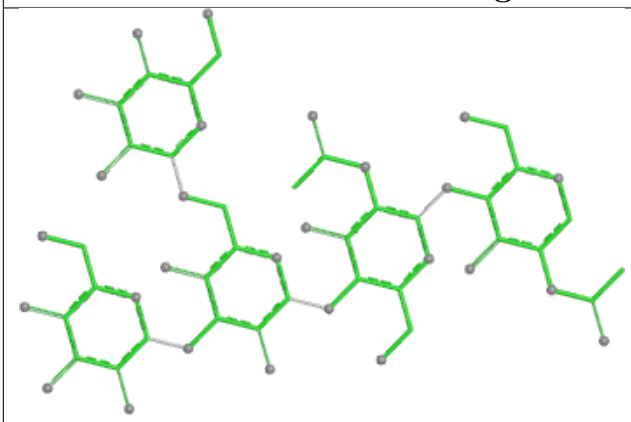


Torsions

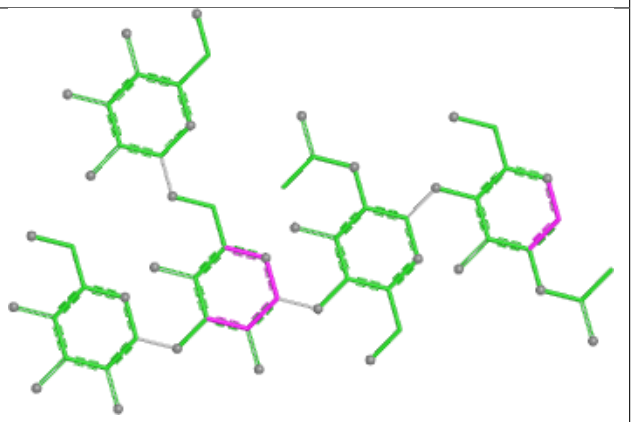


Rings

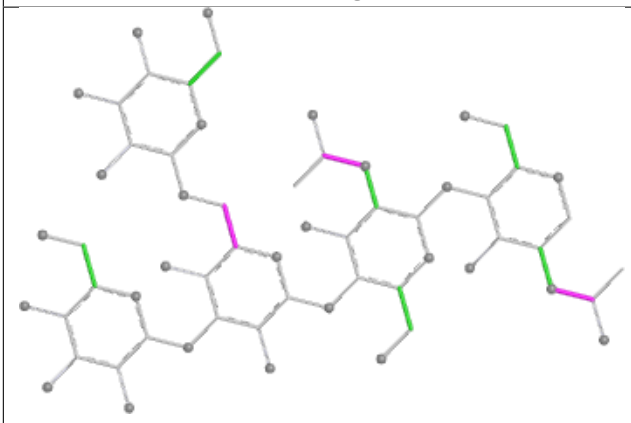
Oligosaccharide Chain X



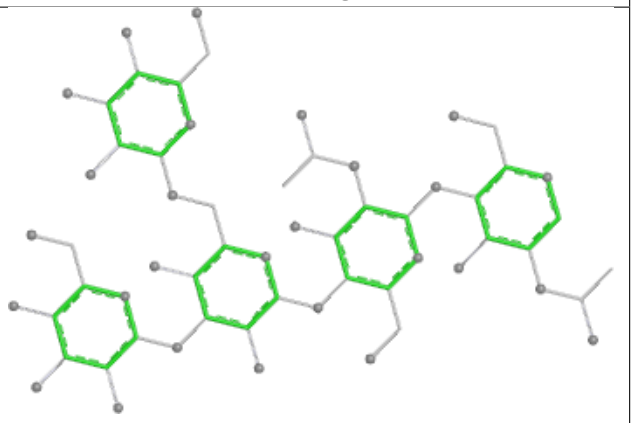
Bond lengths



Bond angles

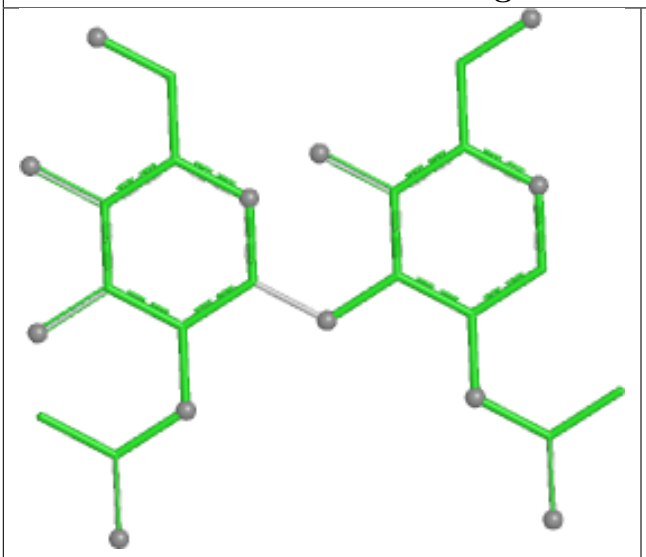


Torsions

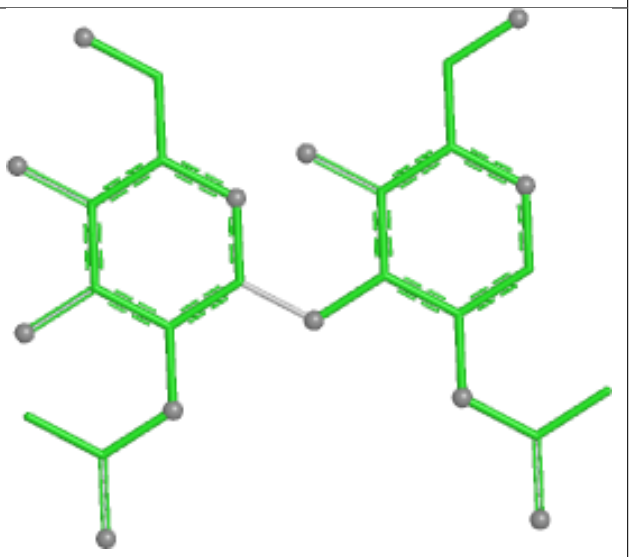


Rings

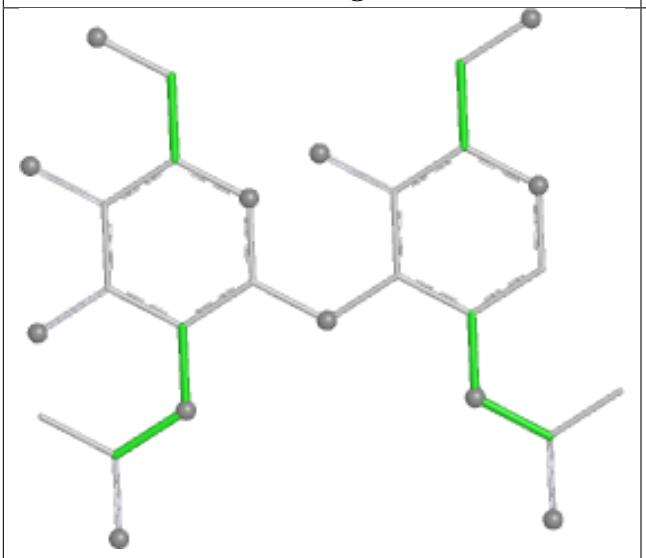
Oligosaccharide Chain R



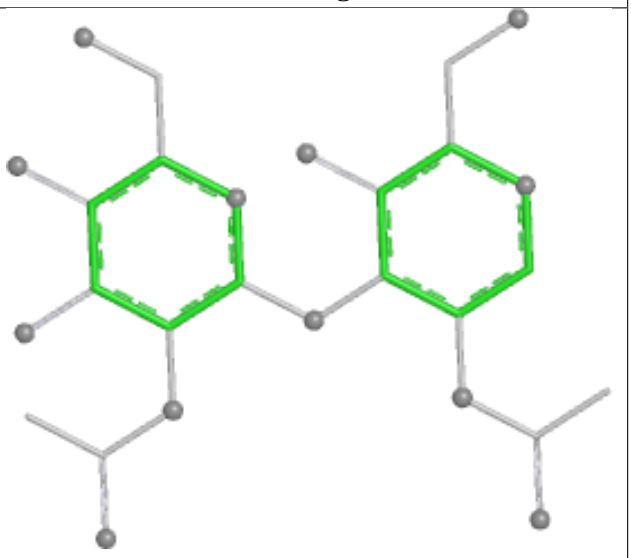
Bond lengths



Bond angles

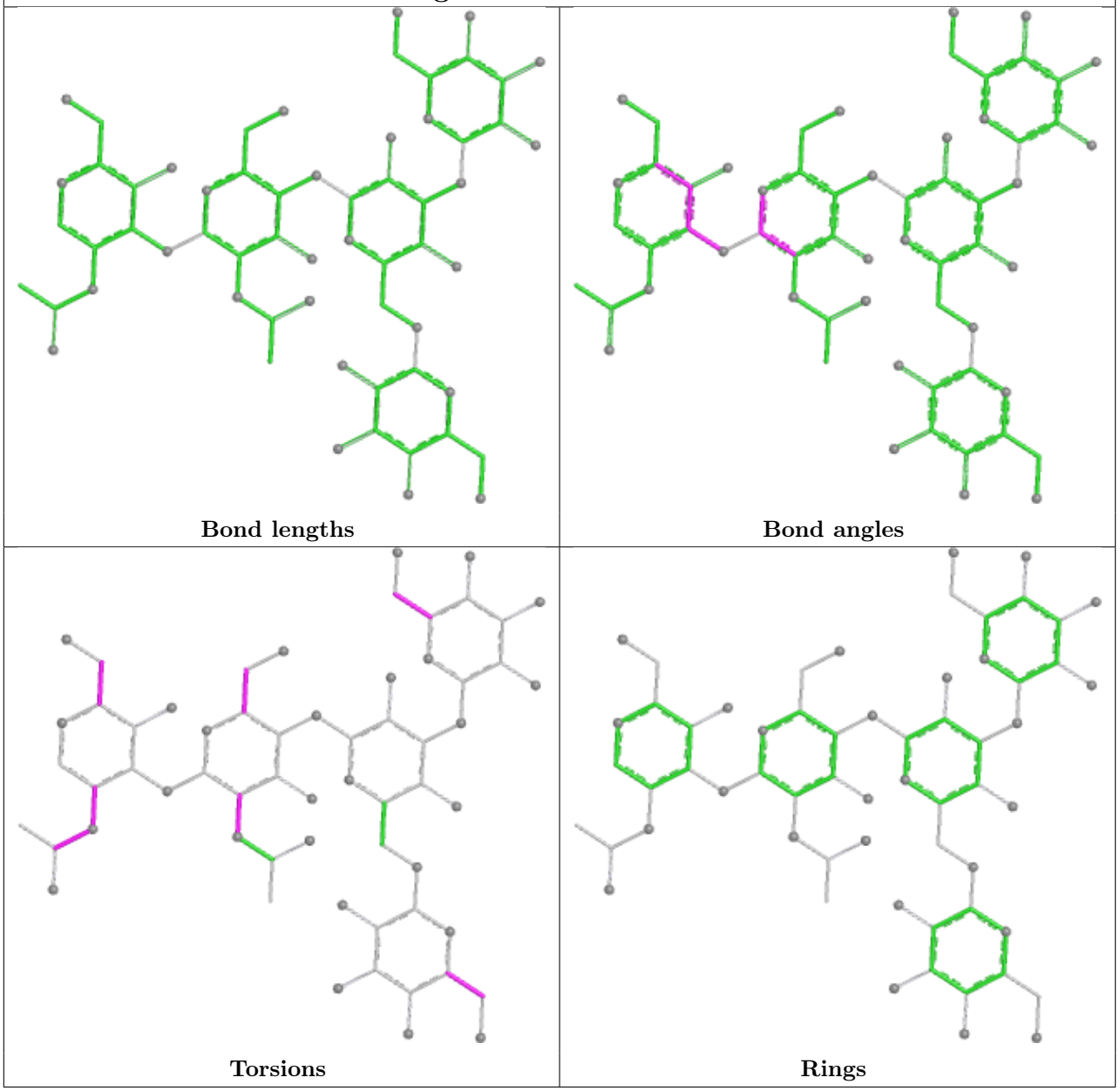


Torsions



Rings

Oligosaccharide Chain Z



5.6 Ligand geometry (i)

Of 24 ligands modelled in this entry, 14 are monoatomic - leaving 10 for Mogul analysis.

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	$\#\|Z\|>2$
11	NAG	B	4701	1	14,14,15	0.33	0	17,19,21	0.72	1 (5%)
11	NAG	A	4703	1	14,14,15	0.30	0	17,19,21	0.71	0
11	NAG	A	4704	1	14,14,15	0.54	0	17,19,21	2.13	2 (11%)
11	NAG	B	4702	1	14,14,15	0.30	0	17,19,21	0.67	1 (5%)
11	NAG	B	4703	1	14,14,15	0.87	1 (7%)	17,19,21	1.14	2 (11%)
11	NAG	B	4704	1	14,14,15	0.35	0	17,19,21	0.66	0
11	NAG	A	4702	1	14,14,15	0.31	0	17,19,21	0.52	0
12	A2G	B	4705	1	14,14,15	0.45	0	17,19,21	1.32	1 (5%)
12	A2G	A	4705	1	14,14,15	0.38	0	17,19,21	0.45	0
11	NAG	A	4701	1	14,14,15	0.41	0	17,19,21	1.20	1 (5%)

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
11	NAG	B	4701	1	-	0/6/23/26	0/1/1/1
11	NAG	A	4703	1	-	3/6/23/26	0/1/1/1
11	NAG	A	4704	1	-	3/6/23/26	0/1/1/1
11	NAG	B	4702	1	-	0/6/23/26	0/1/1/1
11	NAG	B	4703	1	-	0/6/23/26	0/1/1/1
11	NAG	B	4704	1	-	3/6/23/26	0/1/1/1
11	NAG	A	4702	1	-	0/6/23/26	0/1/1/1
12	A2G	B	4705	1	-	0/6/23/26	0/1/1/1
12	A2G	A	4705	1	-	2/6/23/26	0/1/1/1
11	NAG	A	4701	1	-	0/6/23/26	0/1/1/1

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
11	B	4703	NAG	C1-C2	2.70	1.56	1.52

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	A	4704	NAG	C1-O5-C5	7.34	122.02	112.19
12	B	4705	A2G	O5-C1-C2	4.70	118.57	111.29
11	A	4701	NAG	C1-O5-C5	3.84	117.33	112.19
11	A	4704	NAG	O5-C1-C2	3.83	117.21	111.29

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	B	4703	NAG	O5-C5-C4	-2.38	105.04	110.83
11	B	4703	NAG	C1-O5-C5	-2.37	109.01	112.19
11	B	4701	NAG	C1-O5-C5	2.21	115.15	112.19
11	B	4702	NAG	C1-O5-C5	2.02	114.89	112.19

There are no chirality outliers.

All (11) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
11	A	4703	NAG	C1-C2-N2-C7
11	A	4704	NAG	C3-C2-N2-C7
11	A	4704	NAG	C8-C7-N2-C2
11	A	4704	NAG	O7-C7-N2-C2
11	B	4704	NAG	C1-C2-N2-C7
12	A	4705	A2G	O7-C7-N2-C2
12	A	4705	A2G	C8-C7-N2-C2
11	A	4703	NAG	C8-C7-N2-C2
11	A	4703	NAG	O7-C7-N2-C2
11	B	4704	NAG	C8-C7-N2-C2
11	B	4704	NAG	O7-C7-N2-C2

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

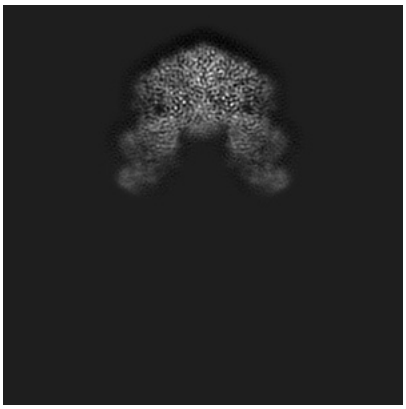
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-36698. These allow visual inspection of the internal detail of the map and identification of artifacts.

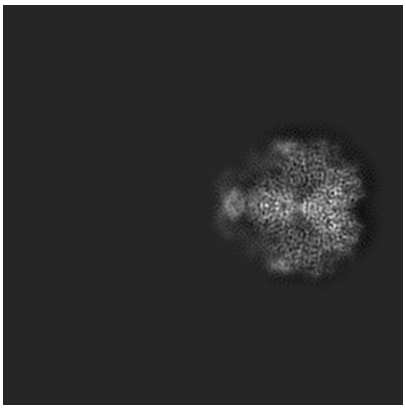
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections

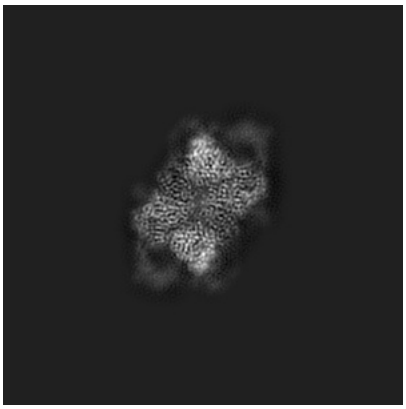
6.1.1 Primary map



X

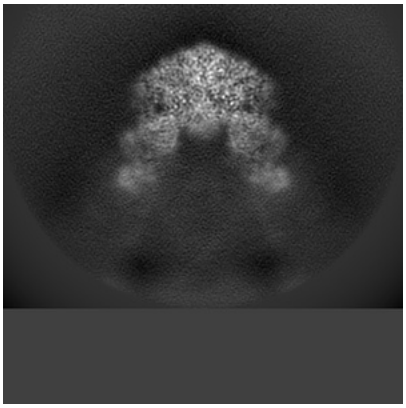


Y

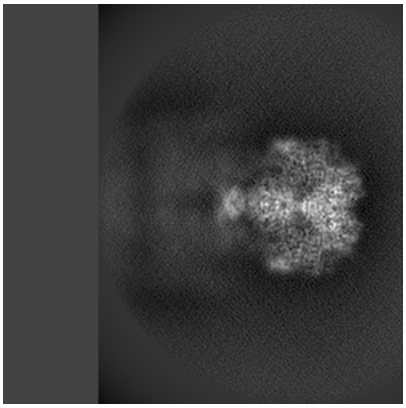


Z

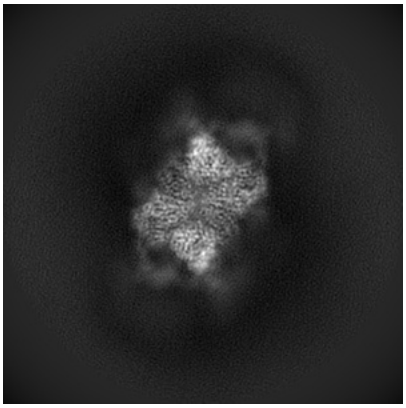
6.1.2 Raw map



X



Y



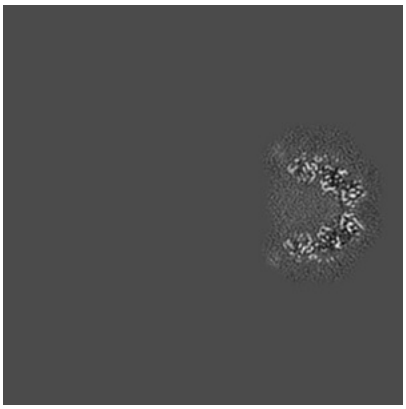
Z

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

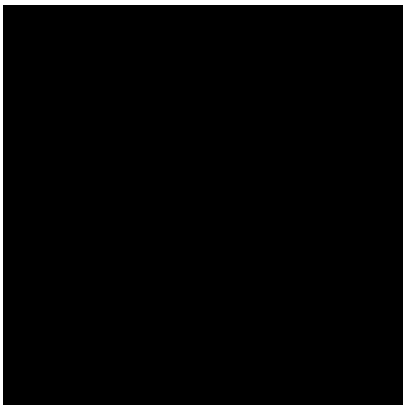
6.2 Central slices (i)

6.2.1 Primary map

X Index: 130

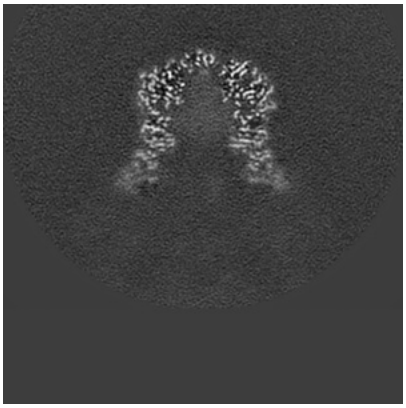


Y Index: 130

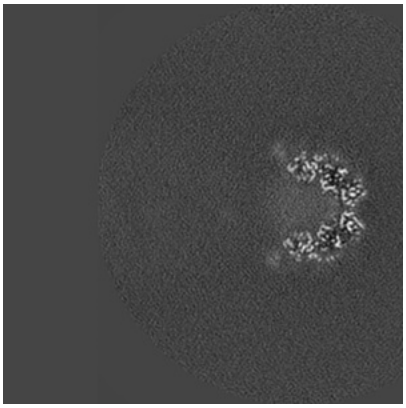


Z Index: 130

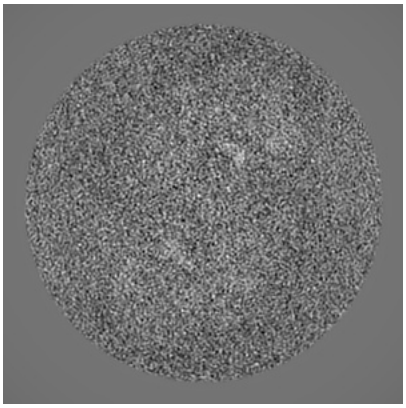
6.2.2 Raw map



X Index: 130



Y Index: 130



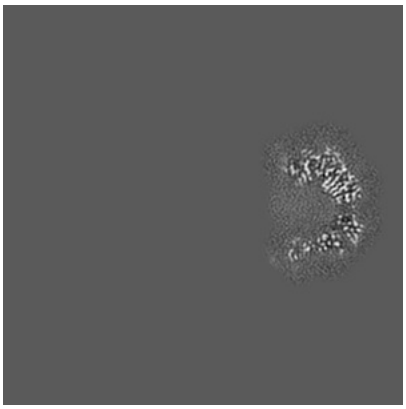
Z Index: 130

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

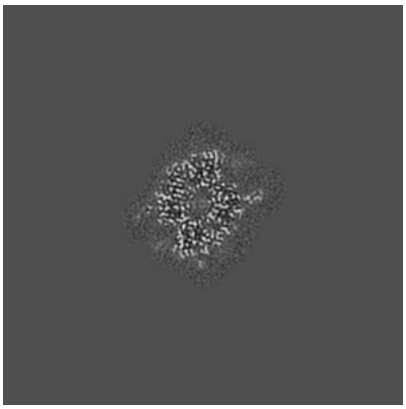
6.3 Largest variance slices (i)

6.3.1 Primary map

X Index: 130

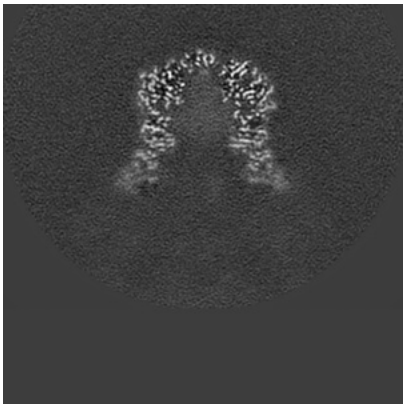


Y Index: 133

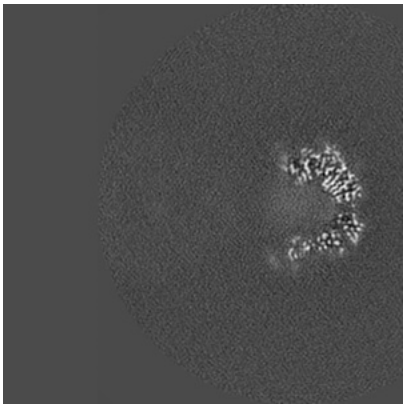


Z Index: 215

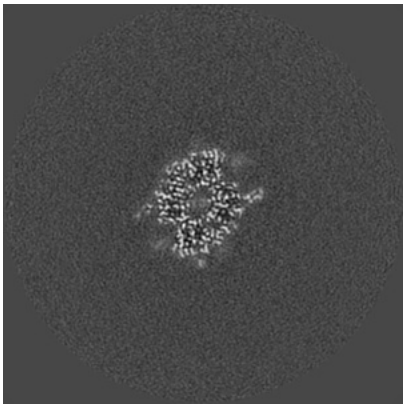
6.3.2 Raw map



X Index: 130



Y Index: 133

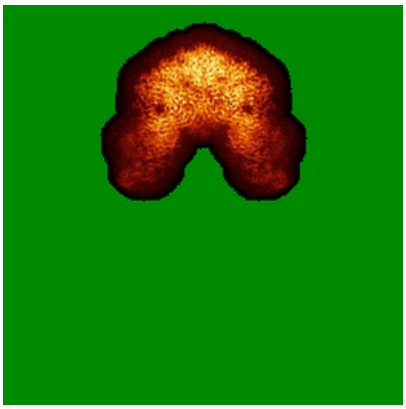


Z Index: 215

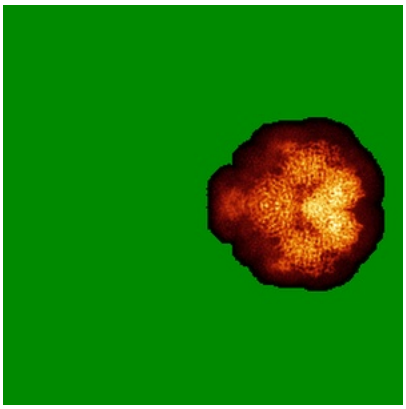
The images above show the largest variance slices of the map in three orthogonal directions.

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

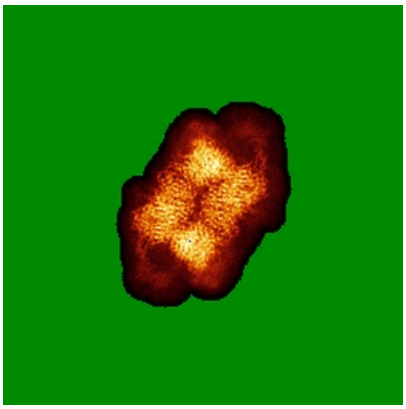
6.4.1 Primary map



X

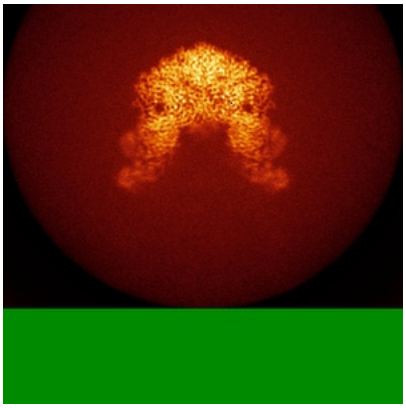


Y

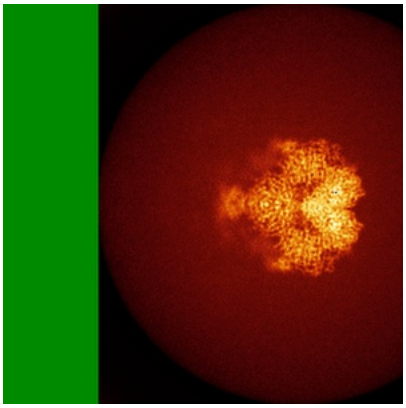


Z

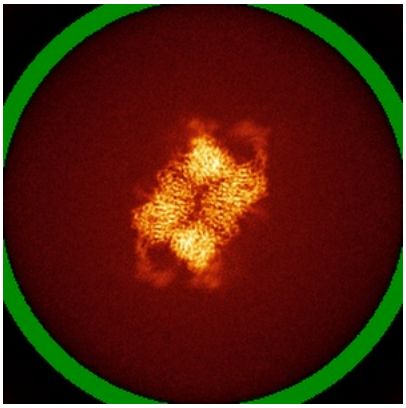
6.4.2 Raw map



X



Y

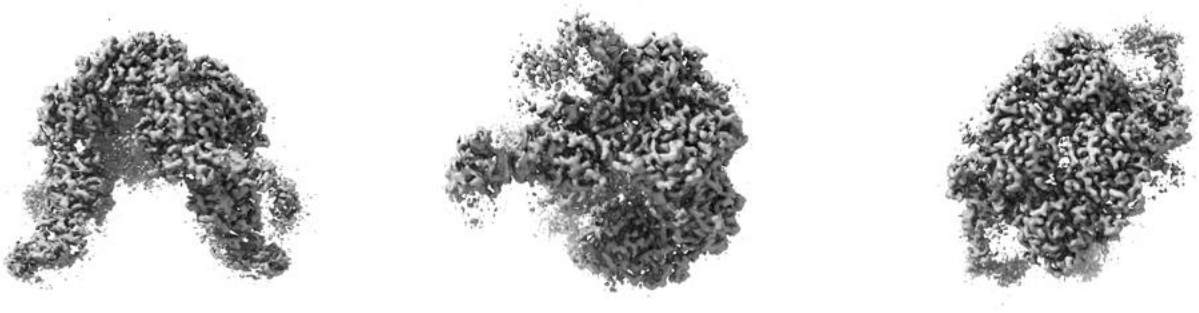


Z

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 (i)

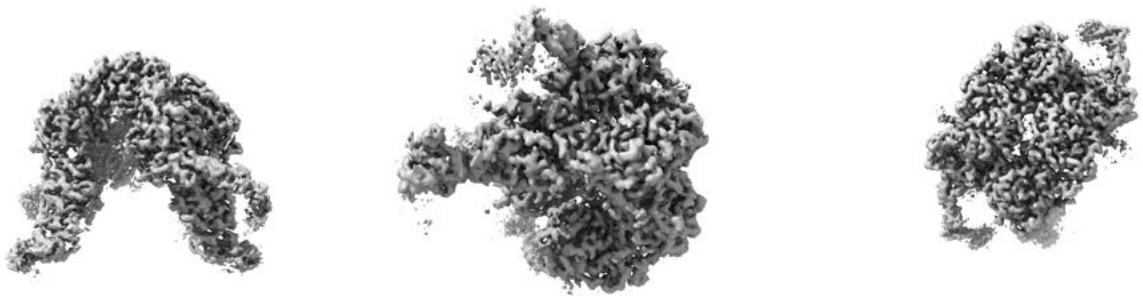
6.5.1 Primary map



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0285. 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



X Y Z

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.

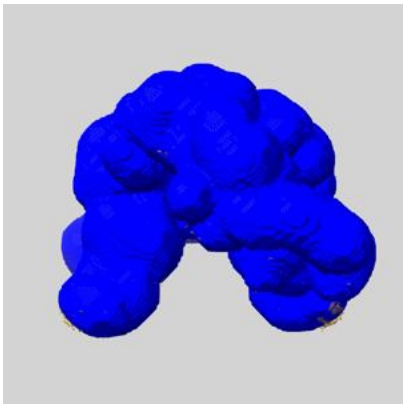
6.6 Mask visualisation (i)

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

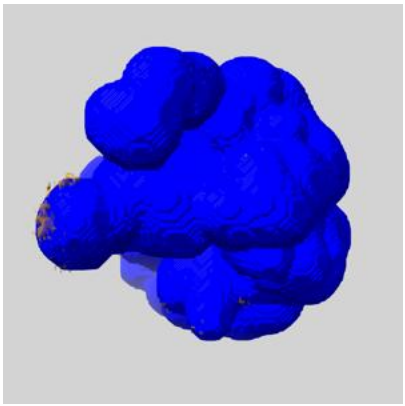
A mask typically either:

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

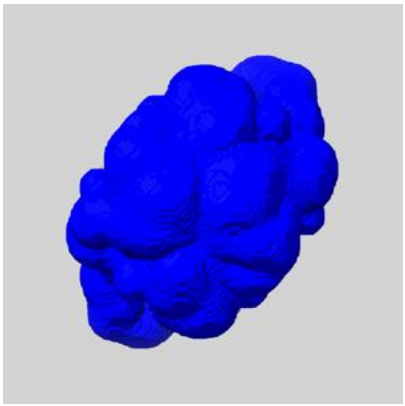
6.6.1 emd_36698_msk_1.map (i)



X



Y

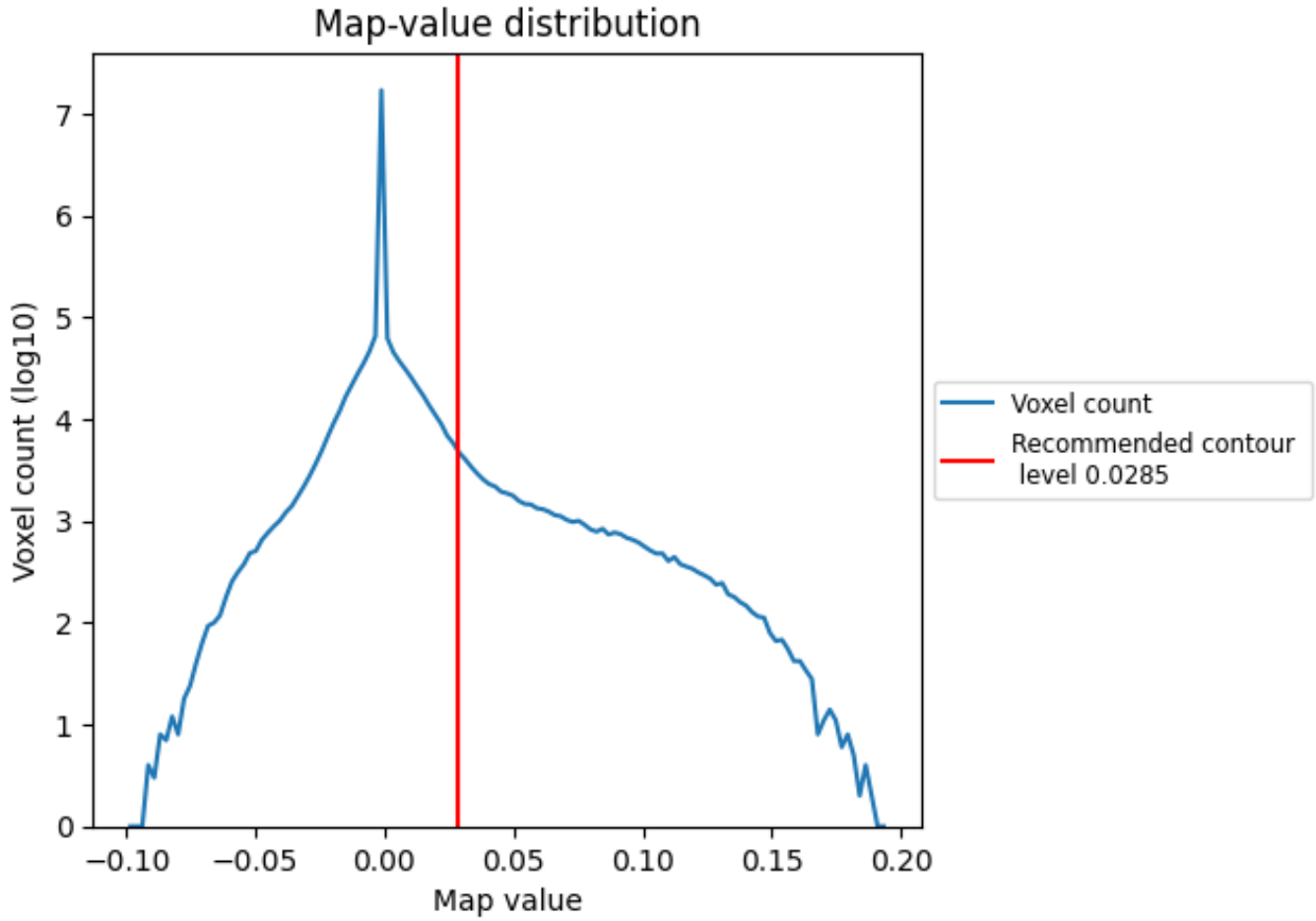


Z

7 Map analysis

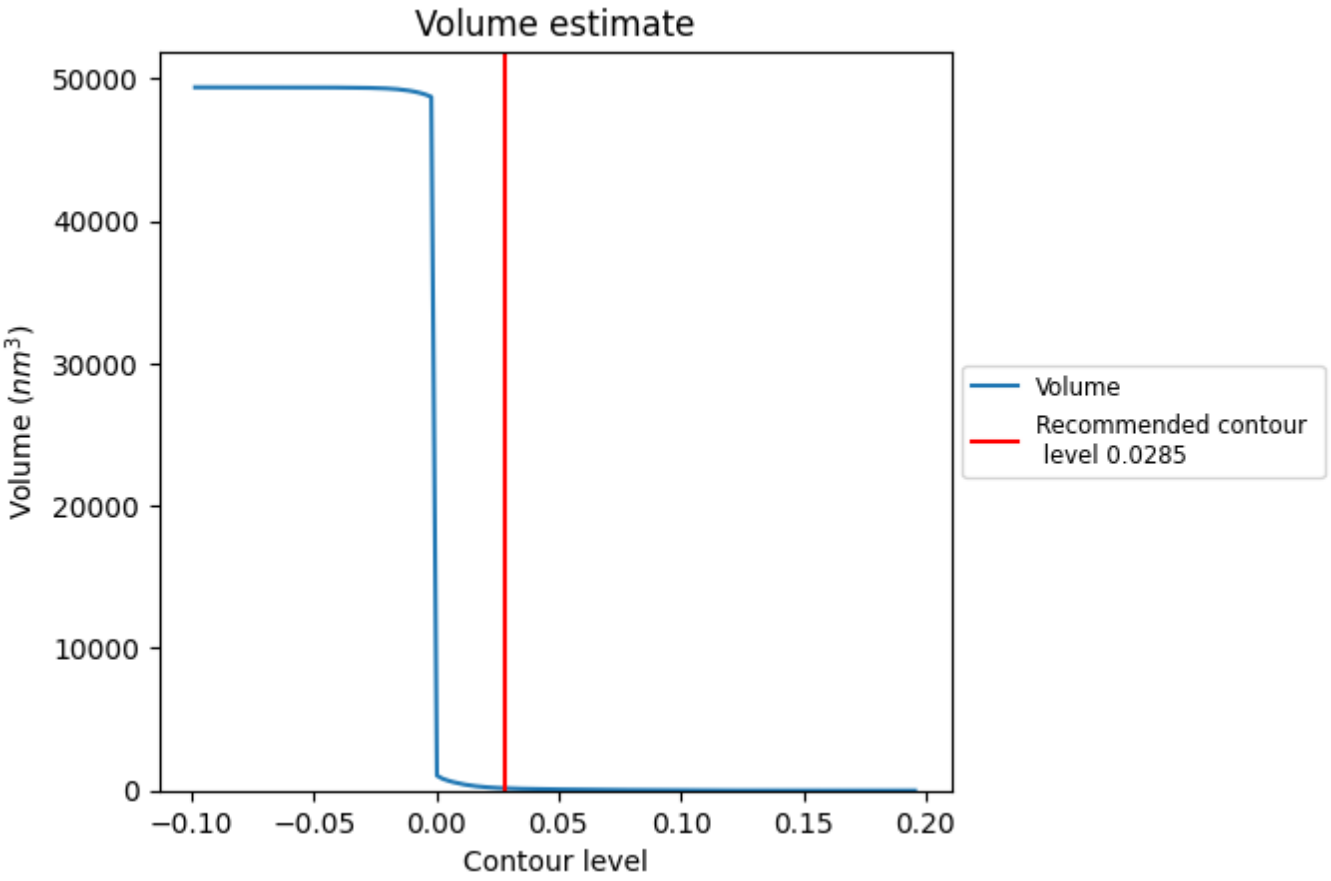
This section contains the results of statistical analysis of the map.

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.

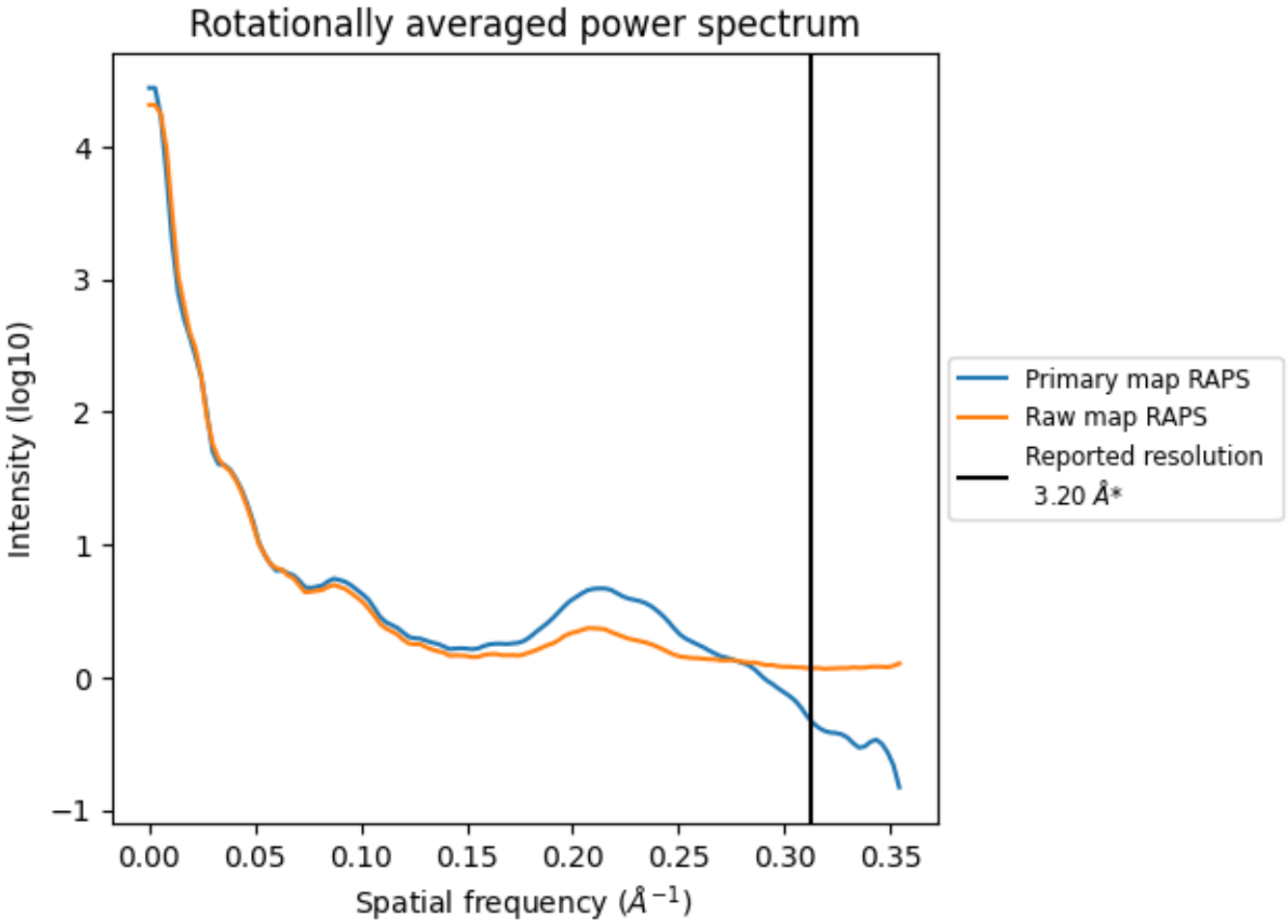
7.2 Volume estimate



The volume at the recommended contour level is 159 nm^3; this corresponds to an approximate mass of 144 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)

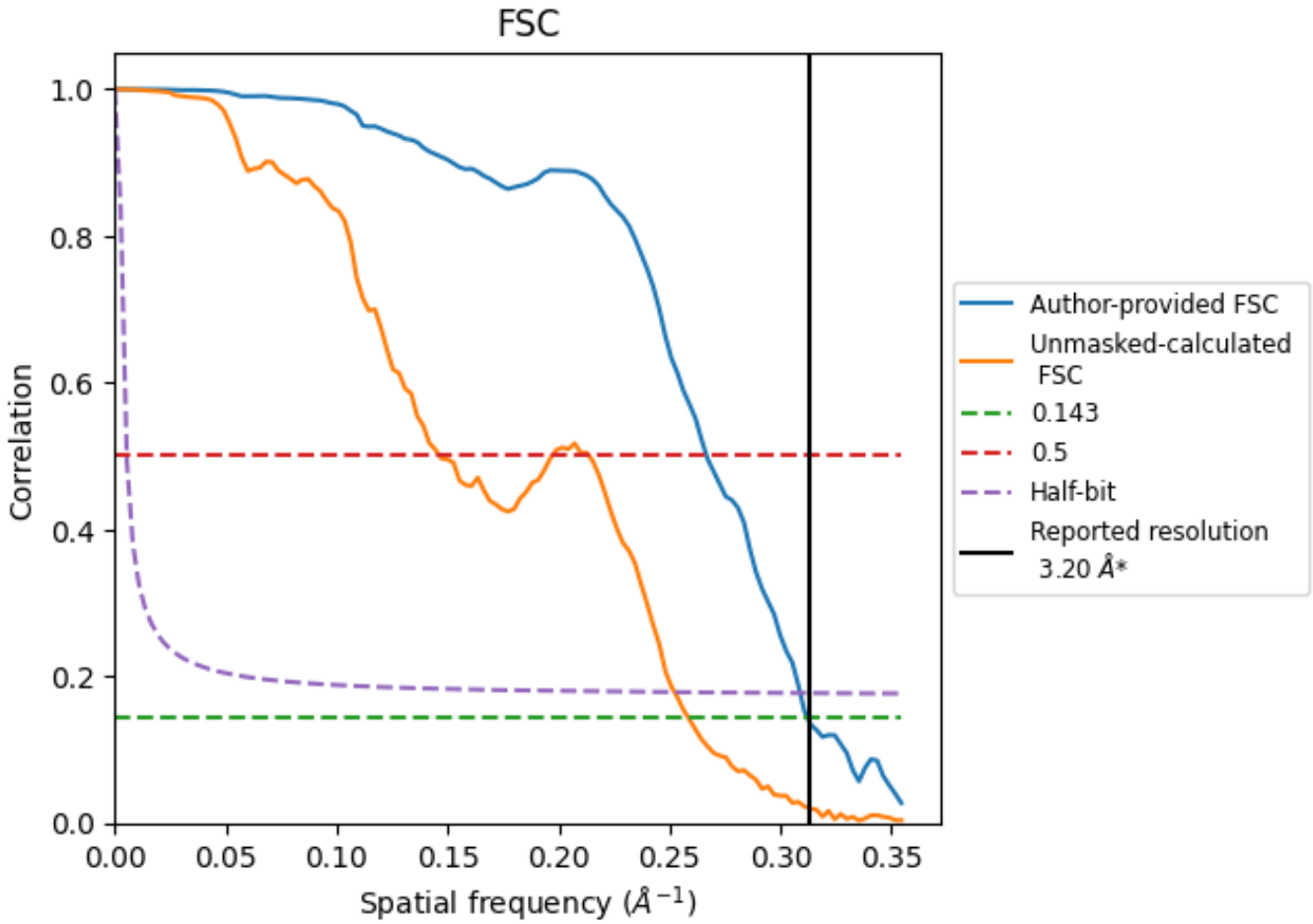


*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8 Fourier-Shell correlation

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



*Reported resolution corresponds to spatial frequency of 0.312 Å^{-1}

8.2 Resolution estimates (i)

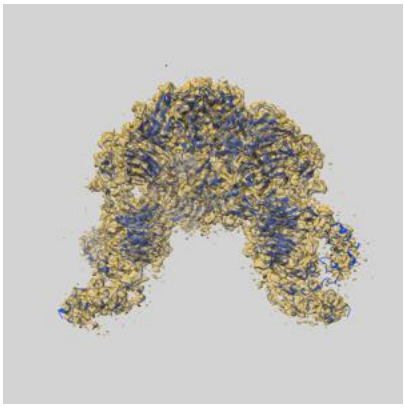
Resolution estimate (Å)	Estimation criterion (FSC cut-off)		
	0.143	0.5	Half-bit
Reported by author	3.20	-	-
Author-provided FSC curve	3.20	3.75	3.24
Unmasked-calculated*	3.87	6.83	3.97

*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 3.87 differs from the reported value 3.2 by more than 10 %

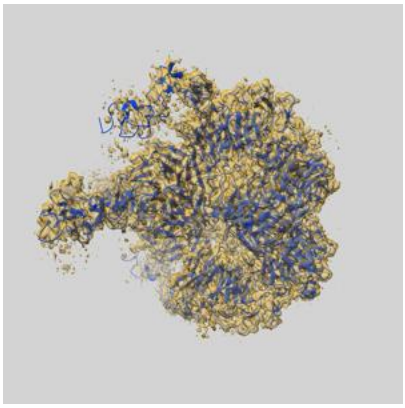
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-36698 and PDB model 8JXE. Per-residue inclusion information can be found in section 3 on page 9.

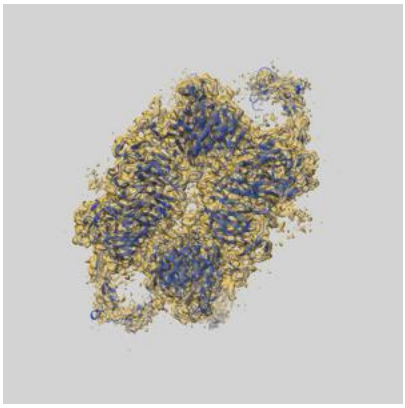
9.1 Map-model overlay



X



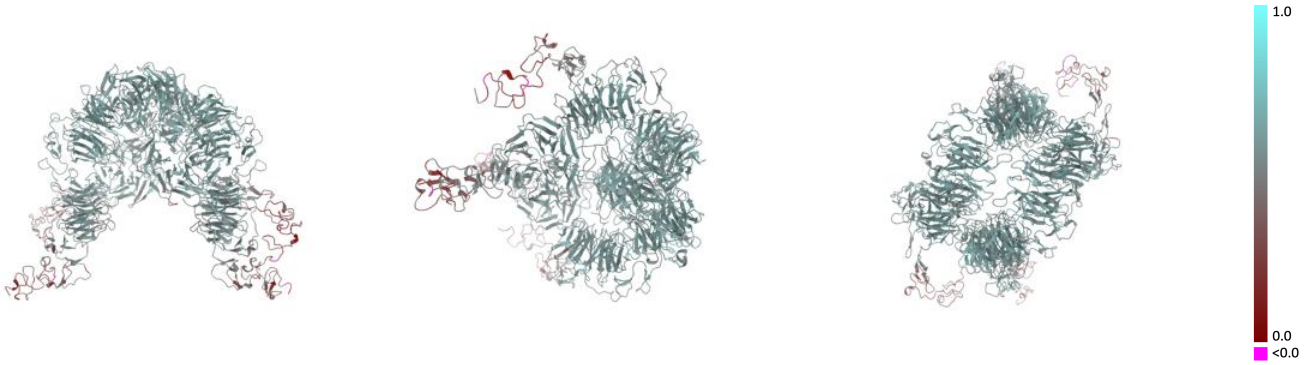
Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.0285 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.

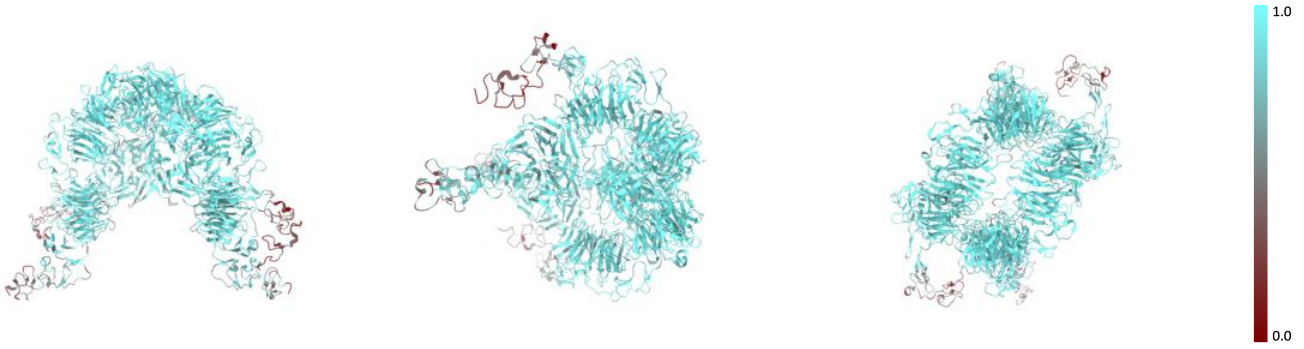
9.2 Q-score mapped to coordinate model



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.

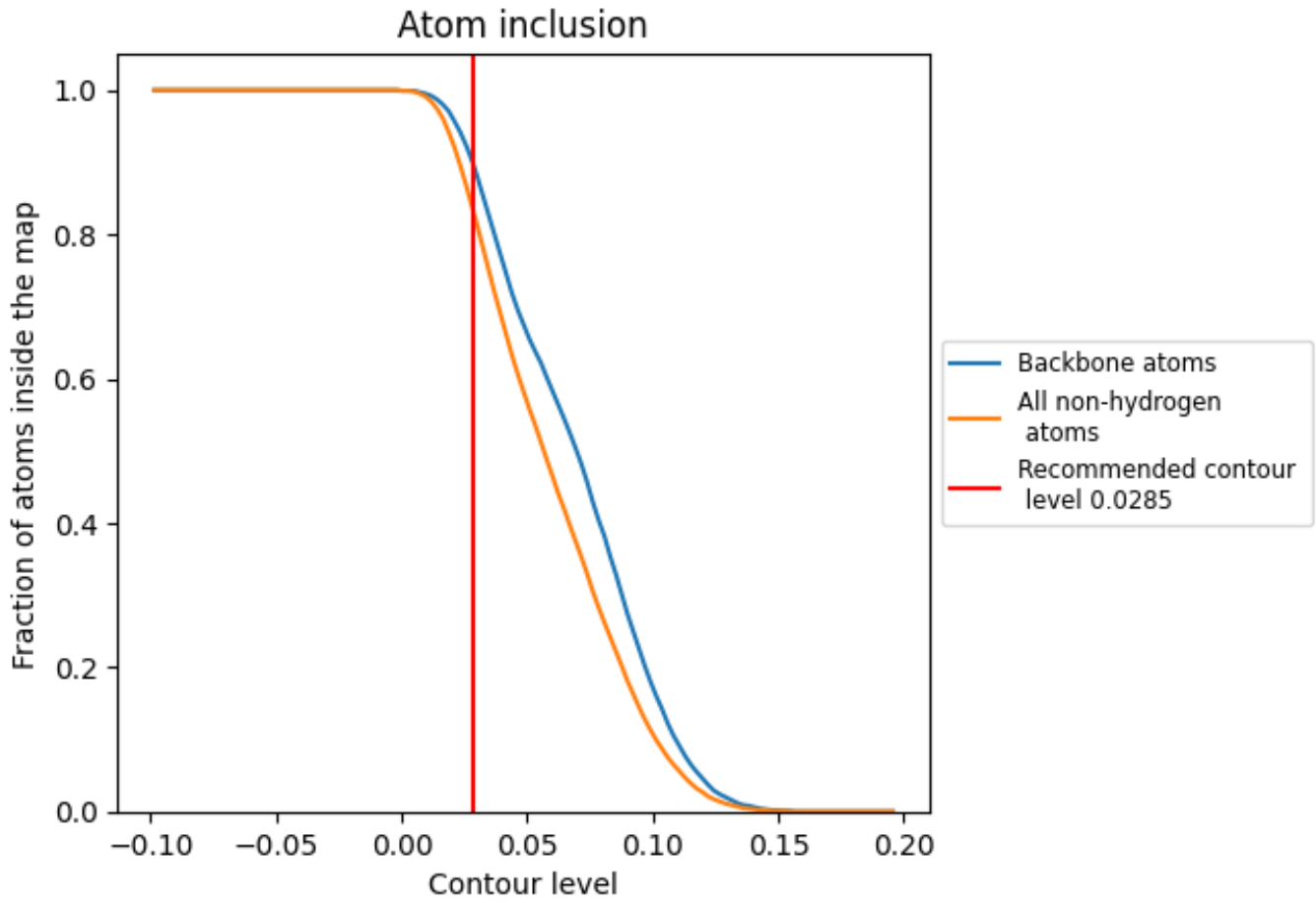
9.3 Atom inclusion mapped to coordinate model



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 (0.0285).

9.4 Atom inclusion (i)



At the recommended contour level, 90% of all backbone atoms, 83% 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 (0.0285) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8330	0.5390
A	0.8460	0.5460
B	0.8410	0.5400
C	0.9090	0.5340
D	0.6250	0.3670
E	0.4640	0.4280
F	0.6920	0.4410
G	0.4850	0.5190
H	0.4640	0.4700
I	0.8790	0.5360
J	0.5620	0.4460
K	0.6360	0.4830
L	0.6430	0.5130
M	0.5360	0.4340
N	0.3930	0.4270
O	0.4750	0.4460
P	0.4640	0.4690
Q	0.8030	0.5310
R	0.3930	0.2750
S	0.5360	0.4280
T	0.2140	0.3370
U	0.5900	0.3980
V	0.6430	0.4140
W	0.3570	0.4020
X	0.3610	0.4140
Y	0.5000	0.4420
Z	0.7870	0.4670
a	0.3570	0.3360
b	0.7500	0.4560