



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 8, 2026 – 05:34 AM UTC

PDB ID : 1TNY / pdb_00001tny
Title : Rat Protein Geranylgeranyltransferase Type-I Complexed with a GGPP analog and a FREKKFFCAIL Peptide Derived from the Heterotrimeric G Protein Gamma-2 Subunit
Authors : S Reid, T.; Terry, K.L.; Casey, P.J.; Beese, L.S.
Deposited on : 2004-06-11
Resolution : 2.70 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Buster-report	:	wwPDB partial adaption of 1.1.7 (2018)
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

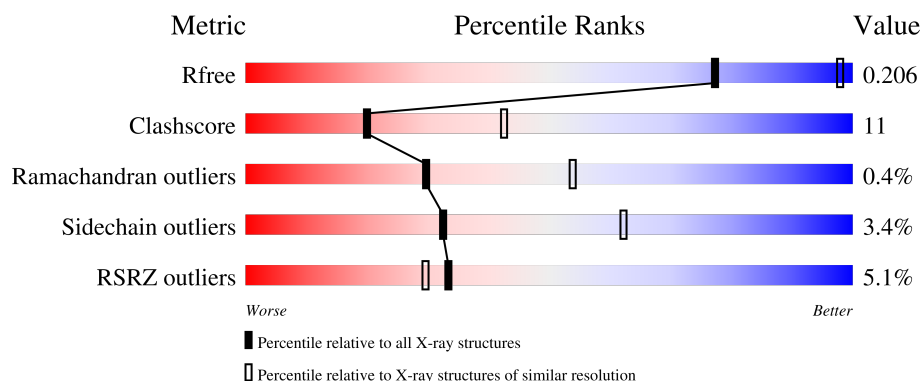
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.70 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	3538 (2.70-2.70)
Clashscore	190562	3843 (2.70-2.70)
Ramachandran outliers	187476	3778 (2.70-2.70)
Sidechain outliers	187428	3778 (2.70-2.70)
RSRZ outliers	180081	3538 (2.70-2.70)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	377	5% 61% 21% • 17%
1	C	377	4% 62% 20% • 17%
1	E	377	3% 56% 25% • 17%
1	G	377	5% 60% 22% • 17%

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Mol	Chain	Length	Quality of chain
1	I	377	
1	K	377	
2	B	377	
2	D	377	
2	F	377	
2	H	377	
2	J	377	
2	L	377	
3	M	11	
3	N	11	
3	O	11	
3	P	11	
3	Q	11	
3	R	11	

2 Entry composition

There are 8 unique types of molecules in this entry. The entry contains 33566 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called geranylgeranyltransferase type I alpha subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	314	Total	C	N	O	S	0	0	0
			2629	1679	463	482	5			
1	C	314	Total	C	N	O	S	0	0	0
			2643	1689	461	488	5			
1	E	314	Total	C	N	O	S	0	0	0
			2642	1686	461	490	5			
1	G	314	Total	C	N	O	S	0	0	0
			2633	1683	459	486	5			
1	I	314	Total	C	N	O	S	0	0	0
			2656	1694	465	492	5			
1	K	314	Total	C	N	O	S	0	0	0
			2671	1703	467	496	5			

- Molecule 2 is a protein called Geranylgeranyl transferase type I beta subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	346	Total	C	N	O	S	0	0	0
			2697	1707	467	499	24			
2	D	346	Total	C	N	O	S	0	0	0
			2713	1715	472	502	24			
2	F	346	Total	C	N	O	S	0	0	0
			2718	1717	474	503	24			
2	H	346	Total	C	N	O	S	0	0	0
			2694	1706	464	500	24			
2	J	346	Total	C	N	O	S	0	0	0
			2711	1713	471	503	24			
2	L	346	Total	C	N	O	S	0	0	0
			2723	1720	473	506	24			

- Molecule 3 is a protein called guanine nucleotide-binding protein G(I)/G(S)/G(O) gamma-2 subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	M	5	Total	C	N	O	S	0	0	0
			38	27	4	6	1			
3	N	5	Total	C	N	O	S	0	0	0
			39	27	5	6	1			
3	O	5	Total	C	N	O	S	0	0	0
			39	27	5	6	1			
3	P	5	Total	C	N	O	S	0	0	0
			39	27	5	6	1			
3	Q	5	Total	C	N	O	S	0	0	0
			39	27	5	6	1			
3	R	5	Total	C	N	O	S	0	0	0
			39	27	5	6	1			

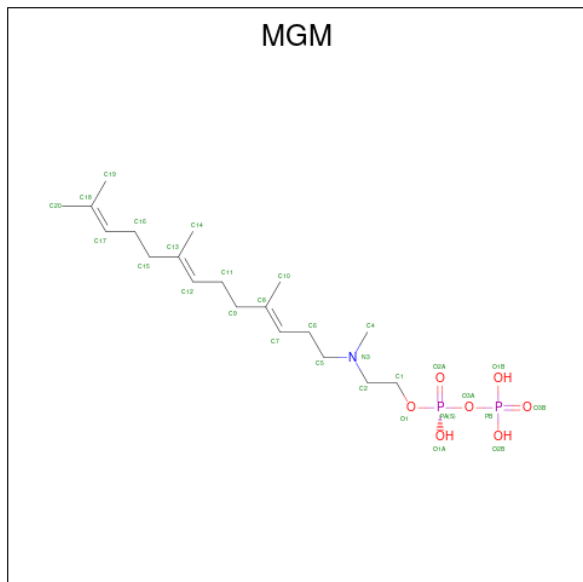
- Molecule 4 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	B	1	Total	Zn	0	0
			1	1		
4	D	1	Total	Zn	0	0
			1	1		
4	F	1	Total	Zn	0	0
			1	1		
4	H	1	Total	Zn	0	0
			1	1		
4	J	1	Total	Zn	0	0
			1	1		
4	L	1	Total	Zn	0	0
			1	1		

- Molecule 5 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	B	1	Total	Cl	0	0
			1	1		
5	D	1	Total	Cl	0	0
			1	1		
5	F	1	Total	Cl	0	0
			1	1		
5	H	1	Total	Cl	0	0
			1	1		
5	J	1	Total	Cl	0	0
			1	1		
5	L	1	Total	Cl	0	0
			1	1		

- Molecule 6 is 2-[METHYL-(5-GERANYL-4-METHYL-PENT-3-ENYL)-AMINO]-ETHYL-DIPHOSPHATE (CCD ID: MGM) (formula: $C_{19}H_{37}NO_7P_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
6	B	1	Total	C	N	O	P	0	0
			29	19	1	7	2		
6	D	1	Total	C	N	O	P	0	0
			29	19	1	7	2		
6	F	1	Total	C	N	O	P	0	0
			29	19	1	7	2		
6	H	1	Total	C	N	O	P	0	0
			29	19	1	7	2		
6	J	1	Total	C	N	O	P	0	0
			29	19	1	7	2		
6	L	1	Total	C	N	O	P	0	0
			29	19	1	7	2		

- Molecule 7 is 2-(N-MORPHOLINO)-ETHANESULFONIC ACID (CCD ID: MES) (formula: $C_6H_{13}NO_4S$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
7	F	1	Total	C	N	O	S	0	0
			12	6	1	4	1		

- Molecule 8 is water.

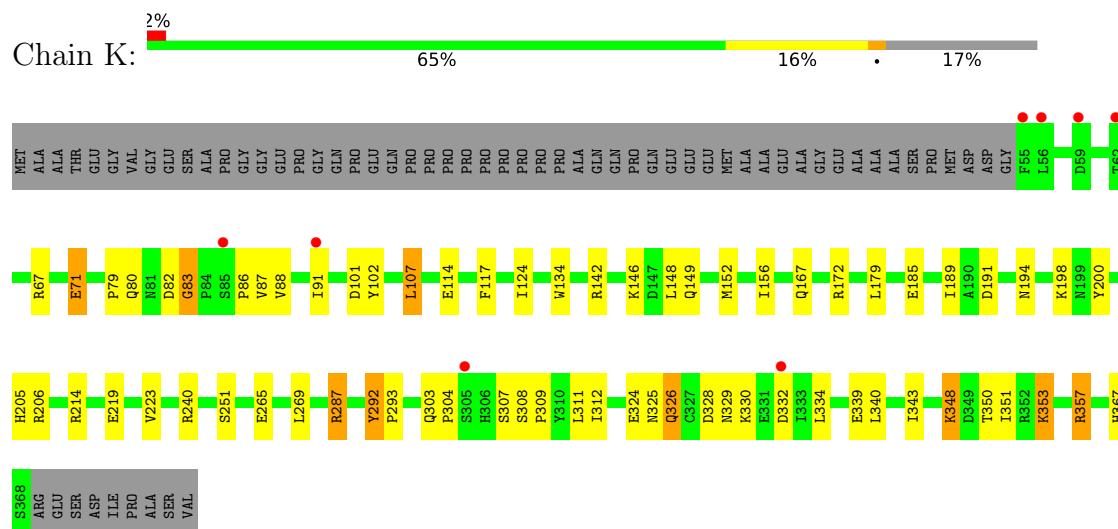
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	A	66	Total	O	0	0
			66	66		
8	B	54	Total	O	0	0
			54	54		
8	C	69	Total	O	0	0
			69	69		
8	D	79	Total	O	0	0
			79	79		
8	E	63	Total	O	0	0
			63	63		
8	F	84	Total	O	0	0
			84	84		
8	G	70	Total	O	0	0
			70	70		
8	H	58	Total	O	0	0
			58	58		
8	I	80	Total	O	0	0
			80	80		
8	J	71	Total	O	0	0
			71	71		
8	K	160	Total	O	0	0
			160	160		

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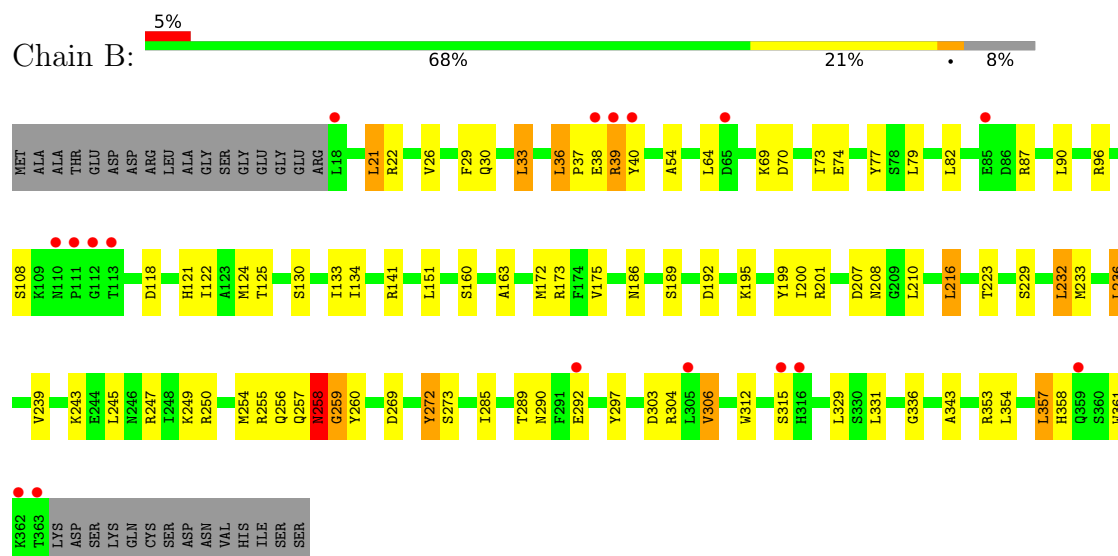
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
8	L	123	Total 123	O 123	0	0
8	M	7	Total 7	O 7	0	0
8	N	5	Total 5	O 5	0	0
8	O	5	Total 5	O 5	0	0
8	P	5	Total 5	O 5	0	0
8	Q	3	Total 3	O 3	0	0
8	R	3	Total 3	O 3	0	0

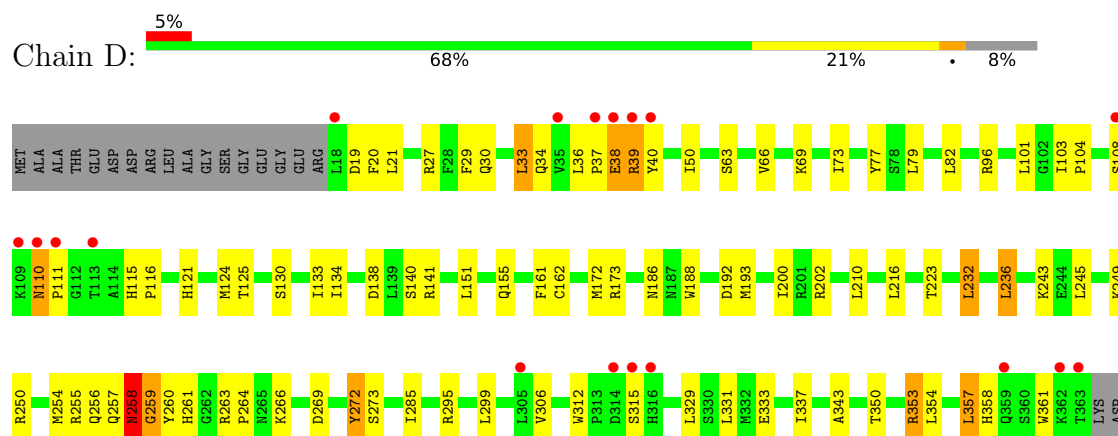
- Molecule 1: geranylgeranyltransferase type I alpha subunit



- Molecule 2: Geranylgeranyl transferase type I beta subunit



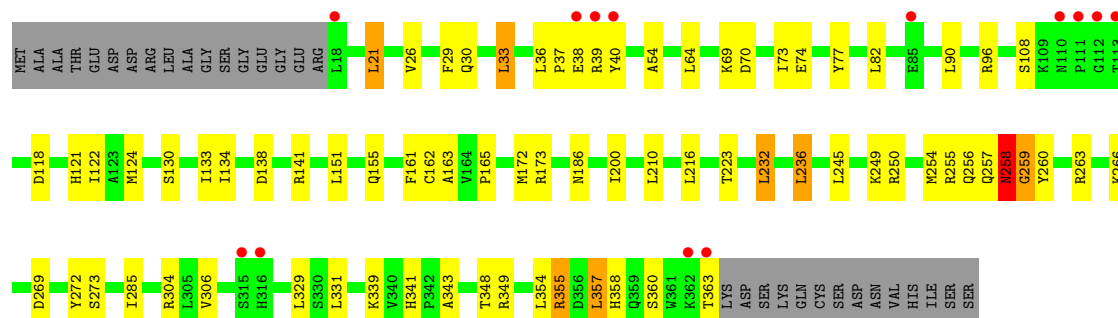
- Molecule 2: Geranylgeranyl transferase type I beta subunit



SER
LYS
GLN
CYS
THR
SER
ASP
ASN
VAL
HIS
ILE
SER
SER

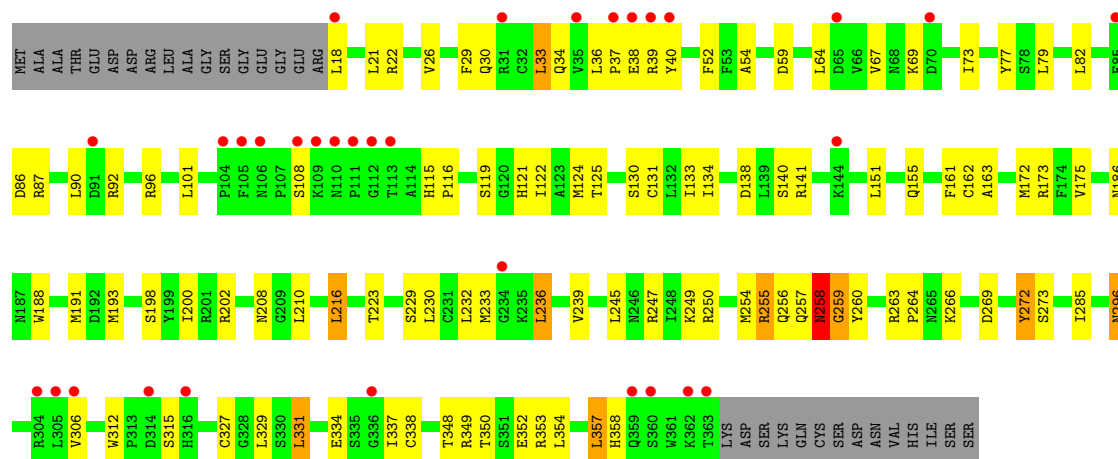
• Molecule 2: Geranylgeranyl transferase type I beta subunit

Chain F: 3% 72% 18% 8%



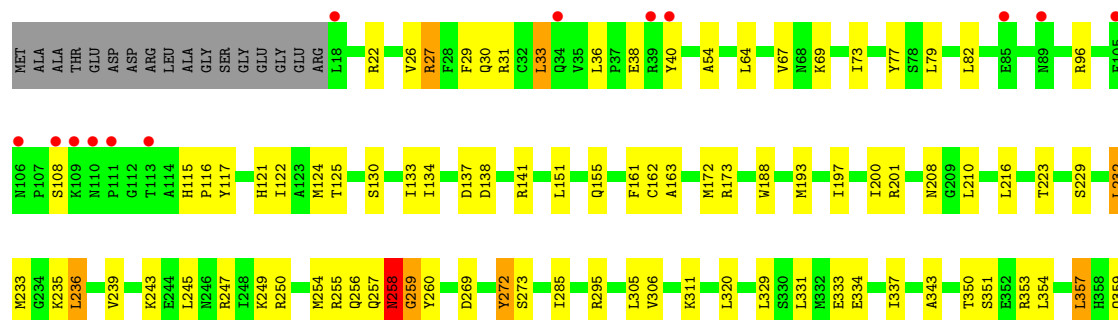
• Molecule 2: Geranylgeranyl transferase type I beta subunit

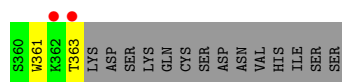
Chain H: 8% 64% 25% 8%



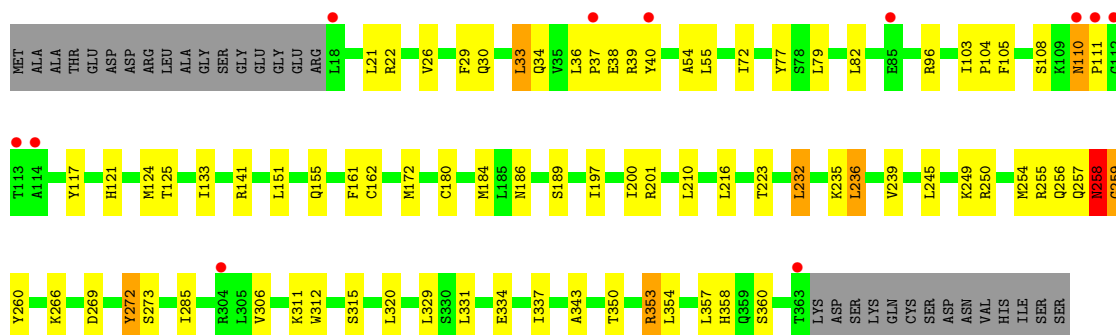
• Molecule 2: Geranylgeranyl transferase type I beta subunit

Chain J: 4% 68% 22% 8%

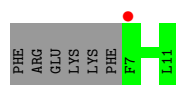




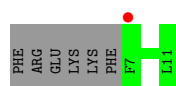
- Molecule 2: Geranylgeranyl transferase type I beta subunit



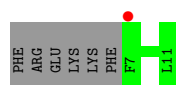
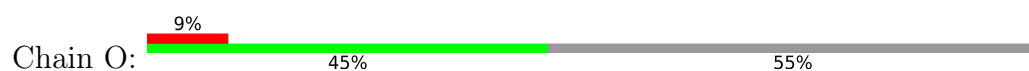
- Molecule 3: guanine nucleotide-binding protein G(I)/G(S)/G(O) gamma-2 subunit



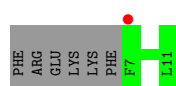
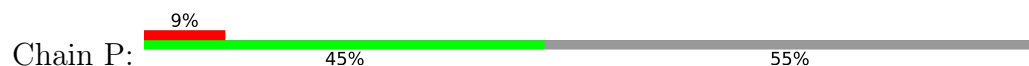
- Molecule 3: guanine nucleotide-binding protein G(I)/G(S)/G(O) gamma-2 subunit



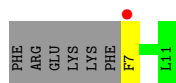
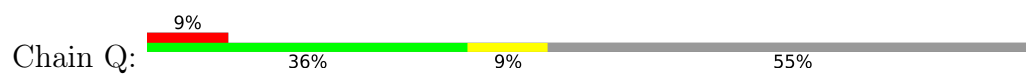
- Molecule 3: guanine nucleotide-binding protein G(I)/G(S)/G(O) gamma-2 subunit



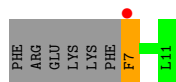
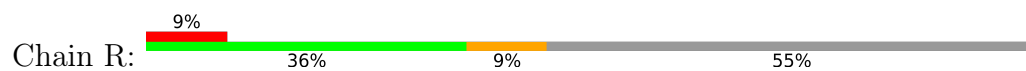
- Molecule 3: guanine nucleotide-binding protein G(I)/G(S)/G(O) gamma-2 subunit



- Molecule 3: guanine nucleotide-binding protein G(I)/G(S)/G(O) gamma-2 subunit



- Molecule 3: guanine nucleotide-binding protein G(I)/G(S)/G(O) gamma-2 subunit



4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	270.95Å 264.01Å 184.99Å 90.00° 131.72° 90.00°	Depositor
Resolution (Å)	29.91 – 2.70 29.91 – 2.70	Depositor EDS
% Data completeness (in resolution range)	91.8 (29.91-2.70) 91.7 (29.91-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.77 (at 2.48Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.193 , 0.212 0.187 , 0.206	Depositor DCC
R_{free} test set	10710 reflections (3.83%)	wwPDB-VP
Wilson B-factor (Å ²)	47.8	Xtriage
Anisotropy	0.110	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.36 , 54.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.079 for -h-2*k,l	Xtriage
F_o, F_c correlation	0.95	EDS
Total number of atoms	33566	wwPDB-VP
Average B, all atoms (Å ²)	54.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.39% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, MES, CL, MGM

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	0.41	0/2695	0.84	4/3668 (0.1%)
1	C	0.41	0/2709	0.85	4/3684 (0.1%)
1	E	0.42	0/2708	0.85	5/3684 (0.1%)
1	G	0.42	0/2699	0.87	7/3672 (0.2%)
1	I	0.42	0/2722	0.85	7/3700 (0.2%)
1	K	0.45	0/2737	0.86	7/3717 (0.2%)
2	B	0.42	0/2759	0.91	9/3733 (0.2%)
2	D	0.42	0/2775	0.89	7/3752 (0.2%)
2	F	0.44	0/2780	0.91	7/3758 (0.2%)
2	H	0.41	0/2756	0.89	7/3729 (0.2%)
2	J	0.41	0/2773	0.90	6/3750 (0.2%)
2	L	0.46	0/2785	0.91	8/3764 (0.2%)
3	M	0.60	0/38	0.75	0/48
3	N	0.49	0/39	0.74	0/50
3	O	0.61	0/39	0.83	0/50
3	P	0.58	0/39	0.91	0/50
3	Q	0.60	0/39	0.75	0/50
3	R	0.48	0/39	0.65	0/50
All	All	0.43	0/33131	0.88	78/44909 (0.2%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	E	0	1
2	B	0	2
2	D	0	1
2	H	0	1
2	J	0	1

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Mol	Chain	#Chirality outliers	#Planarity outliers
2	L	0	1
All	All	0	7

There are no bond length outliers.

All (78) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	F	259	GLY	N-CA-C	-10.14	98.10	112.60
2	D	259	GLY	N-CA-C	-9.98	98.33	112.60
2	L	259	GLY	N-CA-C	-9.82	98.56	112.60
2	J	259	GLY	N-CA-C	-9.79	98.61	112.60
2	H	259	GLY	N-CA-C	-9.69	98.74	112.60
2	B	259	GLY	N-CA-C	-9.47	99.06	112.60
1	K	185	GLU	N-CA-C	9.07	122.08	111.02
1	C	185	GLU	N-CA-C	8.97	121.96	111.02
1	E	185	GLU	N-CA-C	8.87	121.84	111.02
1	I	185	GLU	N-CA-C	8.85	121.81	111.02
1	A	185	GLU	N-CA-C	8.78	121.73	111.02
1	G	185	GLU	N-CA-C	8.38	121.25	111.02
1	A	83	GLY	CA-C-N	7.39	127.25	119.05
1	A	83	GLY	C-N-CA	7.39	127.25	119.05
1	K	348	LYS	N-CA-C	7.18	121.28	112.23
2	J	258	ASN	N-CA-C	-7.06	95.77	110.80
2	L	258	ASN	N-CA-C	-6.96	95.98	110.80
2	H	258	ASN	N-CA-C	-6.92	96.07	110.80
2	D	258	ASN	N-CA-C	-6.91	96.09	110.80
2	B	258	ASN	N-CA-C	-6.76	96.40	110.80
2	F	258	ASN	N-CA-C	-6.74	96.45	110.80
2	D	257	GLN	N-CA-C	-6.60	105.23	113.55
2	H	257	GLN	N-CA-C	-6.55	105.29	113.55
2	F	257	GLN	N-CA-C	-6.44	105.44	113.55
2	B	257	GLN	N-CA-C	-6.36	105.54	113.55
2	L	257	GLN	N-CA-C	-6.35	105.55	113.55
2	J	257	GLN	N-CA-C	-6.30	105.61	113.55
1	I	292	TYR	CA-C-N	6.29	126.50	119.32
1	I	292	TYR	C-N-CA	6.29	126.50	119.32
2	B	36	LEU	CA-C-N	6.12	126.03	119.85
2	B	36	LEU	C-N-CA	6.12	126.03	119.85
2	L	273	SER	N-CA-C	-6.05	105.00	112.38
1	K	292	TYR	CA-C-N	5.96	127.28	119.84
1	K	292	TYR	C-N-CA	5.96	127.28	119.84
2	F	273	SER	N-CA-C	-5.91	105.17	112.38

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	E	347	GLU	N-CA-C	5.86	121.30	114.62
2	B	273	SER	N-CA-C	-5.85	105.24	112.38
2	J	273	SER	N-CA-C	-5.83	105.27	112.38
1	G	83	GLY	CA-C-N	5.82	125.51	119.05
1	G	83	GLY	C-N-CA	5.82	125.51	119.05
1	G	347	GLU	N-CA-C	5.67	121.08	114.62
2	H	273	SER	N-CA-C	-5.67	105.47	112.38
2	F	341	HIS	CA-C-N	5.66	126.03	119.47
2	F	341	HIS	C-N-CA	5.66	126.03	119.47
2	D	273	SER	N-CA-C	-5.64	105.49	112.38
1	E	83	GLY	CA-C-N	5.55	125.01	119.24
1	E	83	GLY	C-N-CA	5.55	125.01	119.24
2	D	125	THR	N-CA-C	-5.37	105.43	111.28
1	C	346	LYS	N-CA-C	5.35	118.02	111.82
2	H	175	VAL	N-CA-C	-5.29	105.38	110.72
2	D	162	CYS	N-CA-C	-5.26	102.40	110.14
2	H	162	CYS	N-CA-C	-5.23	102.45	110.14
2	J	162	CYS	N-CA-C	-5.22	102.46	110.14
2	D	353	ARG	N-CA-C	-5.21	105.60	111.28
1	C	83	GLY	CA-C-N	5.20	124.82	119.05
1	C	83	GLY	C-N-CA	5.20	124.82	119.05
2	H	125	THR	N-CA-C	-5.18	105.63	111.28
2	L	189	SER	N-CA-C	-5.16	106.82	113.01
1	I	83	GLY	CA-C-N	5.14	124.75	119.05
1	I	83	GLY	C-N-CA	5.14	124.75	119.05
1	K	350	THR	N-CA-C	5.13	118.32	111.75
2	B	175	VAL	N-CA-C	-5.13	105.54	110.72
2	L	125	THR	N-CA-C	-5.12	105.70	111.28
2	F	162	CYS	N-CA-C	-5.12	102.62	110.14
1	G	183	SER	N-CA-C	5.11	118.29	111.75
1	G	336	LYS	N-CA-C	-5.10	105.80	111.36
1	G	346	LYS	N-CA-C	5.10	117.74	111.82
1	I	270	VAL	CA-C-N	5.09	125.37	119.47
1	I	270	VAL	C-N-CA	5.09	125.37	119.47
1	E	183	SER	N-CA-C	5.08	118.25	111.75
2	J	125	THR	N-CA-C	-5.07	105.75	111.28
2	L	162	CYS	N-CA-C	-5.06	102.70	110.14
2	B	125	THR	N-CA-C	-5.04	105.86	111.36
2	B	189	SER	N-CA-C	-5.04	106.96	113.01
2	L	353	ARG	N-CA-C	-5.04	105.92	111.71
1	K	83	GLY	CA-C-N	5.01	124.61	119.05
1	K	83	GLY	C-N-CA	5.01	124.61	119.05

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Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
1	A	183	SER	N-CA-C	5.00	118.16	111.75

There are no chirality outliers.

All (7) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	272	TYR	Sidechain
2	B	297	TYR	Sidechain
2	D	272	TYR	Sidechain
1	E	102	TYR	Sidechain
2	H	272	TYR	Sidechain
2	J	272	TYR	Sidechain
2	L	272	TYR	Sidechain

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	2629	0	2520	67	0
1	C	2643	0	2540	62	0
1	E	2642	0	2534	81	0
1	G	2633	0	2524	66	0
1	I	2656	0	2560	58	0
1	K	2671	0	2588	51	0
2	B	2697	0	2600	70	0
2	D	2713	0	2628	68	0
2	F	2718	0	2635	50	0
2	H	2694	0	2590	74	0
2	J	2711	0	2616	61	0
2	L	2723	0	2643	54	0
3	M	38	0	38	0	0
3	N	39	0	39	0	0
3	O	39	0	39	0	0
3	P	39	0	39	0	0
3	Q	39	0	39	1	0
3	R	39	0	39	1	0
4	B	1	0	0	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	D	1	0	0	0	0
4	F	1	0	0	0	0
4	H	1	0	0	0	0
4	J	1	0	0	0	0
4	L	1	0	0	0	0
5	B	1	0	0	0	0
5	D	1	0	0	0	0
5	F	1	0	0	0	0
5	H	1	0	0	0	0
5	J	1	0	0	0	0
5	L	1	0	0	0	0
6	B	29	0	34	2	0
6	D	29	0	34	3	0
6	F	29	0	34	1	0
6	H	29	0	34	3	0
6	J	29	0	34	3	0
6	L	29	0	34	2	0
7	F	12	0	13	1	0
8	A	66	0	0	1	0
8	B	54	0	0	2	0
8	C	69	0	0	1	0
8	D	79	0	0	4	0
8	E	63	0	0	0	0
8	F	84	0	0	2	0
8	G	70	0	0	2	0
8	H	58	0	0	2	0
8	I	80	0	0	0	0
8	J	71	0	0	0	0
8	K	160	0	0	3	0
8	L	123	0	0	0	0
8	M	7	0	0	0	0
8	N	5	0	0	0	0
8	O	5	0	0	0	0
8	P	5	0	0	0	0
8	Q	3	0	0	0	0
8	R	3	0	0	0	0
All	All	33566	0	31428	727	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 11.

All (727) 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:K:156:ILE:HG12	1:K:172:ARG:HH12	1.00	1.15
1:A:156:ILE:HG12	1:A:172:ARG:HH12	1.06	1.10
1:I:156:ILE:HG12	1:I:172:ARG:HH12	1.14	1.08
1:C:156:ILE:HG12	1:C:172:ARG:HH12	1.17	1.05
1:G:156:ILE:HG12	1:G:172:ARG:HH12	1.18	1.03
1:E:156:ILE:HG12	1:E:172:ARG:HH12	1.15	1.03
1:K:156:ILE:HG12	1:K:172:ARG:NH1	1.85	0.90
1:A:348:LYS:HA	1:A:348:LYS:HE2	1.53	0.89
1:C:353:LYS:HE3	1:K:339:GLU:HG3	1.59	0.85
1:E:318:ILE:HG22	1:E:322:MET:HE3	1.59	0.84
1:A:156:ILE:HG12	1:A:172:ARG:NH1	1.91	0.83
1:K:156:ILE:CG1	1:K:172:ARG:HH12	1.88	0.83
1:E:87:VAL:HG12	1:E:88:VAL:HG23	1.61	0.80
1:E:231:VAL:HG23	1:E:266:MET:HE3	1.64	0.79
1:I:156:ILE:HG12	1:I:172:ARG:NH1	1.97	0.79
1:E:255:VAL:HG13	1:E:258:ARG:NH2	1.99	0.78
1:E:312:ILE:HG23	1:E:340:LEU:HD22	1.64	0.78
1:C:87:VAL:HG12	1:C:88:VAL:HG23	1.66	0.78
1:A:152:MET:O	1:A:156:ILE:HG13	1.83	0.77
1:K:152:MET:O	1:K:156:ILE:HG13	1.84	0.77
1:I:156:ILE:CG1	1:I:172:ARG:HH12	1.96	0.77
2:D:39:ARG:H	2:D:39:ARG:HE	1.32	0.77
1:G:152:MET:O	1:G:156:ILE:HG13	1.85	0.76
1:I:152:MET:O	1:I:156:ILE:HG13	1.85	0.76
1:E:296:LEU:HD22	1:E:322:MET:HE1	1.66	0.76
1:I:353:LYS:HG3	1:I:354:GLU:N	1.99	0.75
1:E:152:MET:O	1:E:156:ILE:HG13	1.86	0.75
1:E:156:ILE:HG12	1:E:172:ARG:NH1	1.99	0.75
2:L:133:ILE:HD13	2:L:354:LEU:HD13	1.69	0.75
2:D:38:GLU:HB3	2:D:39:ARG:HH21	1.51	0.74
2:F:349:ARG:HB2	7:F:380:MES:H82	1.68	0.74
2:H:202:ARG:HG3	2:H:202:ARG:HH11	1.51	0.74
2:F:133:ILE:HD13	2:F:354:LEU:HD13	1.67	0.74
1:E:156:ILE:CG1	1:E:172:ARG:HH12	2.00	0.73
2:H:348:THR:O	2:H:352:GLU:HG2	1.89	0.72
1:I:329:ASN:HB3	1:I:332:ASP:HB3	1.68	0.72
1:C:312:ILE:HG23	1:C:340:LEU:HD22	1.72	0.72
1:K:330:LYS:HE2	1:K:367:HIS:HB3	1.71	0.72
1:I:231:VAL:HG23	1:I:266:MET:HE3	1.71	0.71
2:F:355:ARG:HH11	2:F:355:ARG:HB3	1.54	0.71
1:G:87:VAL:HG12	1:G:88:VAL:HG23	1.72	0.71
1:I:87:VAL:HG12	1:I:88:VAL:HG23	1.72	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:339:LYS:O	2:F:348:THR:HG23	1.91	0.70
1:C:152:MET:O	1:C:156:ILE:HG13	1.90	0.70
1:G:251:SER:HA	1:G:287:ARG:HH22	1.57	0.70
1:A:287:ARG:O	1:A:291:ARG:HD3	1.92	0.69
2:H:87:ARG:HH12	2:H:90:LEU:HD11	1.57	0.69
2:H:296:ASN:HD22	2:H:296:ASN:C	1.98	0.69
2:J:133:ILE:HD13	2:J:354:LEU:HD13	1.74	0.69
1:A:339:GLU:O	1:A:343:ILE:HG13	1.92	0.69
2:H:92:ARG:HD2	2:H:119:SER:OG	1.93	0.69
2:J:311:LYS:HD2	3:Q:7:PHE:HB3	1.74	0.69
1:A:251:SER:HA	1:A:287:ARG:HH22	1.55	0.69
1:A:344:LEU:HA	1:A:348:LYS:HB2	1.74	0.69
1:I:312:ILE:HG23	1:I:340:LEU:HD22	1.74	0.69
2:B:133:ILE:HD13	2:B:354:LEU:HD13	1.73	0.69
2:L:197:ILE:HD11	2:L:235:LYS:HD3	1.75	0.68
2:B:22:ARG:HG2	2:B:22:ARG:HH11	1.58	0.68
1:I:91:ILE:HD12	1:I:91:ILE:O	1.92	0.68
2:F:165:PRO:HG3	8:F:397:HOH:O	1.94	0.68
1:A:214:ARG:HG2	1:G:180:LYS:HB2	1.76	0.67
2:D:133:ILE:HD13	2:D:354:LEU:HD13	1.74	0.67
2:D:38:GLU:HB3	2:D:39:ARG:NH2	2.10	0.67
1:K:91:ILE:HD12	1:K:91:ILE:O	1.95	0.67
1:G:156:ILE:CG1	1:G:172:ARG:HH12	2.04	0.67
1:A:340:LEU:HD23	1:A:343:ILE:HD12	1.77	0.67
2:D:295:ARG:CZ	2:D:299:LEU:HD11	2.25	0.66
2:D:353:ARG:NH1	2:D:357:LEU:HG	2.11	0.66
2:B:186:ASN:HB2	2:B:358:HIS:CE1	2.31	0.66
1:E:65:LEU:HD12	1:E:67:ARG:NH1	2.11	0.66
2:B:26:VAL:O	2:B:30:GLN:HG3	1.97	0.65
2:F:355:ARG:HB3	2:F:355:ARG:NH1	2.10	0.65
1:K:251:SER:HA	1:K:287:ARG:HH22	1.62	0.65
1:A:91:ILE:HD12	1:A:91:ILE:O	1.96	0.65
2:D:353:ARG:HG3	8:D:446:HOH:O	1.95	0.65
1:A:87:VAL:HG12	1:A:88:VAL:HG23	1.79	0.65
1:C:78:VAL:HG21	1:C:108:GLN:NE2	2.11	0.65
1:K:303:GLN:HB3	1:K:304:PRO:HD3	1.79	0.65
1:C:339:GLU:O	1:C:343:ILE:HG13	1.96	0.65
1:K:87:VAL:HG12	1:K:88:VAL:HG23	1.77	0.65
1:G:91:ILE:HD12	1:G:91:ILE:O	1.97	0.64
1:K:91:ILE:HG13	2:L:36:LEU:O	1.97	0.64
2:H:334:GLU:HB3	2:H:337:ILE:HD12	1.79	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:79:LEU:O	2:L:96:ARG:HG3	1.97	0.64
1:G:318:ILE:HG22	1:G:322:MET:HE2	1.79	0.64
2:L:133:ILE:CD1	2:L:354:LEU:HD13	2.28	0.64
2:J:334:GLU:HB3	2:J:337:ILE:HD12	1.79	0.63
1:E:339:GLU:O	1:E:343:ILE:HG13	1.98	0.63
2:B:258:ASN:OD1	2:B:259:GLY:N	2.31	0.63
1:C:156:ILE:HG12	1:C:172:ARG:NH1	2.02	0.63
1:C:148:LEU:HB2	1:C:179:LEU:HD21	1.81	0.63
1:E:91:ILE:O	1:E:91:ILE:HD12	1.98	0.63
2:F:69:LYS:O	2:F:73:ILE:HG13	1.99	0.63
1:A:303:GLN:O	1:A:307:SER:HB2	1.99	0.62
1:G:339:GLU:O	1:G:343:ILE:HG13	1.99	0.62
1:G:357:ARG:O	1:G:361:ARG:HG3	1.98	0.62
2:F:37:PRO:HB2	2:F:39:ARG:HG2	1.82	0.62
1:A:274:GLU:HG3	1:A:310:TYR:CE2	2.35	0.62
1:I:339:GLU:O	1:I:343:ILE:HG13	1.99	0.62
2:B:353:ARG:HG2	2:B:353:ARG:HH11	1.65	0.62
1:C:91:ILE:O	1:C:91:ILE:HD12	2.00	0.62
1:G:312:ILE:HG23	1:G:340:LEU:HD22	1.81	0.62
2:H:133:ILE:HD13	2:H:354:LEU:HD13	1.81	0.62
2:B:37:PRO:HB2	2:B:39:ARG:HG2	1.80	0.62
2:D:38:GLU:CB	2:D:39:ARG:HH21	2.13	0.61
1:G:343:ILE:HG22	1:G:348:LYS:HG3	1.82	0.61
1:I:148:LEU:HB2	1:I:179:LEU:HD21	1.82	0.61
2:L:232:LEU:HD13	2:L:343:ALA:HB1	1.82	0.61
2:B:87:ARG:HH12	2:B:90:LEU:HD11	1.65	0.61
1:K:107:LEU:HD11	2:L:117:TYR:HB2	1.82	0.61
1:K:339:GLU:O	1:K:343:ILE:HG13	2.00	0.61
1:E:255:VAL:HG13	1:E:258:ARG:HH21	1.65	0.61
1:G:69:ARG:HB3	1:G:71:GLU:OE1	2.01	0.61
2:D:39:ARG:HE	2:D:39:ARG:N	1.98	0.61
2:L:110:ASN:HB3	2:L:111:PRO:HD2	1.82	0.61
2:D:69:LYS:O	2:D:73:ILE:HG13	2.00	0.61
2:J:269:ASP:HB3	2:J:272:TYR:HD2	1.66	0.60
1:A:71:GLU:CD	1:A:71:GLU:H	2.09	0.60
1:C:88:VAL:CG1	2:D:36:LEU:HD11	2.31	0.60
2:L:269:ASP:HB3	2:L:272:TYR:HD2	1.66	0.60
2:L:133:ILE:HG22	2:L:350:THR:HG23	1.83	0.60
2:B:21:LEU:HD11	2:B:304:ARG:NH2	2.17	0.60
1:E:231:VAL:CG2	1:E:266:MET:HE3	2.29	0.60
1:C:303:GLN:O	1:C:307:SER:HB2	2.01	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:148:LEU:HB2	1:E:179:LEU:HD21	1.82	0.60
2:H:269:ASP:HB3	2:H:272:TYR:HD2	1.67	0.60
2:B:37:PRO:HB3	2:B:39:ARG:CZ	2.32	0.59
1:G:148:LEU:HB2	1:G:179:LEU:HD21	1.84	0.59
1:I:100:TYR:O	1:I:104:ARG:HG3	2.02	0.59
1:I:231:VAL:CG2	1:I:266:MET:HE3	2.31	0.59
2:B:69:LYS:O	2:B:73:ILE:HG13	2.02	0.59
1:I:334:LEU:HD22	1:I:367:HIS:O	2.03	0.59
1:A:93:SER:N	2:B:38:GLU:OE2	2.33	0.59
1:A:328:ASP:O	1:A:329:ASN:HB2	2.02	0.59
2:D:110:ASN:N	2:D:110:ASN:ND2	2.49	0.59
2:J:232:LEU:HD13	2:J:343:ALA:HB1	1.84	0.59
2:L:210:LEU:HB2	2:L:223:THR:HA	1.85	0.59
2:B:269:ASP:HB3	2:B:272:TYR:HD2	1.68	0.59
2:D:138:ASP:OD1	2:D:140:SER:HB3	2.03	0.59
2:H:69:LYS:O	2:H:73:ILE:HG13	2.01	0.59
1:I:328:ASP:O	1:I:329:ASN:HB2	2.03	0.59
2:F:232:LEU:HD13	2:F:343:ALA:HB1	1.85	0.58
2:L:334:GLU:HB3	2:L:337:ILE:HD12	1.85	0.58
1:A:232:ARG:HA	1:A:273:ASN:HD21	1.66	0.58
2:B:210:LEU:HB2	2:B:223:THR:HA	1.84	0.58
1:G:100:TYR:O	1:G:104:ARG:HG3	2.03	0.58
1:G:105:ALA:O	1:G:109:ARG:HG3	2.04	0.58
1:G:329:ASN:HB3	1:G:332:ASP:HB3	1.86	0.58
1:G:334:LEU:HD22	1:G:367:HIS:O	2.04	0.58
2:H:210:LEU:HB2	2:H:223:THR:HA	1.86	0.58
2:F:121:HIS:HB3	2:F:124:MET:HG2	1.86	0.58
2:H:18:LEU:HD22	2:H:18:LEU:N	2.19	0.58
2:D:202:ARG:HD2	8:D:428:HOH:O	2.04	0.57
2:F:269:ASP:HB3	2:F:272:TYR:HD2	1.67	0.57
1:G:303:GLN:O	1:G:307:SER:HB2	2.04	0.57
1:C:189:ILE:HD11	1:C:205:HIS:HD2	1.69	0.57
1:C:334:LEU:HD22	1:C:367:HIS:O	2.04	0.57
2:J:210:LEU:HB2	2:J:223:THR:HA	1.85	0.57
1:K:303:GLN:O	1:K:307:SER:HB2	2.04	0.57
2:L:110:ASN:HD22	2:L:110:ASN:N	2.01	0.57
2:D:269:ASP:HB3	2:D:272:TYR:HD2	1.68	0.57
1:I:101:ASP:HA	1:I:104:ARG:HH11	1.70	0.57
1:I:255:VAL:HG13	1:I:258:ARG:NH2	2.19	0.57
2:L:357:LEU:O	2:L:360:SER:HB3	2.03	0.57
1:E:296:LEU:CD2	1:E:322:MET:HE1	2.34	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:91:ILE:HD11	2:J:38:GLU:H	1.69	0.57
1:K:348:LYS:HD2	8:K:483:HOH:O	2.04	0.57
1:A:148:LEU:HB2	1:A:179:LEU:HD21	1.87	0.57
1:C:69:ARG:HB3	1:C:71:GLU:OE1	2.05	0.57
2:D:210:LEU:HB2	2:D:223:THR:HA	1.85	0.57
2:F:210:LEU:HB2	2:F:223:THR:HA	1.85	0.57
1:I:311:LEU:HD23	1:I:311:LEU:C	2.30	0.56
2:D:121:HIS:HB3	2:D:124:MET:HG2	1.87	0.56
2:J:197:ILE:HD11	2:J:235:LYS:HD3	1.86	0.56
1:K:189:ILE:HD11	1:K:205:HIS:HD2	1.70	0.56
1:A:92:TYR:O	1:A:97:ARG:NH2	2.38	0.56
2:D:110:ASN:N	2:D:110:ASN:HD22	2.03	0.56
1:C:88:VAL:HG13	2:D:36:LEU:HD11	1.88	0.56
2:B:22:ARG:HG2	2:B:22:ARG:NH1	2.16	0.56
1:G:189:ILE:HD11	1:G:205:HIS:HD2	1.70	0.56
2:H:202:ARG:HG3	2:H:202:ARG:NH1	2.20	0.56
1:E:189:ILE:HD11	1:E:205:HIS:HD2	1.70	0.56
1:G:65:LEU:HD12	1:G:67:ARG:NH1	2.21	0.56
1:E:91:ILE:HD12	2:F:38:GLU:HB2	1.88	0.55
1:G:88:VAL:CG1	2:H:36:LEU:HD11	2.36	0.55
1:G:91:ILE:HD12	2:H:38:GLU:HB2	1.88	0.55
2:J:138:ASP:HA	2:J:357:LEU:HD11	1.87	0.55
1:A:329:ASN:HB3	1:A:332:ASP:HB3	1.89	0.55
2:B:336:GLY:HA2	2:J:305:LEU:CD1	2.36	0.55
2:J:359:GLN:C	2:J:361:TRP:H	2.14	0.55
1:C:100:TYR:O	1:C:104:ARG:HG3	2.06	0.55
2:B:353:ARG:HH12	2:B:357:LEU:HG	1.72	0.55
6:D:380:MGM:HC42	8:D:445:HOH:O	2.06	0.55
2:D:295:ARG:NH2	2:D:299:LEU:HD11	2.22	0.55
1:K:311:LEU:C	1:K:311:LEU:HD23	2.32	0.55
1:K:71:GLU:H	1:K:71:GLU:CD	2.15	0.54
1:G:156:ILE:HG12	1:G:172:ARG:NH1	2.03	0.54
1:I:107:LEU:HD11	2:J:117:TYR:HB2	1.88	0.54
2:H:349:ARG:O	2:H:352:GLU:HB2	2.08	0.54
2:L:245:LEU:O	2:L:249:LYS:HG3	2.07	0.54
2:H:229:SER:O	2:H:233:MET:HG3	2.08	0.54
2:B:258:ASN:CG	2:B:259:GLY:H	2.14	0.54
1:K:148:LEU:HB2	1:K:179:LEU:HD21	1.90	0.54
1:C:101:ASP:HA	1:C:104:ARG:HH11	1.72	0.54
1:I:325:ASN:O	1:I:326:GLN:C	2.50	0.54
2:J:77:TYR:CE1	2:J:141:ARG:HB2	2.43	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:79:PRO:HA	1:K:101:ASP:OD1	2.08	0.54
1:E:329:ASN:HB3	1:E:332:ASP:HB3	1.90	0.54
1:G:287:ARG:O	1:G:291:ARG:HD3	2.08	0.54
2:H:121:HIS:HB3	2:H:124:MET:HG2	1.90	0.54
1:I:303:GLN:O	1:I:307:SER:HB2	2.08	0.53
1:C:328:ASP:O	1:C:329:ASN:HB2	2.07	0.53
1:G:67:ARG:NH2	1:G:94:GLU:OE1	2.34	0.53
1:A:344:LEU:HD13	1:A:356:TRP:CE2	2.43	0.53
2:B:121:HIS:HB3	2:B:124:MET:HG2	1.91	0.53
2:D:232:LEU:HD13	2:D:343:ALA:HB1	1.90	0.53
1:G:330:LYS:HE2	1:G:367:HIS:HB3	1.91	0.53
1:G:318:ILE:HG22	1:G:322:MET:CE	2.39	0.53
1:G:325:ASN:O	1:G:326:GLN:C	2.51	0.53
2:H:245:LEU:O	2:H:249:LYS:HG3	2.09	0.53
2:L:39:ARG:HG3	2:L:40:TYR:CE1	2.44	0.53
1:G:265:GLU:O	1:G:269:LEU:HD13	2.09	0.53
2:H:133:ILE:HG22	2:H:350:THR:HG23	1.91	0.53
1:K:265:GLU:O	1:K:269:LEU:HD13	2.09	0.53
1:A:189:ILE:HD11	1:A:205:HIS:HD2	1.74	0.53
1:E:100:TYR:O	1:E:104:ARG:HG3	2.08	0.53
1:E:251:SER:HA	1:E:287:ARG:HH22	1.74	0.53
2:D:133:ILE:HG22	2:D:350:THR:HG23	1.89	0.53
2:H:327:CYS:O	2:H:331:LEU:HD22	2.08	0.53
1:A:265:GLU:O	1:A:269:LEU:HD13	2.09	0.52
2:B:29:PHE:O	2:B:33:LEU:HD22	2.09	0.52
1:C:180:LYS:HB2	1:E:214:ARG:HG2	1.90	0.52
1:K:334:LEU:HD22	1:K:367:HIS:O	2.08	0.52
2:B:37:PRO:HD2	2:B:40:TYR:CE1	2.44	0.52
2:B:192:ASP:OD1	2:B:195:LYS:HG3	2.08	0.52
1:C:251:SER:HA	1:C:287:ARG:HH22	1.75	0.52
1:E:303:GLN:O	1:E:307:SER:HB2	2.10	0.52
1:A:312:ILE:HG23	1:A:340:LEU:HD22	1.90	0.52
1:C:303:GLN:N	1:C:304:PRO:HD2	2.24	0.52
2:H:77:TYR:CZ	2:H:141:ARG:HB2	2.44	0.52
2:D:77:TYR:CZ	2:D:141:ARG:HB2	2.45	0.52
2:D:79:LEU:O	2:D:96:ARG:HG3	2.09	0.52
1:E:325:ASN:O	1:E:326:GLN:C	2.52	0.52
1:G:88:VAL:HG13	2:H:36:LEU:HD11	1.90	0.52
2:B:256:GLN:HG3	2:B:260:TYR:CZ	2.45	0.52
2:H:30:GLN:O	2:H:34:GLN:HG3	2.09	0.52
2:L:121:HIS:HB3	2:L:124:MET:HG2	1.91	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:91:ILE:HD11	2:D:38:GLU:H	1.74	0.52
1:E:67:ARG:NH2	1:E:94:GLU:OE1	2.43	0.52
2:F:360:SER:O	2:F:363:THR:HG23	2.10	0.52
1:A:311:LEU:C	1:A:311:LEU:HD23	2.35	0.52
1:K:117:PHE:CE2	1:K:146:LYS:HE2	2.44	0.52
1:A:334:LEU:HD22	1:A:367:HIS:O	2.10	0.52
2:D:133:ILE:CD1	2:D:354:LEU:HD13	2.39	0.52
2:D:186:ASN:HB2	2:D:358:HIS:CE1	2.45	0.52
1:I:189:ILE:HD11	1:I:205:HIS:HD2	1.75	0.52
2:J:121:HIS:HB3	2:J:124:MET:HG2	1.92	0.52
1:E:69:ARG:HB3	1:E:71:GLU:OE1	2.10	0.52
1:E:117:PHE:CE2	1:E:146:LYS:HE2	2.45	0.52
2:F:186:ASN:HB2	2:F:358:HIS:CE1	2.44	0.52
2:J:33:LEU:HD22	2:J:54:ALA:HB1	1.92	0.52
1:C:214:ARG:O	1:C:214:ARG:HG2	2.10	0.51
1:C:325:ASN:O	1:C:326:GLN:C	2.53	0.51
2:B:353:ARG:HG2	2:B:353:ARG:NH1	2.24	0.51
2:J:22:ARG:HG2	2:J:22:ARG:HH11	1.75	0.51
1:E:88:VAL:CG1	2:F:36:LEU:HD11	2.41	0.51
1:I:344:LEU:HA	1:I:348:LYS:HB2	1.92	0.51
2:D:39:ARG:H	2:D:39:ARG:NE	2.05	0.51
2:D:173:ARG:HG2	6:D:380:MGM:H112	1.92	0.51
1:A:348:LYS:HA	1:A:348:LYS:CE	2.34	0.51
1:E:156:ILE:O	1:E:160:GLU:HG3	2.10	0.51
1:K:325:ASN:O	1:K:326:GLN:C	2.53	0.51
1:C:284:LEU:O	1:C:287:ARG:HG2	2.11	0.51
1:E:334:LEU:O	1:E:338:LEU:HG	2.10	0.51
1:G:207:GLN:OE1	2:H:216:LEU:HD13	2.11	0.51
2:L:22:ARG:O	2:L:26:VAL:HG23	2.10	0.51
2:J:40:TYR:CD1	2:J:40:TYR:N	2.79	0.51
1:E:265:GLU:O	1:E:269:LEU:HD13	2.11	0.50
2:J:33:LEU:CD2	2:J:54:ALA:HB1	2.42	0.50
1:A:357:ARG:HG3	1:A:357:ARG:HH11	1.77	0.50
1:K:312:ILE:HG23	1:K:340:LEU:HD22	1.92	0.50
1:C:265:GLU:O	1:C:269:LEU:HD13	2.11	0.50
2:J:27:ARG:HG3	2:J:27:ARG:HH11	1.76	0.50
2:L:110:ASN:N	2:L:110:ASN:ND2	2.60	0.50
1:A:296:LEU:CD2	1:A:322:MET:HE1	2.41	0.50
1:G:311:LEU:HD23	1:G:311:LEU:C	2.37	0.50
1:G:334:LEU:O	1:G:338:LEU:HG	2.12	0.50
2:H:64:LEU:O	2:H:67:VAL:HG22	2.11	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:334:LEU:HD22	1:E:367:HIS:O	2.11	0.50
2:H:37:PRO:C	2:H:39:ARG:H	2.20	0.50
1:A:255:VAL:HG13	1:A:258:ARG:NH2	2.27	0.50
1:E:318:ILE:HG22	1:E:322:MET:CE	2.37	0.50
1:G:340:LEU:HD23	1:G:343:ILE:HD12	1.93	0.50
1:K:88:VAL:HG12	1:K:88:VAL:O	2.11	0.50
1:A:91:ILE:HD12	2:B:38:GLU:HB2	1.93	0.50
1:A:325:ASN:O	1:A:326:GLN:C	2.54	0.50
1:G:328:ASP:O	1:G:329:ASN:HB2	2.12	0.50
1:E:101:ASP:HA	1:E:104:ARG:HH11	1.77	0.50
1:E:301:ASP:O	1:E:304:PRO:HD2	2.11	0.50
1:E:97:ARG:HG2	1:E:101:ASP:OD2	2.11	0.50
1:G:78:VAL:O	1:G:104:ARG:HD2	2.12	0.50
2:B:173:ARG:HG2	6:B:380:MGM:H112	1.94	0.49
2:H:186:ASN:HB2	2:H:358:HIS:CE1	2.47	0.49
2:H:296:ASN:C	2:H:296:ASN:ND2	2.68	0.49
1:K:198:LYS:HD3	2:L:266:LYS:HD3	1.93	0.49
2:H:87:ARG:HB3	2:H:87:ARG:NH1	2.26	0.49
2:J:27:ARG:HG3	2:J:27:ARG:NH1	2.26	0.49
2:J:69:LYS:O	2:J:73:ILE:HG13	2.12	0.49
1:K:107:LEU:CD1	2:L:117:TYR:HB2	2.42	0.49
2:D:37:PRO:HG2	2:D:40:TYR:CD1	2.48	0.49
2:B:245:LEU:O	2:B:249:LYS:HG3	2.12	0.49
2:D:37:PRO:HG2	2:D:40:TYR:CE1	2.48	0.49
2:F:77:TYR:CZ	2:F:141:ARG:HB2	2.48	0.49
2:L:236:LEU:HD22	2:L:245:LEU:HD21	1.95	0.49
1:G:215:LEU:HA	8:G:414:HOH:O	2.12	0.49
2:H:33:LEU:HD22	2:H:54:ALA:HB1	1.94	0.49
1:E:78:VAL:O	1:E:104:ARG:HD2	2.12	0.49
1:G:101:ASP:HA	1:G:104:ARG:HH11	1.77	0.49
1:I:323:LEU:HB3	1:I:367:HIS:CD2	2.48	0.49
1:A:191:ASP:O	1:A:194:ASN:HB2	2.13	0.49
2:D:236:LEU:HD22	2:D:245:LEU:HD21	1.95	0.49
1:G:252:ASP:OD1	1:G:255:VAL:HG23	2.13	0.49
2:B:77:TYR:CZ	2:B:141:ARG:HB2	2.47	0.49
2:B:249:LYS:HB3	2:B:285:ILE:HD13	1.95	0.49
1:K:91:ILE:HD11	2:L:38:GLU:H	1.77	0.49
1:A:334:LEU:O	1:A:338:LEU:HG	2.12	0.49
2:D:29:PHE:O	2:D:33:LEU:HD22	2.13	0.49
2:J:27:ARG:HH12	2:J:30:GLN:NE2	2.11	0.49
2:J:258:ASN:OD1	2:J:259:GLY:N	2.40	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:77:TYR:CZ	2:L:141:ARG:HB2	2.48	0.49
2:H:353:ARG:O	2:H:357:LEU:HB2	2.12	0.48
2:L:55:LEU:HD11	2:L:72:ILE:HG21	1.95	0.48
1:A:78:VAL:O	1:A:104:ARG:HD2	2.14	0.48
1:A:88:VAL:HG13	2:B:36:LEU:HD11	1.94	0.48
2:B:37:PRO:HD2	2:B:40:TYR:CD1	2.47	0.48
2:H:249:LYS:HB3	2:H:285:ILE:HD13	1.96	0.48
2:L:30:GLN:O	2:L:34:GLN:HG3	2.12	0.48
2:B:303:ASP:CG	2:B:306:VAL:HG22	2.38	0.48
1:A:151:GLU:HG3	1:A:175:LEU:HD11	1.95	0.48
2:B:37:PRO:HB2	2:B:39:ARG:CG	2.44	0.48
2:F:70:ASP:O	2:F:74:GLU:HG2	2.14	0.48
1:I:82:ASP:HB2	1:I:86:PRO:HB3	1.95	0.48
1:I:265:GLU:O	1:I:269:LEU:HD13	2.13	0.48
1:A:88:VAL:HG12	1:A:88:VAL:O	2.14	0.48
1:A:117:PHE:CE2	1:A:146:LYS:HE2	2.48	0.48
1:C:97:ARG:HG2	1:C:101:ASP:OD2	2.14	0.48
1:G:91:ILE:HD11	2:H:38:GLU:H	1.78	0.48
2:J:79:LEU:O	2:J:96:ARG:HG3	2.13	0.48
2:J:359:GLN:C	2:J:361:TRP:N	2.70	0.48
1:C:78:VAL:O	1:C:104:ARG:HD2	2.14	0.48
1:C:91:ILE:HD12	2:D:38:GLU:HB2	1.96	0.48
1:G:319:TYR:HA	1:G:322:MET:HE3	1.96	0.48
2:B:87:ARG:NH1	2:B:90:LEU:HD11	2.28	0.48
2:H:26:VAL:O	2:H:30:GLN:HG3	2.13	0.48
2:H:37:PRO:C	2:H:39:ARG:N	2.70	0.48
1:I:353:LYS:CG	1:I:354:GLU:N	2.74	0.48
2:J:22:ARG:HG2	2:J:22:ARG:NH1	2.28	0.48
1:E:328:ASP:O	1:E:329:ASN:HB2	2.14	0.48
2:J:22:ARG:O	2:J:26:VAL:HG23	2.13	0.48
2:J:236:LEU:HD22	2:J:245:LEU:HD21	1.95	0.48
1:I:78:VAL:O	1:I:104:ARG:HD2	2.14	0.47
2:F:29:PHE:O	2:F:33:LEU:HD22	2.14	0.47
2:L:103:ILE:HG23	2:L:104:PRO:HD2	1.95	0.47
1:C:286:ASP:HB2	8:C:425:HOH:O	2.14	0.47
2:J:256:GLN:HB2	2:J:260:TYR:CE2	2.49	0.47
1:K:67:ARG:HA	1:K:102:TYR:OH	2.13	0.47
2:L:353:ARG:HD3	2:L:353:ARG:O	2.14	0.47
2:H:138:ASP:OD1	2:H:140:SER:HB3	2.13	0.47
1:I:340:LEU:HD23	1:I:343:ILE:HD12	1.96	0.47
2:L:249:LYS:HB3	2:L:285:ILE:HD13	1.96	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:207:GLN:OE1	2:B:216:LEU:HD13	2.15	0.47
2:F:130:SER:O	2:F:134:ILE:HG13	2.14	0.47
2:F:77:TYR:CE1	2:F:141:ARG:HB2	2.49	0.47
2:F:256:GLN:HB2	2:F:260:TYR:CE2	2.49	0.47
2:B:250:ARG:O	2:B:254:MET:HG2	2.14	0.47
1:E:284:LEU:O	1:E:287:ARG:HG2	2.15	0.47
2:H:256:GLN:HB2	2:H:260:TYR:CE2	2.50	0.47
2:F:249:LYS:HB3	2:F:285:ILE:HD13	1.96	0.47
2:J:353:ARG:HD3	2:J:353:ARG:C	2.40	0.47
1:A:274:GLU:HG2	1:A:278:ASN:HD21	1.79	0.47
1:A:296:LEU:O	1:A:300:LEU:HG	2.14	0.47
1:E:74:ASP:OD2	1:E:74:ASP:N	2.45	0.47
1:E:332:ASP:O	1:E:336:LYS:HG3	2.15	0.47
2:H:22:ARG:HH11	2:H:22:ARG:HG2	1.79	0.47
2:H:33:LEU:CD2	2:H:54:ALA:HB1	2.44	0.47
1:I:67:ARG:NH2	1:I:94:GLU:OE1	2.48	0.47
2:J:77:TYR:CZ	2:J:141:ARG:HB2	2.50	0.47
1:I:191:ASP:O	1:I:194:ASN:HB2	2.13	0.47
2:J:64:LEU:O	2:J:67:VAL:HG22	2.15	0.47
1:K:91:ILE:HD11	2:L:38:GLU:N	2.30	0.47
2:B:236:LEU:HD22	2:B:245:LEU:HD21	1.97	0.46
2:L:311:LYS:HD2	3:R:7:PHE:HB3	1.96	0.46
2:B:232:LEU:HD13	2:B:343:ALA:HB1	1.97	0.46
2:D:82:LEU:HD11	2:D:108:SER:HA	1.97	0.46
1:C:219:GLU:HA	1:C:219:GLU:OE1	2.16	0.46
2:D:115:HIS:ND1	2:D:116:PRO:HD2	2.29	0.46
1:E:198:LYS:HD3	2:F:266:LYS:HD3	1.96	0.46
1:K:223:VAL:HG11	1:K:240:ARG:HB2	1.97	0.46
1:A:214:ARG:HG3	1:A:214:ARG:O	2.15	0.46
1:E:110:ASP:OD2	1:E:112:ARG:NE	2.38	0.46
1:K:328:ASP:O	1:K:329:ASN:HB2	2.16	0.46
1:A:88:VAL:CG1	2:B:36:LEU:HD11	2.45	0.46
2:D:19:ASP:OD2	2:D:19:ASP:N	2.48	0.46
2:D:245:LEU:O	2:D:249:LYS:HG3	2.15	0.46
2:D:357:LEU:HD22	2:D:361:TRP:CZ2	2.50	0.46
1:I:72:TRP:CZ2	1:I:115:ARG:HB2	2.51	0.46
2:J:229:SER:O	2:J:233:MET:HG3	2.15	0.46
2:L:258:ASN:OD1	2:L:259:GLY:N	2.43	0.46
2:D:249:LYS:HB3	2:D:285:ILE:HD13	1.98	0.46
1:G:207:GLN:HG2	1:G:242:PHE:CE2	2.50	0.46
2:L:353:ARG:HD3	2:L:353:ARG:C	2.40	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:287:ARG:O	1:C:291:ARG:HD3	2.16	0.46
2:D:110:ASN:HB3	2:D:111:PRO:HD2	1.97	0.46
2:F:39:ARG:NH1	2:F:40:TYR:HE1	2.13	0.46
2:L:82:LEU:HD11	2:L:108:SER:HA	1.97	0.46
2:H:269:ASP:HB3	2:H:272:TYR:CD2	2.50	0.46
2:L:256:GLN:HB2	2:L:260:TYR:CE2	2.51	0.46
2:B:256:GLN:HE22	2:B:290:ASN:HB3	1.80	0.46
2:D:103:ILE:HG23	2:D:104:PRO:HD2	1.97	0.46
2:F:349:ARG:HG3	2:F:349:ARG:HH11	1.81	0.46
1:A:91:ILE:HD11	2:B:38:GLU:H	1.81	0.46
1:E:156:ILE:HD11	1:E:172:ARG:HH22	1.81	0.46
1:G:189:ILE:HG21	1:G:206:ARG:HB2	1.98	0.46
2:H:130:SER:O	2:H:134:ILE:HG13	2.16	0.46
2:H:188:TRP:CZ3	2:H:191:MET:HE3	2.50	0.46
2:J:351:SER:O	2:J:354:LEU:HB3	2.16	0.46
2:B:82:LEU:HD11	2:B:108:SER:HA	1.97	0.45
2:B:96:ARG:HD3	8:B:417:HOH:O	2.16	0.45
2:B:130:SER:O	2:B:134:ILE:HG13	2.16	0.45
2:F:245:LEU:O	2:F:249:LYS:HG3	2.16	0.45
1:G:100:TYR:C	1:G:104:ARG:NH1	2.74	0.45
2:H:22:ARG:HG2	2:H:22:ARG:NH1	2.30	0.45
2:H:236:LEU:HD22	2:H:245:LEU:HD21	1.98	0.45
2:L:269:ASP:HB3	2:L:272:TYR:CD2	2.49	0.45
2:D:30:GLN:O	2:D:34:GLN:HG3	2.16	0.45
1:E:92:TYR:O	1:E:97:ARG:NH2	2.50	0.45
1:E:110:ASP:CG	1:E:112:ARG:HE	2.24	0.45
2:H:198:SER:OG	2:H:202:ARG:NH1	2.50	0.45
2:H:230:LEU:HD22	2:H:239:VAL:HG21	1.98	0.45
1:K:82:ASP:HB2	1:K:86:PRO:HB3	1.99	0.45
2:F:250:ARG:O	2:F:254:MET:HG2	2.16	0.45
1:I:223:VAL:HG11	1:I:240:ARG:HB2	1.99	0.45
2:J:295:ARG:HG2	2:J:295:ARG:HH11	1.82	0.45
2:D:37:PRO:O	2:D:39:ARG:N	2.50	0.45
2:F:172:MET:HE1	2:F:200:ILE:HA	1.99	0.45
2:H:258:ASN:OD1	2:H:259:GLY:N	2.42	0.45
6:H:380:MGM:O1	6:H:380:MGM:HC41	2.16	0.45
1:I:79:PRO:HA	1:I:101:ASP:OD1	2.16	0.45
1:K:357:ARG:HD2	8:K:434:HOH:O	2.16	0.45
1:A:261:GLN:O	1:A:265:GLU:HG2	2.16	0.45
1:E:58:LEU:HD23	1:E:63:TYR:CE2	2.51	0.45
1:E:296:LEU:HD22	1:E:322:MET:CE	2.42	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:F:269:ASP:HB3	2:F:272:TYR:CD2	2.50	0.45
1:A:104:ARG:NH2	8:A:390:HOH:O	2.49	0.45
2:D:256:GLN:HB2	2:D:260:TYR:CE2	2.50	0.45
2:F:26:VAL:O	2:F:30:GLN:HG3	2.16	0.45
2:H:37:PRO:HG2	2:H:40:TYR:CD1	2.52	0.45
2:H:338:CYS:HB3	8:H:413:HOH:O	2.15	0.45
1:A:274:GLU:O	1:A:278:ASN:ND2	2.50	0.45
2:B:336:GLY:HA2	2:J:305:LEU:HD13	1.98	0.45
2:F:173:ARG:HG2	6:F:381:MGM:H112	1.99	0.45
2:B:201:ARG:NH1	2:B:239:VAL:O	2.50	0.45
1:C:88:VAL:HG12	1:C:88:VAL:O	2.17	0.45
1:C:88:VAL:HG11	2:D:50:ILE:HB	1.99	0.45
1:G:58:LEU:HD23	1:G:63:TYR:CZ	2.52	0.45
1:G:107:LEU:HD12	2:H:101:LEU:HD22	1.98	0.45
1:I:88:VAL:HG12	1:I:88:VAL:O	2.17	0.45
1:I:353:LYS:HG3	1:I:354:GLU:H	1.80	0.45
1:A:103:PHE:CZ	1:A:133:VAL:HG22	2.51	0.44
1:A:214:ARG:O	1:A:214:ARG:CG	2.65	0.44
6:D:380:MGM:HC41	6:D:380:MGM:O1	2.16	0.44
2:F:21:LEU:HD11	2:F:304:ARG:NH2	2.32	0.44
1:I:333:ILE:HD13	1:I:336:LYS:HD2	1.99	0.44
1:I:343:ILE:HG22	1:I:348:LYS:HG2	1.98	0.44
1:I:344:LEU:HD13	1:I:356:TRP:CE2	2.52	0.44
1:A:77:PRO:HB2	1:A:101:ASP:HB3	1.99	0.44
1:A:296:LEU:O	1:A:296:LEU:HD12	2.18	0.44
1:C:156:ILE:CG1	1:C:172:ARG:HH12	2.06	0.44
2:D:269:ASP:HB3	2:D:272:TYR:CD2	2.51	0.44
1:K:351:ILE:CD1	2:L:256:GLN:HG2	2.46	0.44
1:I:107:LEU:CD1	2:J:117:TYR:HB2	2.47	0.44
2:B:269:ASP:HB3	2:B:272:TYR:CD2	2.51	0.44
1:E:82:ASP:HB2	1:E:86:PRO:HB3	1.99	0.44
2:H:37:PRO:O	2:H:39:ARG:N	2.50	0.44
2:H:173:ARG:HG2	6:H:380:MGM:H112	1.99	0.44
2:J:201:ARG:NH1	2:J:239:VAL:O	2.50	0.44
1:A:66:TYR:CE1	1:A:119:LEU:HD13	2.53	0.44
2:B:36:LEU:HA	2:B:37:PRO:HD3	1.83	0.44
1:C:105:ALA:O	1:C:109:ARG:HG3	2.18	0.44
2:D:188:TRP:CE3	2:D:193:MET:HE2	2.52	0.44
1:E:329:ASN:O	1:E:330:LYS:C	2.60	0.44
2:J:82:LEU:HD11	2:J:108:SER:HA	1.99	0.44
2:B:21:LEU:HD11	2:B:304:ARG:HH22	1.79	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:243:LYS:O	2:B:247:ARG:HG3	2.17	0.44
1:E:311:LEU:C	1:E:311:LEU:HD23	2.43	0.44
2:F:37:PRO:HD2	2:F:40:TYR:CD1	2.52	0.44
1:I:149:GLN:NE2	1:I:179:LEU:HD13	2.32	0.44
2:J:269:ASP:HB3	2:J:272:TYR:CD2	2.49	0.44
2:H:77:TYR:CE1	2:H:141:ARG:HB2	2.51	0.44
1:A:194:ASN:HD22	1:A:194:ASN:HA	1.55	0.44
1:A:294:ASN:O	1:A:298:GLN:HG3	2.17	0.44
1:C:232:ARG:NH2	1:C:272:HIS:O	2.50	0.44
2:J:130:SER:O	2:J:134:ILE:HG13	2.18	0.44
2:J:353:ARG:HD3	2:J:353:ARG:O	2.17	0.44
1:C:74:ASP:OD2	1:C:74:ASP:N	2.50	0.44
2:B:256:GLN:HG3	2:B:260:TYR:CE1	2.53	0.43
2:F:236:LEU:HD22	2:F:245:LEU:HD21	1.99	0.43
2:H:250:ARG:O	2:H:254:MET:HG2	2.18	0.43
1:I:91:ILE:HG13	2:J:36:LEU:O	2.18	0.43
1:I:100:TYR:C	1:I:104:ARG:NH1	2.76	0.43
1:I:301:ASP:O	1:I:304:PRO:HD2	2.18	0.43
2:J:29:PHE:O	2:J:33:LEU:HD22	2.17	0.43
2:J:250:ARG:O	2:J:254:MET:HG2	2.18	0.43
1:A:364:GLN:CA	1:A:364:GLN:HE21	2.29	0.43
2:J:77:TYR:HE2	2:J:137:ASP:OD2	2.02	0.43
1:C:311:LEU:C	1:C:311:LEU:HD23	2.43	0.43
2:D:20:PHE:CZ	2:D:337:ILE:HD11	2.53	0.43
1:E:66:TYR:CE1	1:E:119:LEU:HD13	2.53	0.43
2:F:122:ILE:HG22	2:F:163:ALA:HA	2.00	0.43
1:G:239:GLN:O	1:G:242:PHE:HB3	2.17	0.43
1:C:117:PHE:CE2	1:C:146:LYS:HE2	2.53	0.43
1:G:77:PRO:HB3	1:G:102:TYR:CE1	2.54	0.43
2:H:82:LEU:HD11	2:H:108:SER:HA	2.00	0.43
1:I:334:LEU:O	1:I:338:LEU:HG	2.18	0.43
1:A:328:ASP:O	1:A:329:ASN:CB	2.67	0.43
1:E:223:VAL:HG11	1:E:240:ARG:HB2	2.00	0.43
1:A:105:ALA:O	1:A:109:ARG:HG3	2.18	0.43
1:C:91:ILE:CD1	2:D:38:GLU:H	2.31	0.43
1:E:296:LEU:O	1:E:300:LEU:HG	2.19	0.43
2:F:64:LEU:HD23	2:F:64:LEU:HA	1.88	0.43
1:K:83:GLY:HA3	2:L:105:PHE:CD1	2.54	0.43
2:L:186:ASN:HB2	2:L:358:HIS:CE1	2.54	0.43
1:C:283:ILE:O	1:C:287:ARG:HD3	2.18	0.43
2:D:192:ASP:OD2	2:D:192:ASP:C	2.60	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:331:GLU:O	1:E:335:ASN:ND2	2.52	0.43
2:F:82:LEU:HD11	2:F:108:SER:HA	2.00	0.43
2:F:96:ARG:HD3	8:F:463:HOH:O	2.17	0.43
2:F:133:ILE:CD1	2:F:354:LEU:HD13	2.43	0.43
1:G:65:LEU:O	1:G:69:ARG:HG3	2.19	0.43
1:G:219:GLU:HA	1:G:219:GLU:OE1	2.19	0.43
1:G:252:ASP:OD2	1:G:252:ASP:C	2.59	0.43
1:I:167:GLN:CD	1:I:167:GLN:H	2.27	0.43
1:A:312:ILE:O	1:A:316:VAL:HG23	2.19	0.43
8:D:400:HOH:O	1:K:353:LYS:HE3	2.18	0.43
2:L:180:CYS:O	2:L:184:MET:HG3	2.19	0.43
1:A:232:ARG:HA	1:A:273:ASN:ND2	2.33	0.43
2:B:172:MET:HE1	2:B:200:ILE:HA	2.00	0.43
1:C:308:SER:O	1:C:312:ILE:HG12	2.19	0.43
1:E:167:GLN:H	1:E:167:GLN:CD	2.27	0.43
1:K:149:GLN:HG3	8:K:501:HOH:O	2.17	0.43
1:C:312:ILE:O	1:C:316:VAL:HG23	2.19	0.43
2:J:64:LEU:HD23	2:J:64:LEU:HA	1.90	0.43
1:K:91:ILE:HD11	2:L:37:PRO:HA	2.01	0.43
2:D:63:SER:O	2:D:66:VAL:HG22	2.18	0.42
2:J:40:TYR:N	2:J:40:TYR:HD1	2.17	0.42
2:J:122:ILE:HG22	2:J:163:ALA:HA	2.00	0.42
1:E:65:LEU:O	1:E:69:ARG:HG3	2.19	0.42
1:E:93:SER:N	2:F:38:GLU:OE2	2.44	0.42
1:E:103:PHE:CZ	1:E:133:VAL:HG22	2.54	0.42
2:F:258:ASN:CG	2:F:259:GLY:H	2.26	0.42
1:G:117:PHE:CE2	1:G:146:LYS:HE2	2.54	0.42
1:G:289:LEU:HG	8:G:422:HOH:O	2.20	0.42
1:I:330:LYS:HE2	1:I:367:HIS:HB3	2.01	0.42
2:L:201:ARG:NH1	2:L:239:VAL:O	2.52	0.42
2:D:243:LYS:HE2	2:D:243:LYS:HB3	1.86	0.42
1:E:283:ILE:O	1:E:287:ARG:HD3	2.19	0.42
2:H:312:TRP:O	2:H:315:SER:HB3	2.19	0.42
1:K:191:ASP:O	1:K:194:ASN:HB2	2.19	0.42
2:B:160:SER:HB3	2:B:199:TYR:CE1	2.55	0.42
2:B:269:ASP:OD1	2:B:269:ASP:C	2.62	0.42
6:B:380:MGM:HC42	8:B:416:HOH:O	2.19	0.42
1:C:101:ASP:HA	1:C:104:ARG:NH1	2.33	0.42
1:C:148:LEU:CB	1:C:179:LEU:HD21	2.47	0.42
1:G:189:ILE:HD11	1:G:205:HIS:CD2	2.53	0.42
2:H:29:PHE:O	2:H:33:LEU:HD22	2.19	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:303:GLN:HB3	1:I:304:PRO:HD3	2.00	0.42
2:J:173:ARG:HG2	6:J:380:MGM:H112	2.01	0.42
2:L:250:ARG:O	2:L:254:MET:HG2	2.20	0.42
2:D:353:ARG:HH11	2:D:357:LEU:HG	1.82	0.42
1:E:340:LEU:HD23	1:E:343:ILE:HD12	2.01	0.42
2:J:361:TRP:C	2:J:363:THR:H	2.28	0.42
2:D:37:PRO:C	2:D:39:ARG:N	2.78	0.42
1:E:106:VAL:HG11	1:E:116:ALA:HB1	2.02	0.42
2:F:33:LEU:CD2	2:F:54:ALA:HB1	2.48	0.42
2:H:269:ASP:OD1	2:H:269:ASP:C	2.62	0.42
1:I:151:GLU:HG3	1:I:175:LEU:HD11	2.02	0.42
6:J:380:MGM:O1	6:J:380:MGM:HC41	2.20	0.42
1:K:308:SER:HB2	1:K:309:PRO:HD2	2.01	0.42
1:E:100:TYR:C	1:E:104:ARG:NH1	2.78	0.42
1:E:219:GLU:HA	1:E:219:GLU:OE1	2.19	0.42
1:E:344:LEU:HD13	1:E:356:TRP:CE2	2.54	0.42
2:F:90:LEU:HD23	2:F:90:LEU:HA	1.92	0.42
2:H:79:LEU:O	2:H:96:ARG:HG3	2.19	0.42
6:H:380:MGM:HC42	8:H:417:HOH:O	2.19	0.42
1:K:214:ARG:O	1:K:214:ARG:HG2	2.19	0.42
2:L:37:PRO:HD2	2:L:40:TYR:CD1	2.54	0.42
1:A:267:ILE:HD13	1:A:277:TRP:CE2	2.55	0.42
1:A:273:ASN:OD1	1:A:275:SER:HB2	2.20	0.42
2:B:229:SER:O	2:B:233:MET:HG3	2.19	0.42
2:D:255:ARG:HD3	2:D:261:HIS:CD2	2.54	0.42
1:E:214:ARG:O	1:E:214:ARG:HG3	2.18	0.42
1:E:308:SER:O	1:E:312:ILE:HG12	2.19	0.42
1:G:227:LEU:HD23	1:G:227:LEU:HA	1.94	0.42
1:K:200:TYR:HB3	6:L:380:MGM:HC12	2.01	0.42
1:K:329:ASN:HB3	1:K:332:ASP:HB3	2.02	0.42
2:L:77:TYR:CE1	2:L:141:ARG:HB2	2.54	0.42
1:A:303:GLN:HB3	1:A:304:PRO:HD3	2.01	0.42
2:B:64:LEU:HD11	2:B:134:ILE:HG22	2.02	0.42
2:B:357:LEU:HD22	2:B:361:TRP:NE1	2.35	0.42
1:G:151:GLU:HG3	1:G:175:LEU:HD11	2.02	0.42
2:B:22:ARG:O	2:B:26:VAL:HG23	2.19	0.42
1:C:124:ILE:HD13	1:C:134:TRP:CH2	2.55	0.42
2:D:155:GLN:HB2	2:D:161:PHE:CE2	2.55	0.42
2:F:96:ARG:HE	2:F:118:ASP:CG	2.27	0.42
2:F:263:ARG:HB2	2:F:266:LYS:HG3	2.01	0.42
1:I:338:LEU:HD11	1:I:364:GLN:OE1	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:172:MET:HE1	2:J:200:ILE:HA	2.01	0.42
2:J:243:LYS:O	2:J:247:ARG:HG3	2.20	0.42
1:K:292:TYR:HA	1:K:293:PRO:HD2	1.80	0.42
2:L:155:GLN:HB2	2:L:161:PHE:CE2	2.55	0.42
1:C:261:GLN:O	1:C:265:GLU:HG2	2.19	0.41
1:E:226:LEU:HD23	1:E:226:LEU:HA	1.91	0.41
2:H:188:TRP:CE3	2:H:193:MET:HE2	2.55	0.41
1:I:287:ARG:H	1:I:287:ARG:HG2	1.44	0.41
1:K:219:GLU:OE1	1:K:219:GLU:HA	2.20	0.41
2:L:172:MET:HE1	2:L:200:ILE:HA	2.02	0.41
1:E:189:ILE:HD11	1:E:205:HIS:CD2	2.54	0.41
2:H:258:ASN:CG	2:H:259:GLY:H	2.26	0.41
1:I:312:ILE:O	1:I:316:VAL:HG23	2.20	0.41
1:A:219:GLU:OE1	1:A:219:GLU:HA	2.20	0.41
2:B:122:ILE:HG22	2:B:163:ALA:HA	2.02	0.41
2:F:155:GLN:HB2	2:F:161:PHE:CE2	2.56	0.41
1:G:287:ARG:H	1:G:287:ARG:HG2	1.51	0.41
2:H:22:ARG:O	2:H:26:VAL:HG23	2.20	0.41
1:K:124:ILE:HD13	1:K:134:TRP:CH2	2.55	0.41
2:L:33:LEU:HD22	2:L:54:ALA:HB1	2.02	0.41
2:L:186:ASN:HB2	2:L:358:HIS:NE2	2.35	0.41
1:C:189:ILE:HG21	1:C:206:ARG:HB2	2.03	0.41
2:F:138:ASP:HA	2:F:357:LEU:HD11	2.02	0.41
1:G:91:ILE:H	1:G:91:ILE:HG13	1.76	0.41
1:G:106:VAL:HG11	1:G:116:ALA:HB1	2.03	0.41
1:G:267:ILE:HD13	1:G:277:TRP:CE2	2.55	0.41
1:G:344:LEU:HD13	1:G:356:TRP:CE2	2.55	0.41
1:A:124:ILE:HD13	1:A:134:TRP:CH2	2.56	0.41
2:D:250:ARG:O	2:D:254:MET:HG2	2.21	0.41
2:D:255:ARG:CZ	2:D:264:PRO:HG3	2.50	0.41
1:E:58:LEU:HD22	1:E:95:LYS:CD	2.51	0.41
2:H:133:ILE:CD1	2:H:354:LEU:HD13	2.48	0.41
2:J:155:GLN:HB2	2:J:161:PHE:CE2	2.55	0.41
1:K:167:GLN:H	1:K:167:GLN:CD	2.28	0.41
1:C:78:VAL:HG21	1:C:108:GLN:HE22	1.85	0.41
1:C:308:SER:HB2	1:C:309:PRO:HD2	2.02	0.41
2:D:130:SER:O	2:D:134:ILE:HG13	2.21	0.41
1:G:252:ASP:CG	1:G:255:VAL:HG23	2.46	0.41
1:G:357:ARG:HH11	1:G:357:ARG:HG3	1.86	0.41
2:H:52:PHE:HA	2:H:131:CYS:SG	2.61	0.41
2:H:155:GLN:HB2	2:H:161:PHE:CE2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:L:312:TRP:O	2:L:315:SER:HB3	2.19	0.41
2:B:64:LEU:HD23	2:B:64:LEU:HA	1.86	0.41
2:B:70:ASP:O	2:B:74:GLU:HG2	2.20	0.41
1:C:92:TYR:O	1:C:97:ARG:NH2	2.53	0.41
2:D:263:ARG:HB2	2:D:266:LYS:HG3	2.02	0.41
1:E:124:ILE:HD13	1:E:134:TRP:CH2	2.55	0.41
1:G:223:VAL:HG11	1:G:240:ARG:HB2	2.02	0.41
2:H:202:ARG:NH1	2:H:202:ARG:CG	2.82	0.41
1:I:148:LEU:CB	1:I:179:LEU:HD21	2.47	0.41
2:J:115:HIS:HA	2:J:116:PRO:HD3	1.93	0.41
2:D:77:TYR:CE1	2:D:141:ARG:HB2	2.55	0.41
2:D:258:ASN:OD1	2:D:259:GLY:N	2.48	0.41
2:B:77:TYR:CE1	2:B:141:ARG:HB2	2.56	0.41
2:B:79:LEU:O	2:B:96:ARG:HG3	2.21	0.41
2:B:133:ILE:CD1	2:B:354:LEU:HD13	2.46	0.41
2:B:256:GLN:OE1	2:B:289:THR:HB	2.20	0.41
1:C:65:LEU:O	1:C:69:ARG:HG3	2.20	0.41
1:C:106:VAL:HG11	1:C:116:ALA:HB1	2.03	0.41
1:C:151:GLU:HG3	1:C:175:LEU:HD11	2.03	0.41
2:D:172:MET:HE1	2:D:200:ILE:HA	2.02	0.41
2:D:312:TRP:O	2:D:315:SER:HB3	2.20	0.41
1:E:105:ALA:O	1:E:109:ARG:HG3	2.21	0.41
1:E:127:ASN:ND2	1:E:130:ASN:HB2	2.36	0.41
1:E:148:LEU:CB	1:E:179:LEU:HD21	2.47	0.41
1:E:294:ASN:O	1:E:298:GLN:HG3	2.21	0.41
2:F:37:PRO:C	2:F:39:ARG:N	2.79	0.41
1:G:312:ILE:O	1:G:316:VAL:HG23	2.21	0.41
2:H:172:MET:HE1	2:H:200:ILE:HA	2.03	0.41
2:H:255:ARG:CZ	2:H:264:PRO:HG3	2.50	0.41
2:J:188:TRP:CE3	2:J:193:MET:HE2	2.56	0.41
2:J:295:ARG:HG2	2:J:295:ARG:NH1	2.35	0.41
2:L:29:PHE:O	2:L:33:LEU:HD22	2.20	0.41
2:B:37:PRO:C	2:B:39:ARG:N	2.79	0.41
2:B:96:ARG:HE	2:B:118:ASP:CG	2.29	0.41
2:B:207:ASP:O	2:B:208:ASN:HB2	2.21	0.41
2:B:312:TRP:O	2:B:315:SER:HB3	2.21	0.41
2:H:59:ASP:OD2	2:H:349:ARG:NH1	2.54	0.41
2:H:122:ILE:HG22	2:H:163:ALA:HA	2.02	0.41
2:H:263:ARG:HB2	2:H:266:LYS:HG3	2.02	0.41
1:I:106:VAL:HG11	1:I:116:ALA:CB	2.51	0.41
1:I:251:SER:HA	1:I:287:ARG:HH22	1.85	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:200:TYR:CB	6:L:380:MGM:HC12	2.51	0.41
1:A:287:ARG:H	1:A:287:ARG:HG2	1.53	0.40
1:C:357:ARG:O	1:C:361:ARG:HG3	2.21	0.40
2:J:133:ILE:HG22	2:J:350:THR:CG2	2.51	0.40
1:K:189:ILE:HG21	1:K:206:ARG:HB2	2.04	0.40
2:D:353:ARG:HH12	2:D:357:LEU:HG	1.85	0.40
1:E:227:LEU:HD23	1:E:227:LEU:HA	1.92	0.40
1:I:101:ASP:HA	1:I:104:ARG:NH1	2.36	0.40
1:C:107:LEU:HD12	2:D:101:LEU:HD22	2.02	0.40
2:H:115:HIS:ND1	2:H:116:PRO:HD2	2.36	0.40
2:L:22:ARG:HG2	2:L:22:ARG:HH11	1.85	0.40
2:L:258:ASN:CG	2:L:259:GLY:H	2.27	0.40
2:B:33:LEU:HD22	2:B:54:ALA:HB1	2.03	0.40
1:C:112:ARG:O	1:C:144:LEU:HD21	2.22	0.40
1:C:287:ARG:HG2	1:C:287:ARG:H	1.60	0.40
1:C:330:LYS:HE2	1:C:367:HIS:HB3	2.03	0.40
2:H:86:ASP:OD2	2:H:86:ASP:N	2.53	0.40
2:H:208:ASN:CG	2:H:247:ARG:HB3	2.46	0.40
2:J:320:LEU:C	2:J:320:LEU:HD23	2.47	0.40
6:J:380:MGM:H17	6:J:380:MGM:H142	2.03	0.40
2:L:320:LEU:C	2:L:320:LEU:HD23	2.46	0.40
1:C:239:GLN:O	1:C:242:PHE:HB3	2.20	0.40
2:D:258:ASN:CG	2:D:259:GLY:H	2.28	0.40
1:E:88:VAL:HG13	2:F:36:LEU:HD11	2.03	0.40
1:E:189:ILE:HG21	1:E:206:ARG:HB2	2.03	0.40
1:E:296:LEU:O	1:E:296:LEU:HD12	2.22	0.40
1:E:328:ASP:O	1:E:329:ASN:CB	2.70	0.40
2:J:208:ASN:CG	2:J:247:ARG:HB3	2.47	0.40
2:J:249:LYS:HB3	2:J:285:ILE:HD13	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	312/377 (83%)	286 (92%)	25 (8%)	1 (0%)	36	60
1	C	312/377 (83%)	290 (93%)	21 (7%)	1 (0%)	36	60
1	E	312/377 (83%)	289 (93%)	22 (7%)	1 (0%)	36	60
1	G	312/377 (83%)	291 (93%)	20 (6%)	1 (0%)	36	60
1	I	312/377 (83%)	291 (93%)	20 (6%)	1 (0%)	36	60
1	K	312/377 (83%)	292 (94%)	19 (6%)	1 (0%)	36	60
2	B	344/377 (91%)	329 (96%)	14 (4%)	1 (0%)	36	60
2	D	344/377 (91%)	330 (96%)	11 (3%)	3 (1%)	14	35
2	F	344/377 (91%)	330 (96%)	13 (4%)	1 (0%)	36	60
2	H	344/377 (91%)	329 (96%)	14 (4%)	1 (0%)	36	60
2	J	344/377 (91%)	328 (95%)	14 (4%)	2 (1%)	21	44
2	L	344/377 (91%)	334 (97%)	9 (3%)	1 (0%)	36	60
3	M	3/11 (27%)	3 (100%)	0	0	100	100
3	N	3/11 (27%)	3 (100%)	0	0	100	100
3	O	3/11 (27%)	3 (100%)	0	0	100	100
3	P	3/11 (27%)	3 (100%)	0	0	100	100
3	Q	3/11 (27%)	2 (67%)	1 (33%)	0	100	100
3	R	3/11 (27%)	2 (67%)	1 (33%)	0	100	100
All	All	3954/4590 (86%)	3735 (94%)	204 (5%)	15 (0%)	30	54

All (15) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
2	D	38	GLU
1	G	326	GLN
2	B	258	ASN
1	C	326	GLN
1	E	326	GLN
2	F	258	ASN
2	J	258	ASN
1	K	326	GLN
2	D	258	ASN
2	D	333	GLU
2	H	258	ASN
1	I	326	GLN
2	J	333	GLU
2	L	258	ASN

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Mol	Chain	Res	Type
1	A	326	GLN

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	280/338 (83%)	271 (97%)	9 (3%)	34	64
1	C	283/338 (84%)	276 (98%)	7 (2%)	42	71
1	E	284/338 (84%)	278 (98%)	6 (2%)	47	75
1	G	281/338 (83%)	276 (98%)	5 (2%)	51	78
1	I	287/338 (85%)	281 (98%)	6 (2%)	47	75
1	K	291/338 (86%)	282 (97%)	9 (3%)	35	65
2	B	289/326 (89%)	276 (96%)	13 (4%)	24	52
2	D	293/326 (90%)	279 (95%)	14 (5%)	23	50
2	F	294/326 (90%)	282 (96%)	12 (4%)	27	56
2	H	288/326 (88%)	276 (96%)	12 (4%)	26	55
2	J	292/326 (90%)	280 (96%)	12 (4%)	27	56
2	L	296/326 (91%)	285 (96%)	11 (4%)	30	59
3	M	3/10 (30%)	3 (100%)	0	100	100
3	N	4/10 (40%)	4 (100%)	0	100	100
3	O	4/10 (40%)	4 (100%)	0	100	100
3	P	4/10 (40%)	4 (100%)	0	100	100
3	Q	4/10 (40%)	4 (100%)	0	100	100
3	R	4/10 (40%)	3 (75%)	1 (25%)	0	2
All	All	3481/4044 (86%)	3364 (97%)	117 (3%)	32	62

All (117) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	71	GLU

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Mol	Chain	Res	Type
1	A	107	LEU
1	A	114	GLU
1	A	149	GLN
1	A	194	ASN
1	A	214	ARG
1	A	287	ARG
1	A	354	GLU
1	A	364	GLN
2	B	21	LEU
2	B	33	LEU
2	B	39	ARG
2	B	151	LEU
2	B	216	LEU
2	B	232	LEU
2	B	236	LEU
2	B	255	ARG
2	B	292	GLU
2	B	306	VAL
2	B	329	LEU
2	B	331	LEU
2	B	357	LEU
1	C	59	ASP
1	C	71	GLU
1	C	107	LEU
1	C	194	ASN
1	C	287	ARG
1	C	324	GLU
1	C	364	GLN
2	D	21	LEU
2	D	27	ARG
2	D	33	LEU
2	D	39	ARG
2	D	110	ASN
2	D	151	LEU
2	D	216	LEU
2	D	232	LEU
2	D	236	LEU
2	D	258	ASN
2	D	306	VAL
2	D	329	LEU
2	D	331	LEU
2	D	357	LEU

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Mol	Chain	Res	Type
1	E	71	GLU
1	E	107	LEU
1	E	214	ARG
1	E	265	GLU
1	E	287	ARG
1	E	364	GLN
2	F	21	LEU
2	F	33	LEU
2	F	151	LEU
2	F	216	LEU
2	F	232	LEU
2	F	236	LEU
2	F	255	ARG
2	F	306	VAL
2	F	329	LEU
2	F	331	LEU
2	F	355	ARG
2	F	357	LEU
1	G	59	ASP
1	G	107	LEU
1	G	114	GLU
1	G	194	ASN
1	G	287	ARG
2	H	21	LEU
2	H	33	LEU
2	H	151	LEU
2	H	216	LEU
2	H	232	LEU
2	H	236	LEU
2	H	255	ARG
2	H	296	ASN
2	H	306	VAL
2	H	329	LEU
2	H	331	LEU
2	H	357	LEU
1	I	67	ARG
1	I	107	LEU
1	I	114	GLU
1	I	142	ARG
1	I	287	ARG
1	I	353	LYS
2	J	27	ARG

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Mol	Chain	Res	Type
2	J	31	ARG
2	J	33	LEU
2	J	151	LEU
2	J	216	LEU
2	J	232	LEU
2	J	236	LEU
2	J	255	ARG
2	J	306	VAL
2	J	329	LEU
2	J	331	LEU
2	J	357	LEU
1	K	71	GLU
1	K	80	GLN
1	K	107	LEU
1	K	114	GLU
1	K	142	ARG
1	K	287	ARG
1	K	324	GLU
1	K	353	LYS
1	K	357	ARG
2	L	21	LEU
2	L	33	LEU
2	L	110	ASN
2	L	151	LEU
2	L	216	LEU
2	L	232	LEU
2	L	236	LEU
2	L	255	ARG
2	L	306	VAL
2	L	329	LEU
2	L	331	LEU
3	R	7	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (69) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	89	GLN
1	A	135	HIS
1	A	194	ASN
1	A	234	ASN
1	A	278	ASN
1	A	285	GLN

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Mol	Chain	Res	Type
1	A	303	GLN
1	A	329	ASN
1	A	364	GLN
2	B	208	ASN
2	B	257	GLN
1	C	81	ASN
1	C	108	GLN
1	C	135	HIS
1	C	194	ASN
1	C	218	ASN
1	C	298	GLN
1	C	364	GLN
2	D	110	ASN
2	D	246	ASN
2	D	257	GLN
1	E	81	ASN
1	E	184	GLN
1	E	204	GLN
1	E	285	GLN
1	E	325	ASN
1	E	335	ASN
1	E	364	GLN
2	F	30	GLN
2	F	208	ASN
2	F	246	ASN
1	G	81	ASN
1	G	89	GLN
1	G	135	HIS
1	G	149	GLN
1	G	162	GLN
1	G	184	GLN
1	G	218	ASN
1	G	272	HIS
1	G	285	GLN
1	G	297	ASN
1	G	303	GLN
1	G	335	ASN
1	G	367	HIS
2	H	34	GLN
2	H	208	ASN
2	H	257	GLN
2	H	296	ASN

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Mol	Chain	Res	Type
1	I	89	GLN
1	I	149	GLN
1	I	184	GLN
1	I	285	GLN
1	I	303	GLN
1	I	335	ASN
1	I	367	HIS
2	J	30	GLN
2	J	208	ASN
2	J	212	GLN
2	J	246	ASN
2	J	257	GLN
1	K	218	ASN
1	K	261	GLN
1	K	285	GLN
1	K	294	ASN
2	L	110	ASN
2	L	208	ASN
2	L	212	GLN
2	L	257	GLN
2	L	345	ASN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 19 ligands modelled in this entry, 12 are monoatomic - leaving 7 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
6	MGM	B	380	-	27,28,28	1.02	2 (7%)	34,37,37	1.98	6 (17%)
6	MGM	H	380	-	27,28,28	0.88	0	34,37,37	1.87	6 (17%)
6	MGM	D	380	-	27,28,28	0.90	0	34,37,37	1.89	6 (17%)
6	MGM	F	381	-	27,28,28	0.97	1 (3%)	34,37,37	1.98	6 (17%)
6	MGM	J	380	-	27,28,28	0.91	1 (3%)	34,37,37	1.95	6 (17%)
6	MGM	L	380	-	27,28,28	0.98	1 (3%)	34,37,37	2.00	6 (17%)
7	MES	F	380	-	12,12,12	9.16	8 (66%)	15,16,16	2.14	5 (33%)

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	MGM	B	380	-	-	10/31/31/31	-
6	MGM	H	380	-	-	10/31/31/31	-
6	MGM	D	380	-	-	10/31/31/31	-
6	MGM	F	381	-	-	8/31/31/31	-
6	MGM	J	380	-	-	9/31/31/31	-
6	MGM	L	380	-	-	8/31/31/31	-
7	MES	F	380	-	-	3/6/14/14	0/1/1/1

All (13) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	F	380	MES	C8-S	-23.58	1.44	1.77
7	F	380	MES	O2S-S	12.91	1.81	1.45
7	F	380	MES	O1S-S	12.67	1.80	1.45
7	F	380	MES	O3S-S	8.80	1.80	1.47
7	F	380	MES	C7-C8	-4.56	1.40	1.52
7	F	380	MES	C3-C2	-2.79	1.40	1.50
7	F	380	MES	C5-C6	-2.49	1.41	1.50
6	L	380	MGM	C7-C8	2.46	1.38	1.33
6	B	380	MGM	PA-O3A	2.41	1.62	1.59

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	F	380	MES	C7-N4	-2.30	1.42	1.47
6	B	380	MGM	C12-C13	2.23	1.38	1.33
6	J	380	MGM	C12-C13	2.13	1.38	1.33
6	F	381	MGM	C7-C8	2.13	1.38	1.33

All (41) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	B	380	MGM	C1-C2-N3	7.28	130.77	113.30
6	F	381	MGM	C1-C2-N3	7.21	130.61	113.30
6	L	380	MGM	C1-C2-N3	6.97	130.03	113.30
6	J	380	MGM	C1-C2-N3	6.89	129.83	113.30
6	H	380	MGM	C1-C2-N3	6.81	129.64	113.30
6	D	380	MGM	C1-C2-N3	6.80	129.64	113.30
6	J	380	MGM	C4-N3-C2	5.30	125.77	110.55
6	D	380	MGM	C4-N3-C2	5.27	125.67	110.55
6	F	381	MGM	C4-N3-C2	5.23	125.56	110.55
6	H	380	MGM	C4-N3-C2	5.22	125.53	110.55
6	L	380	MGM	C4-N3-C2	5.20	125.48	110.55
6	B	380	MGM	C4-N3-C2	5.20	125.46	110.55
7	F	380	MES	O1S-S-C8	4.58	113.66	106.73
7	F	380	MES	O3S-S-C8	3.80	113.44	106.00
6	L	380	MGM	O1-C1-C2	3.74	114.85	107.38
6	B	380	MGM	O1-C1-C2	3.67	114.71	107.38
6	F	381	MGM	O1-C1-C2	3.66	114.69	107.38
6	J	380	MGM	O1B-PB-O3A	3.05	114.85	104.64
6	J	380	MGM	O1-C1-C2	3.00	113.38	107.38
7	F	380	MES	O2S-S-C8	2.92	111.14	106.73
6	L	380	MGM	O1B-PB-O3A	2.91	114.38	104.64
6	H	380	MGM	O1-C1-C2	2.81	112.99	107.38
6	F	381	MGM	O1B-PB-O3A	2.80	114.02	104.64
6	D	380	MGM	O1-C1-C2	2.77	112.92	107.38
6	J	380	MGM	O1A-PA-O3A	2.73	114.66	107.27
6	L	380	MGM	O1A-PA-O3A	2.72	114.63	107.27
6	F	381	MGM	O1A-PA-O3A	2.62	114.36	107.27
6	D	380	MGM	O1B-PB-O3A	2.59	113.32	104.64
6	B	380	MGM	O1B-PB-O3A	2.55	113.17	104.64
7	F	380	MES	O3S-S-O2S	-2.53	105.08	111.40
6	B	380	MGM	O1A-PA-O3A	2.42	113.81	107.27
7	F	380	MES	O2S-S-O1S	-2.40	106.02	113.82
6	H	380	MGM	O1B-PB-O3A	2.37	112.57	104.64
6	D	380	MGM	O1A-PA-O3A	2.35	113.62	107.27

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
6	H	380	MGM	O1A-PA-O3A	2.33	113.58	107.27
6	L	380	MGM	C2-N3-C5	2.30	122.74	112.03
6	F	381	MGM	C2-N3-C5	2.18	122.21	112.03
6	H	380	MGM	C2-N3-C5	2.18	122.20	112.03
6	D	380	MGM	C2-N3-C5	2.18	122.20	112.03
6	B	380	MGM	C2-N3-C5	2.11	121.88	112.03
6	J	380	MGM	C2-N3-C5	2.04	121.54	112.03

There are no chirality outliers.

All (58) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
6	B	380	MGM	C1-C2-N3-C4
6	B	380	MGM	O1-C1-C2-N3
6	B	380	MGM	PA-O3A-PB-O1B
6	D	380	MGM	C1-C2-N3-C4
6	D	380	MGM	O1-C1-C2-N3
6	D	380	MGM	PA-O3A-PB-O1B
6	F	381	MGM	C1-C2-N3-C4
6	F	381	MGM	O1-C1-C2-N3
6	F	381	MGM	PA-O3A-PB-O1B
6	H	380	MGM	C1-C2-N3-C4
6	H	380	MGM	O1-C1-C2-N3
6	H	380	MGM	PA-O3A-PB-O1B
6	J	380	MGM	C1-C2-N3-C4
6	J	380	MGM	O1-C1-C2-N3
6	J	380	MGM	PA-O3A-PB-O1B
6	L	380	MGM	C1-C2-N3-C4
6	L	380	MGM	O1-C1-C2-N3
6	L	380	MGM	PA-O3A-PB-O1B
7	F	380	MES	N4-C7-C8-S
6	L	380	MGM	C6-C5-N3-C2
6	B	380	MGM	C6-C5-N3-C4
6	D	380	MGM	C6-C5-N3-C4
6	F	381	MGM	C6-C5-N3-C4
6	H	380	MGM	C6-C5-N3-C4
6	J	380	MGM	C6-C5-N3-C4
6	H	380	MGM	C10-C8-C9-C11
6	H	380	MGM	C7-C8-C9-C11
6	J	380	MGM	C6-C5-N3-C2
6	B	380	MGM	C10-C8-C9-C11
6	D	380	MGM	C10-C8-C9-C11

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Mol	Chain	Res	Type	Atoms
7	F	380	MES	C7-C8-S-O3S
6	F	381	MGM	C10-C8-C9-C11
6	B	380	MGM	C7-C8-C9-C11
6	J	380	MGM	C10-C8-C9-C11
6	L	380	MGM	C10-C8-C9-C11
6	F	381	MGM	C7-C8-C9-C11
6	J	380	MGM	C7-C8-C9-C11
6	D	380	MGM	C7-C8-C9-C11
6	L	380	MGM	C7-C8-C9-C11
6	B	380	MGM	C14-C13-C15-C16
6	D	380	MGM	C14-C13-C15-C16
6	H	380	MGM	C14-C13-C15-C16
7	F	380	MES	C7-C8-S-O1S
6	B	380	MGM	PA-O3A-PB-O3B
6	D	380	MGM	PA-O3A-PB-O3B
6	B	380	MGM	PA-O3A-PB-O2B
6	D	380	MGM	PA-O3A-PB-O2B
6	F	381	MGM	PA-O3A-PB-O2B
6	H	380	MGM	PA-O3A-PB-O2B
6	J	380	MGM	PA-O3A-PB-O2B
6	L	380	MGM	PA-O3A-PB-O2B
6	H	380	MGM	C13-C15-C16-C17
6	H	380	MGM	C9-C11-C12-C13
6	J	380	MGM	C9-C11-C12-C13
6	L	380	MGM	C9-C11-C12-C13
6	B	380	MGM	C9-C11-C12-C13
6	D	380	MGM	C9-C11-C12-C13
6	F	381	MGM	C9-C11-C12-C13

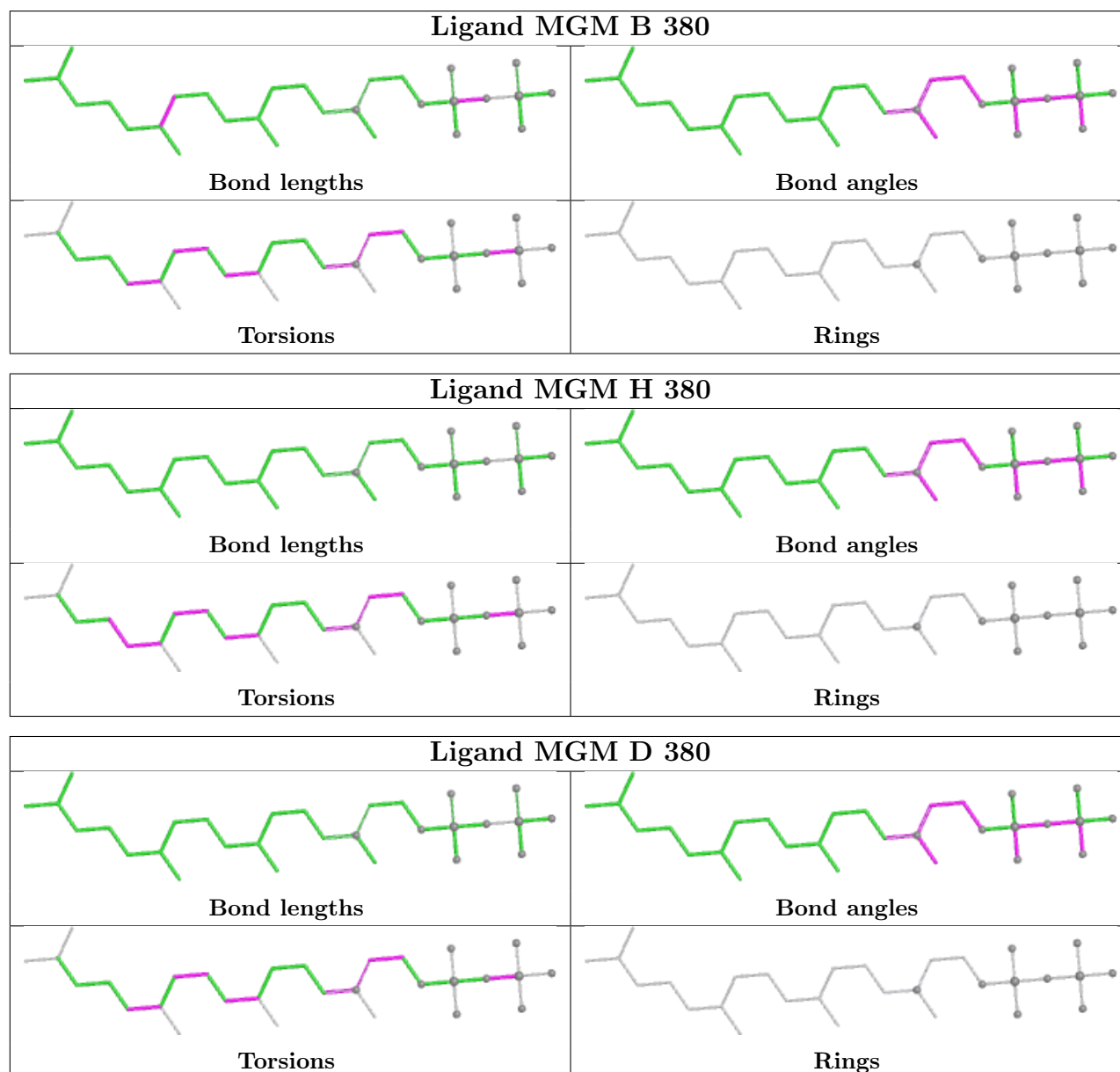
There are no ring outliers.

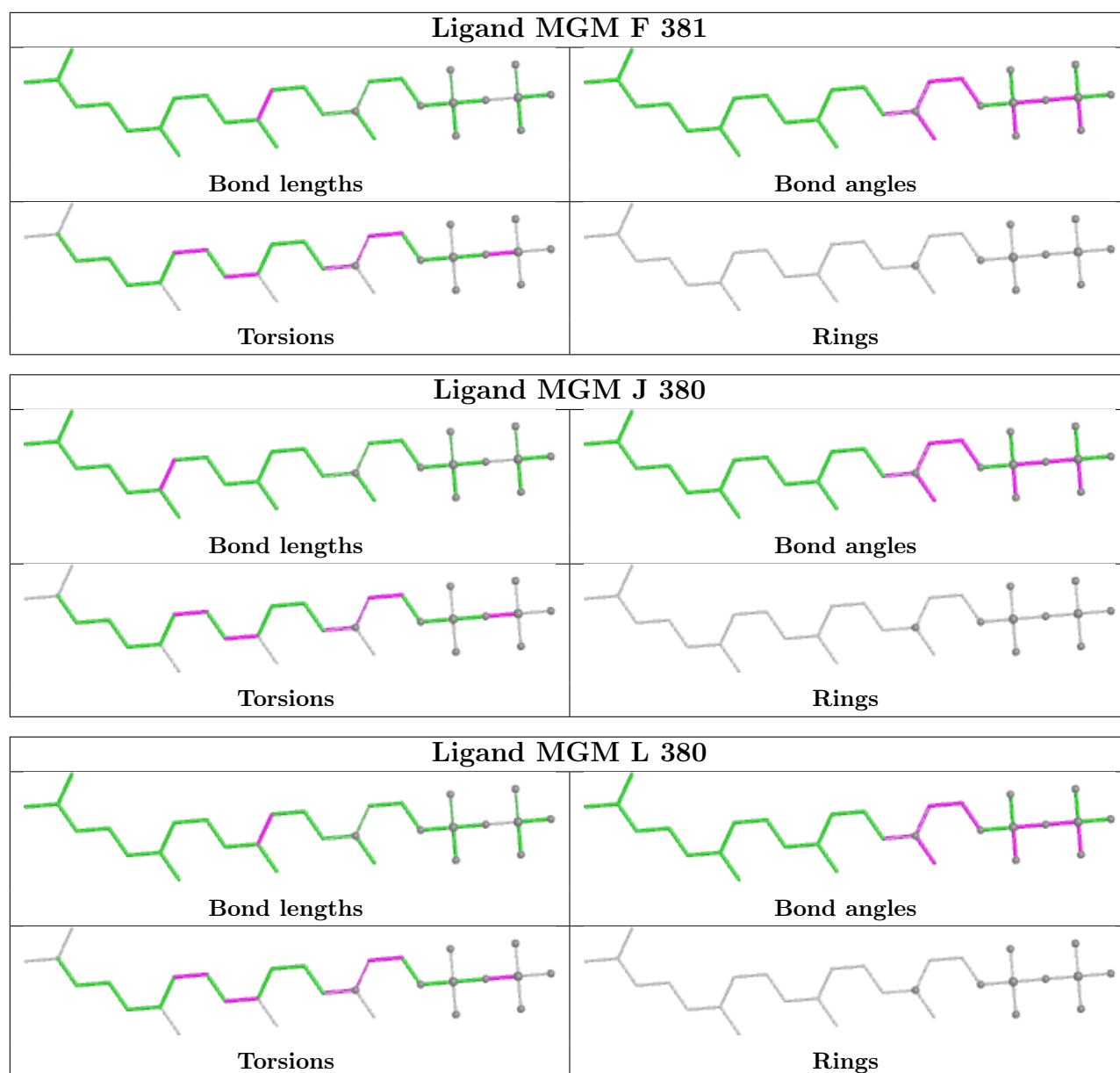
7 monomers are involved in 15 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
6	B	380	MGM	2	0
6	H	380	MGM	3	0
6	D	380	MGM	3	0
6	F	381	MGM	1	0
6	J	380	MGM	3	0
6	L	380	MGM	2	0
7	F	380	MES	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 all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.





5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95th percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	314/377 (83%)	0.46	18 (5%) 29 26	37, 59, 92, 108	0
1	C	314/377 (83%)	0.38	16 (5%) 33 29	34, 56, 83, 100	0
1	E	314/377 (83%)	0.46	12 (3%) 44 40	32, 57, 86, 102	0
1	G	314/377 (83%)	0.44	20 (6%) 25 22	32, 54, 84, 98	0
1	I	314/377 (83%)	0.51	17 (5%) 31 27	32, 57, 88, 98	0
1	K	314/377 (83%)	0.01	8 (2%) 58 55	25, 44, 69, 83	0
2	B	346/377 (91%)	0.21	17 (4%) 35 31	38, 53, 79, 102	0
2	D	346/377 (91%)	-0.03	18 (5%) 33 29	32, 48, 75, 93	0
2	F	346/377 (91%)	-0.06	13 (3%) 44 40	31, 46, 73, 97	0
2	H	346/377 (91%)	0.52	32 (9%) 14 12	33, 61, 91, 108	0
2	J	346/377 (91%)	0.26	15 (4%) 40 36	34, 54, 82, 106	0
2	L	346/377 (91%)	-0.15	11 (3%) 50 46	28, 42, 66, 95	0
3	M	5/11 (45%)	0.78	1 (20%) 3 2	37, 40, 50, 74	0
3	N	5/11 (45%)	0.23	1 (20%) 3 2	40, 42, 53, 70	0
3	O	5/11 (45%)	0.79	1 (20%) 3 2	41, 42, 55, 76	0
3	P	5/11 (45%)	0.56	1 (20%) 3 2	43, 46, 59, 77	0
3	Q	5/11 (45%)	-0.04	1 (20%) 3 2	36, 37, 48, 67	0
3	R	5/11 (45%)	-0.12	1 (20%) 3 2	30, 31, 51, 68	0
All	All	3990/4590 (86%)	0.25	203 (5%) 33 29	25, 52, 83, 108	0

All (203) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	G	55	PHE	8.7
2	F	18	LEU	8.0
1	C	55	PHE	7.7

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Mol	Chain	Res	Type	RSRZ
1	E	55	PHE	6.6
1	I	55	PHE	6.4
2	H	18	LEU	6.4
3	M	7	PHE	6.3
2	B	18	LEU	6.2
2	B	40	TYR	5.9
3	O	7	PHE	5.8
1	G	57	SER	5.5
1	A	55	PHE	5.2
2	H	40	TYR	5.2
2	F	111	PRO	5.1
2	J	110	ASN	5.0
1	G	56	LEU	4.8
2	J	18	LEU	4.7
1	K	55	PHE	4.7
3	P	7	PHE	4.7
2	D	18	LEU	4.7
2	J	113	THR	4.6
2	F	40	TYR	4.5
2	L	363	THR	4.5
1	C	57	SER	4.5
2	H	363	THR	4.5
2	F	110	ASN	4.4
2	H	38	GLU	4.4
2	J	85	GLU	4.4
2	J	363	THR	4.3
2	H	85	GLU	4.2
2	H	113	THR	4.2
2	H	362	LYS	4.2
2	H	305	LEU	4.2
2	B	363	THR	4.2
1	A	368	SER	4.1
2	H	111	PRO	3.9
1	G	59	ASP	3.9
3	N	7	PHE	3.8
2	B	113	THR	3.8
2	D	40	TYR	3.8
2	B	111	PRO	3.8
1	A	326	GLN	3.8
1	G	62	THR	3.8
1	I	368	SER	3.8
2	J	108	SER	3.7

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Mol	Chain	Res	Type	RSRZ
1	C	56	LEU	3.7
1	A	328	ASP	3.7
2	D	363	THR	3.5
1	G	368	SER	3.5
1	C	368	SER	3.4
1	C	328	ASP	3.4
2	D	111	PRO	3.4
1	G	60	SER	3.4
1	C	62	THR	3.4
1	G	88	VAL	3.4
1	I	91	ILE	3.3
1	K	91	ILE	3.3
2	J	40	TYR	3.3
2	H	70	ASP	3.3
1	K	59	ASP	3.2
1	C	60	SER	3.2
1	E	332	ASP	3.2
1	G	326	GLN	3.2
2	D	359	GLN	3.2
2	F	363	THR	3.2
2	B	110	ASN	3.1
1	K	85	SER	3.1
2	H	108	SER	3.1
1	G	58	LEU	3.1
2	L	18	LEU	3.1
2	B	315	SER	3.1
1	G	328	ASP	3.1
2	H	316	HIS	3.1
1	G	61	PRO	3.0
2	L	113	THR	3.0
2	H	35	VAL	3.0
2	D	305	LEU	3.0
1	E	331	GLU	3.0
1	E	81	ASN	3.0
1	C	59	ASP	2.9
2	B	292	GLU	2.9
2	H	304	ARG	2.9
1	A	327	CYS	2.9
2	H	39	ARG	2.8
2	B	362	LYS	2.8
1	E	56	LEU	2.8
1	A	195	GLN	2.8

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Mol	Chain	Res	Type	RSRZ
1	G	87	VAL	2.8
2	D	38	GLU	2.8
2	D	39	ARG	2.8
1	G	364	GLN	2.8
1	E	368	SER	2.8
2	L	37	PRO	2.7
1	E	91	ILE	2.7
1	C	331	GLU	2.7
1	E	195	GLN	2.7
1	K	62	THR	2.7
1	I	330	LYS	2.7
2	F	38	GLU	2.7
2	H	91	ASP	2.7
2	H	105	PHE	2.7
2	D	37	PRO	2.7
2	J	111	PRO	2.7
2	L	111	PRO	2.7
1	A	331	GLU	2.6
2	B	85	GLU	2.6
2	B	112	GLY	2.6
2	H	110	ASN	2.6
2	L	114	ALA	2.6
1	I	364	GLN	2.6
1	A	291	ARG	2.6
1	C	61	PRO	2.6
1	I	326	GLN	2.6
1	A	288	GLY	2.5
2	H	359	GLN	2.5
1	I	328	ASP	2.5
1	A	304	PRO	2.5
1	G	81	ASN	2.5
1	A	305	SER	2.5
2	B	39	ARG	2.5
1	I	354	GLU	2.5
2	F	362	LYS	2.5
2	J	362	LYS	2.5
2	H	314	ASP	2.5
1	E	326	GLN	2.5
2	H	144	LYS	2.4
2	H	31	ARG	2.4
1	C	251	SER	2.4
1	A	364	GLN	2.4

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Mol	Chain	Res	Type	RSRZ
2	J	39	ARG	2.4
2	B	38	GLU	2.4
3	Q	7	PHE	2.4
2	B	305	LEU	2.4
2	D	316	HIS	2.4
2	H	112	GLY	2.4
1	I	329	ASN	2.3
2	F	85	GLU	2.3
2	D	314	ASP	2.3
1	I	327	CYS	2.3
3	R	7	PHE	2.3
1	I	81	ASN	2.3
2	D	362	LYS	2.3
1	K	305	SER	2.3
2	H	65	ASP	2.3
1	E	330	LYS	2.3
1	A	251	SER	2.3
1	I	59	ASP	2.3
2	H	37	PRO	2.3
2	H	336	GLY	2.3
2	L	112	GLY	2.3
1	E	102	TYR	2.3
2	J	89	ASN	2.3
2	F	316	HIS	2.2
2	L	85	GLU	2.2
2	L	40	TYR	2.2
2	L	110	ASN	2.2
2	F	39	ARG	2.2
1	G	84	PRO	2.2
2	H	109	LYS	2.2
2	F	113	THR	2.2
1	I	225	GLN	2.2
2	D	108	SER	2.2
1	K	56	LEU	2.2
2	J	105	PHE	2.2
1	G	92	TYR	2.2
1	C	195	GLN	2.2
2	D	109	LYS	2.2
2	J	109	LYS	2.2
1	I	161	GLU	2.2
2	D	113	THR	2.2
2	L	304	ARG	2.2

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Mol	Chain	Res	Type	RSRZ
1	I	304	PRO	2.2
1	I	332	ASP	2.2
1	E	265	GLU	2.1
1	C	81	ASN	2.1
1	C	58	LEU	2.1
2	F	112	GLY	2.1
1	A	257	GLU	2.1
1	A	271	PRO	2.1
1	A	300	LEU	2.1
1	K	332	ASP	2.1
2	J	34	GLN	2.1
2	B	316	HIS	2.1
2	H	234	GLY	2.1
1	G	304	PRO	2.1
1	G	195	GLN	2.1
2	H	106	ASN	2.1
2	D	35	VAL	2.1
2	B	65	ASP	2.0
1	C	304	PRO	2.0
2	B	359	GLN	2.0
1	A	81	ASN	2.0
1	I	335	ASN	2.0
2	D	110	ASN	2.0
2	J	106	ASN	2.0
2	H	306	VAL	2.0
1	A	265	GLU	2.0
1	G	332	ASP	2.0
2	D	315	SER	2.0
2	F	315	SER	2.0
2	H	360	SER	2.0
2	H	104	PRO	2.0
1	C	326	GLN	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands ⓘ

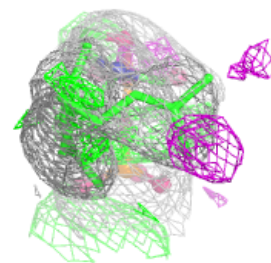
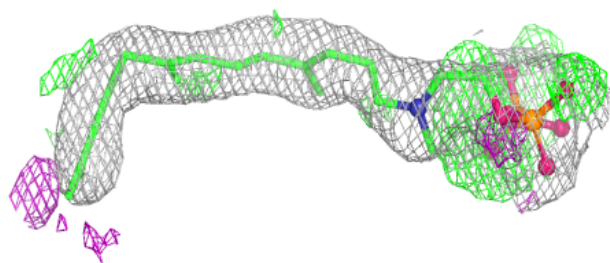
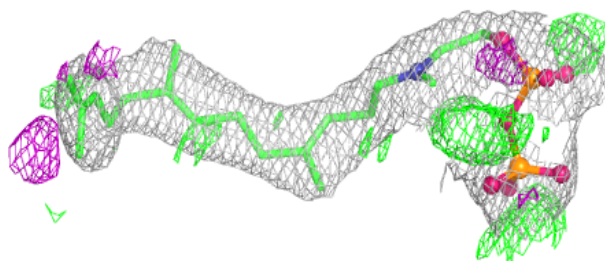
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
7	MES	F	380	12/12	0.88	0.19	85,87,87,88	0
6	MGM	H	380	29/29	0.91	0.15	38,50,71,73	0
6	MGM	F	381	29/29	0.92	0.15	38,48,65,65	0
5	CL	J	379	1/1	0.93	0.10	68,68,68,68	0
6	MGM	B	380	29/29	0.93	0.14	37,50,67,67	0
6	MGM	L	380	29/29	0.93	0.14	27,39,55,58	0
6	MGM	D	380	29/29	0.93	0.14	38,49,66,67	0
6	MGM	J	380	29/29	0.94	0.12	30,40,57,57	0
5	CL	B	379	1/1	0.97	0.07	64,64,64,64	0
5	CL	H	379	1/1	0.99	0.04	54,54,54,54	0
4	ZN	B	378	1/1	0.99	0.03	46,46,46,46	0
5	CL	L	379	1/1	0.99	0.05	47,47,47,47	0
5	CL	D	379	1/1	0.99	0.05	49,49,49,49	0
5	CL	F	379	1/1	0.99	0.03	49,49,49,49	0
4	ZN	J	378	1/1	1.00	0.03	43,43,43,43	0
4	ZN	L	378	1/1	1.00	0.03	38,38,38,38	0
4	ZN	D	378	1/1	1.00	0.02	44,44,44,44	0
4	ZN	F	378	1/1	1.00	0.02	44,44,44,44	0
4	ZN	H	378	1/1	1.00	0.03	51,51,51,51	0

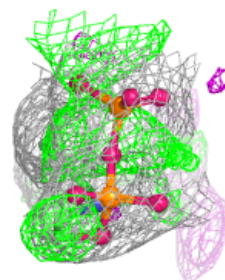
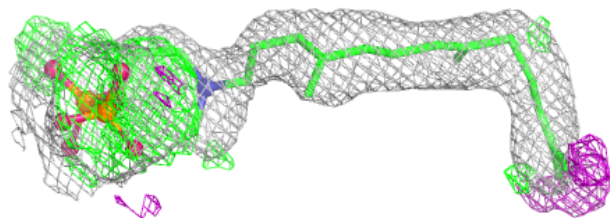
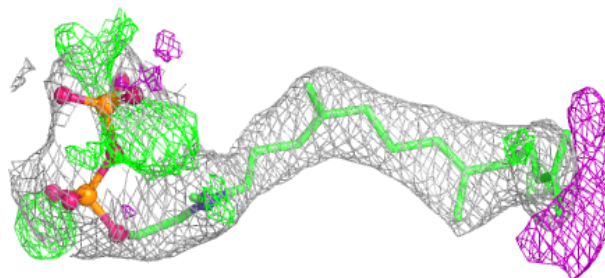
The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around MGM H 380:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

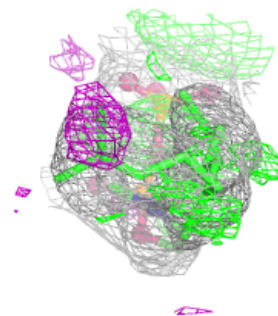
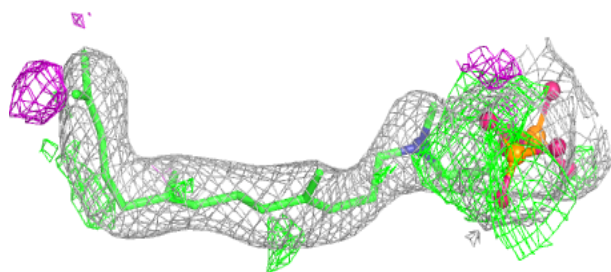
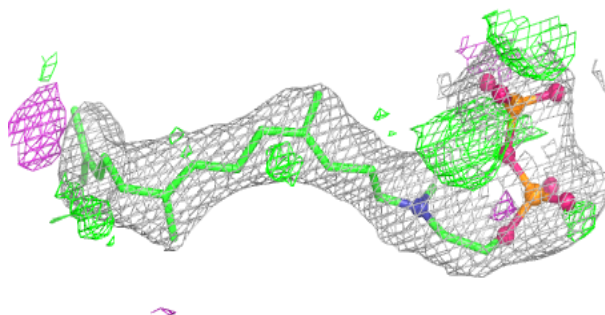
**Electron density around MGM F 381:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

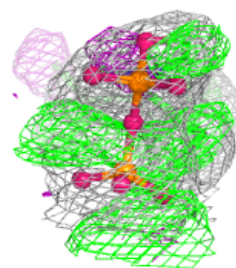
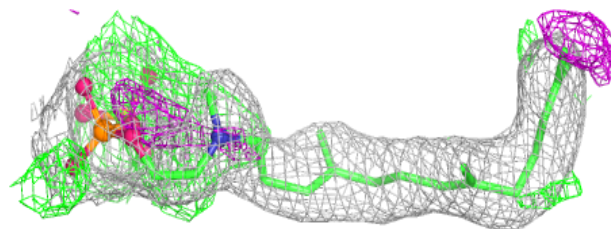
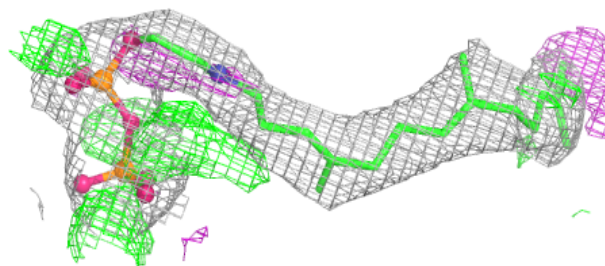


Electron density around MGM B 380:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

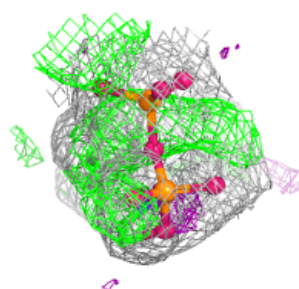
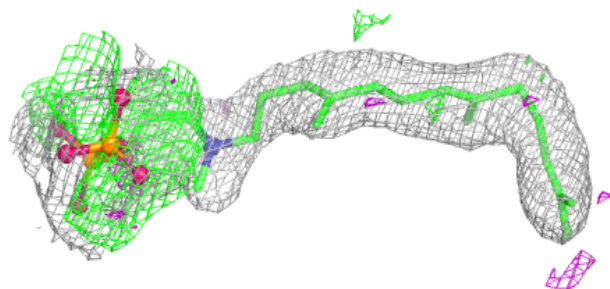
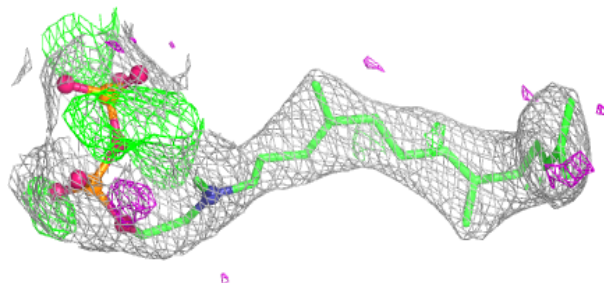
**Electron density around MGM L 380:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

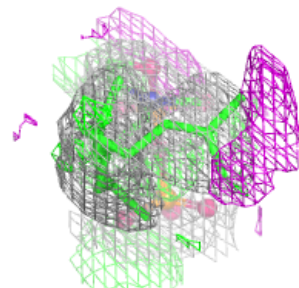
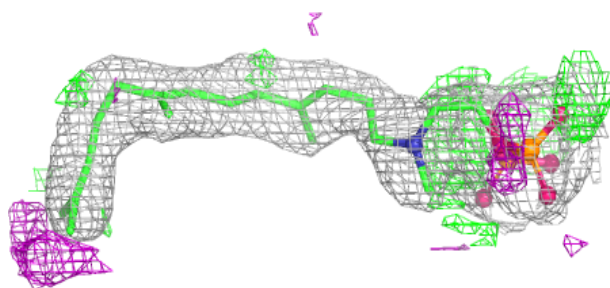
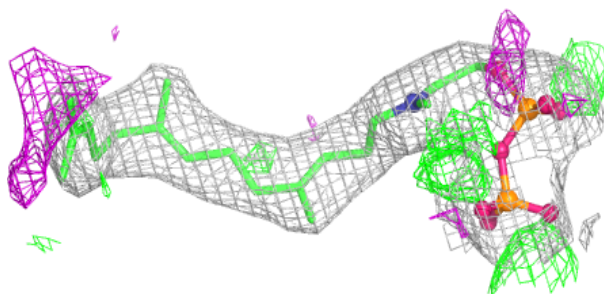


Electron density around MGM D 380:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)

**Electron density around MGM J 380:**

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



6.5 Other polymers [i](#)

There are no such residues in this entry.