Full wwPDB X-ray Structure Validation Report ⓘ

Sep 24, 2025 – 03:31 am BST

PDB ID	:	6TWM / pdb_00006twm
Title	:	Product bound structure of the Ectoine utilization protein EutE (DoeB) from Ruegeria pomeroyi
Authors	:	Mais, C.-N.; Altegoer, F.; Bange, G.
Deposited on	:	2020-01-13
Resolution	:	2.50 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:

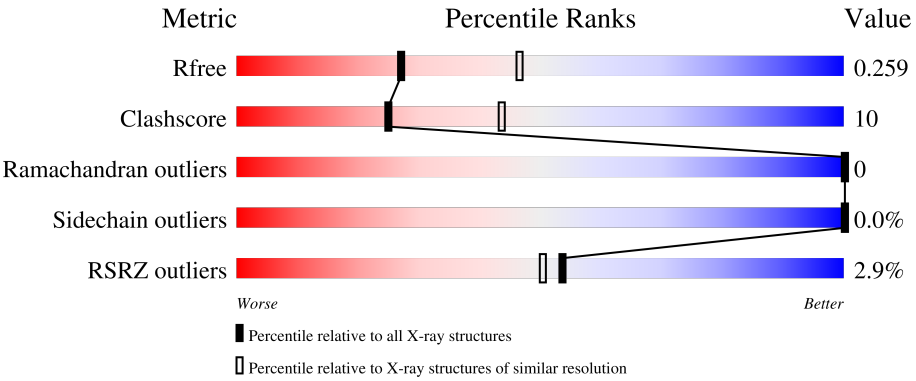
MolProbity	:	4-5-2 with Phenix2.0
Mogul	:	1.8.4, CSD as541be (2020)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 2.50 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}	164625	5504 (2.50-2.50)
Clashscore	180529	6282 (2.50-2.50)
Ramachandran outliers	177936	6191 (2.50-2.50)
Sidechain outliers	177891	6193 (2.50-2.50)
RSRZ outliers	164620	5504 (2.50-2.50)

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 <=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	337	2% 78% 18% .
1	B	337	3% 78% 19% .
1	C	337	% 78% 18% .
1	D	337	4% 73% 23% .
1	E	337	% 79% 18% .

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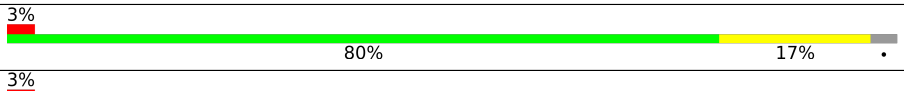
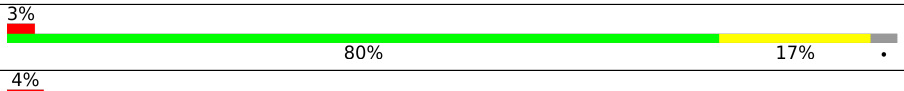
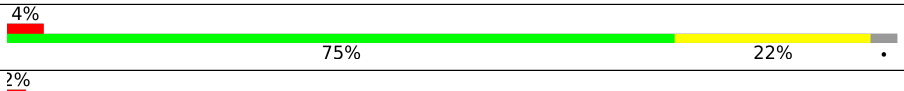
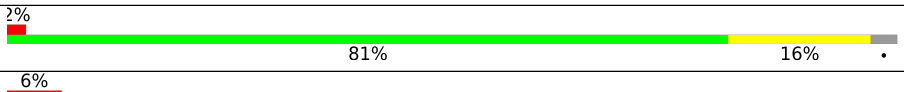
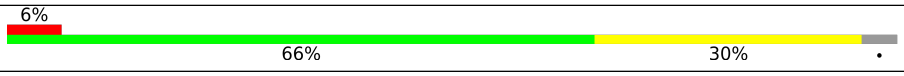
Mol	Chain	Length	Quality of chain
1	F	337	
1	G	337	
1	H	337	
1	I	337	
1	J	337	
1	K	337	
1	L	337	

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	DAB	B	402	-	-	X	-

2 Entry composition (i)

There are 5 unique types of molecules in this entry. The entry contains 30865 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 N-acetyl-L-2,4-diaminobutyric acid deacetylase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	326	Total	C	N	O	S	0	0	0
			2442	1544	422	464	12			
1	B	326	Total	C	N	O	S	0	0	0
			2442	1544	422	464	12			
1	C	325	Total	C	N	O	S	0	0	0
			2434	1538	421	463	12			
1	D	328	Total	C	N	O	S	0	0	0
			2461	1555	427	467	12			
1	E	327	Total	C	N	O	S	0	0	0
			2451	1549	424	466	12			
1	F	327	Total	C	N	O	S	0	0	0
			2446	1546	423	465	12			
1	G	327	Total	C	N	O	S	0	0	0
			2451	1549	424	466	12			
1	H	327	Total	C	N	O	S	0	0	0
			2451	1549	424	466	12			
1	I	326	Total	C	N	O	S	0	0	0
			2442	1544	422	464	12			
1	J	326	Total	C	N	O	S	0	0	0
			2443	1543	423	465	12			
1	K	327	Total	C	N	O	S	0	0	0
			2451	1549	424	466	12			
1	L	324	Total	C	N	O	S	0	0	0
			2426	1532	421	461	12			

There are 96 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-6	MET	-	initiating methionine	UNP Q5LUB5
A	-5	GLY	-	expression tag	UNP Q5LUB5
A	-4	HIS	-	expression tag	UNP Q5LUB5
A	-3	HIS	-	expression tag	UNP Q5LUB5
A	-2	HIS	-	expression tag	UNP Q5LUB5

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Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	HIS	-	expression tag	UNP Q5LUB5
A	0	HIS	-	expression tag	UNP Q5LUB5
A	1	HIS	-	expression tag	UNP Q5LUB5
B	-6	MET	-	initiating methionine	UNP Q5LUB5
B	-5	GLY	-	expression tag	UNP Q5LUB5
B	-4	HIS	-	expression tag	UNP Q5LUB5
B	-3	HIS	-	expression tag	UNP Q5LUB5
B	-2	HIS	-	expression tag	UNP Q5LUB5
B	-1	HIS	-	expression tag	UNP Q5LUB5
B	0	HIS	-	expression tag	UNP Q5LUB5
B	1	HIS	-	expression tag	UNP Q5LUB5
C	-6	MET	-	initiating methionine	UNP Q5LUB5
C	-5	GLY	-	expression tag	UNP Q5LUB5
C	-4	HIS	-	expression tag	UNP Q5LUB5
C	-3	HIS	-	expression tag	UNP Q5LUB5
C	-2	HIS	-	expression tag	UNP Q5LUB5
C	-1	HIS	-	expression tag	UNP Q5LUB5
C	0	HIS	-	expression tag	UNP Q5LUB5
C	1	HIS	-	expression tag	UNP Q5LUB5
D	-6	MET	-	initiating methionine	UNP Q5LUB5
D	-5	GLY	-	expression tag	UNP Q5LUB5
D	-4	HIS	-	expression tag	UNP Q5LUB5
D	-3	HIS	-	expression tag	UNP Q5LUB5
D	-2	HIS	-	expression tag	UNP Q5LUB5
D	-1	HIS	-	expression tag	UNP Q5LUB5
D	0	HIS	-	expression tag	UNP Q5LUB5
D	1	HIS	-	expression tag	UNP Q5LUB5
E	-6	MET	-	initiating methionine	UNP Q5LUB5
E	-5	GLY	-	expression tag	UNP Q5LUB5
E	-4	HIS	-	expression tag	UNP Q5LUB5
E	-3	HIS	-	expression tag	UNP Q5LUB5
E	-2	HIS	-	expression tag	UNP Q5LUB5
E	-1	HIS	-	expression tag	UNP Q5LUB5
E	0	HIS	-	expression tag	UNP Q5LUB5
E	1	HIS	-	expression tag	UNP Q5LUB5
F	-6	MET	-	initiating methionine	UNP Q5LUB5
F	-5	GLY	-	expression tag	UNP Q5LUB5
F	-4	HIS	-	expression tag	UNP Q5LUB5
F	-3	HIS	-	expression tag	UNP Q5LUB5
F	-2	HIS	-	expression tag	UNP Q5LUB5
F	-1	HIS	-	expression tag	UNP Q5LUB5
F	0	HIS	-	expression tag	UNP Q5LUB5

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Chain	Residue	Modelled	Actual	Comment	Reference
F	1	HIS	-	expression tag	UNP Q5LUB5
G	-6	MET	-	initiating methionine	UNP Q5LUB5
G	-5	GLY	-	expression tag	UNP Q5LUB5
G	-4	HIS	-	expression tag	UNP Q5LUB5
G	-3	HIS	-	expression tag	UNP Q5LUB5
G	-2	HIS	-	expression tag	UNP Q5LUB5
G	-1	HIS	-	expression tag	UNP Q5LUB5
G	0	HIS	-	expression tag	UNP Q5LUB5
G	1	HIS	-	expression tag	UNP Q5LUB5
H	-6	MET	-	initiating methionine	UNP Q5LUB5
H	-5	GLY	-	expression tag	UNP Q5LUB5
H	-4	HIS	-	expression tag	UNP Q5LUB5
H	-3	HIS	-	expression tag	UNP Q5LUB5
H	-2	HIS	-	expression tag	UNP Q5LUB5
H	-1	HIS	-	expression tag	UNP Q5LUB5
H	0	HIS	-	expression tag	UNP Q5LUB5
H	1	HIS	-	expression tag	UNP Q5LUB5
I	-6	MET	-	initiating methionine	UNP Q5LUB5
I	-5	GLY	-	expression tag	UNP Q5LUB5
I	-4	HIS	-	expression tag	UNP Q5LUB5
I	-3	HIS	-	expression tag	UNP Q5LUB5
I	-2	HIS	-	expression tag	UNP Q5LUB5
I	-1	HIS	-	expression tag	UNP Q5LUB5
I	0	HIS	-	expression tag	UNP Q5LUB5
I	1	HIS	-	expression tag	UNP Q5LUB5
J	-6	MET	-	initiating methionine	UNP Q5LUB5
J	-5	GLY	-	expression tag	UNP Q5LUB5
J	-4	HIS	-	expression tag	UNP Q5LUB5
J	-3	HIS	-	expression tag	UNP Q5LUB5
J	-2	HIS	-	expression tag	UNP Q5LUB5
J	-1	HIS	-	expression tag	UNP Q5LUB5
J	0	HIS	-	expression tag	UNP Q5LUB5
J	1	HIS	-	expression tag	UNP Q5LUB5
K	-6	MET	-	initiating methionine	UNP Q5LUB5
K	-5	GLY	-	expression tag	UNP Q5LUB5
K	-4	HIS	-	expression tag	UNP Q5LUB5
K	-3	HIS	-	expression tag	UNP Q5LUB5
K	-2	HIS	-	expression tag	UNP Q5LUB5
K	-1	HIS	-	expression tag	UNP Q5LUB5
K	0	HIS	-	expression tag	UNP Q5LUB5
K	1	HIS	-	expression tag	UNP Q5LUB5
L	-6	MET	-	initiating methionine	UNP Q5LUB5

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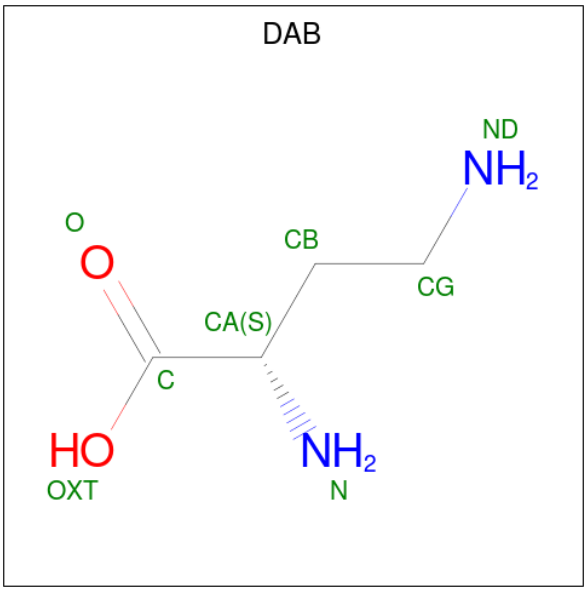
Chain	Residue	Modelled	Actual	Comment	Reference
L	-5	GLY	-	expression tag	UNP Q5LUB5
L	-4	HIS	-	expression tag	UNP Q5LUB5
L	-3	HIS	-	expression tag	UNP Q5LUB5
L	-2	HIS	-	expression tag	UNP Q5LUB5
L	-1	HIS	-	expression tag	UNP Q5LUB5
L	0	HIS	-	expression tag	UNP Q5LUB5
L	1	HIS	-	expression tag	UNP Q5LUB5

- Molecule 2 is ZINC ION (CCD ID: ZN) (formula: Zn).

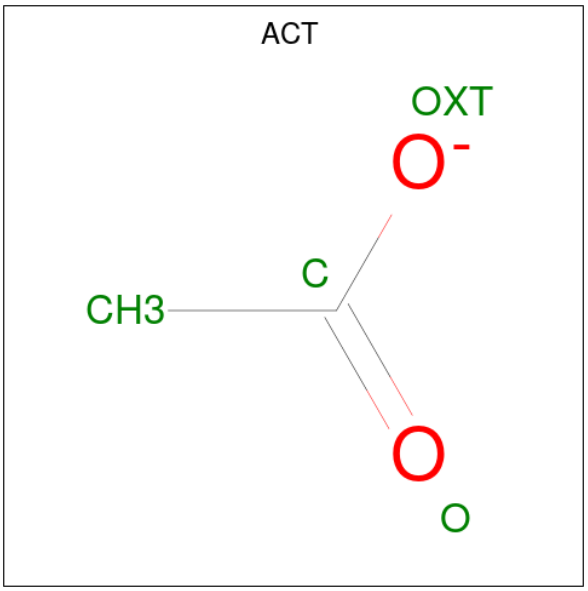
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total Zn 1 1	0	0
2	B	1	Total Zn 1 1	0	0
2	C	1	Total Zn 1 1	0	0
2	D	1	Total Zn 1 1	0	0
2	E	1	Total Zn 1 1	0	0
2	G	1	Total Zn 1 1	0	0
2	H	1	Total Zn 1 1	0	0
2	I	1	Total Zn 1 1	0	0
2	J	1	Total Zn 1 1	0	0
2	L	1	Total Zn 1 1	0	0

- Molecule 3 is 2,4-DIAMINOBUTYRIC ACID (CCD ID: DAB) (formula: $C_4H_{10}N_2O_2$) (labeled as "Ligand of Interest" by depositor).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total C N O 8 4 2 2	0	0
3	B	1	Total C N O 8 4 2 2	0	0
3	D	1	Total C N O 8 4 2 2	0	0
3	E	1	Total C N O 8 4 2 2	0	0
3	F	1	Total C N O 8 4 2 2	0	0
3	J	1	Total C N O 8 4 2 2	0	0
3	K	1	Total C N O 8 4 2 2	0	0

- Molecule 4 is ACETATE ION (CCD ID: ACT) (formula: $C_2H_3O_2$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	C	1	Total C O 4 2 2	0	0
4	G	1	Total C O 4 2 2	0	0
4	H	1	Total C O 4 2 2	0	0

- Molecule 5 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	144	Total O 144 144	0	0
5	B	130	Total O 130 130	0	0
5	C	130	Total O 130 130	0	0
5	D	111	Total O 111 111	0	0
5	E	117	Total O 117 117	0	0
5	F	131	Total O 131 131	0	0
5	G	121	Total O 121 121	0	0
5	H	112	Total O 112 112	0	0
5	I	108	Total O 108 108	0	0

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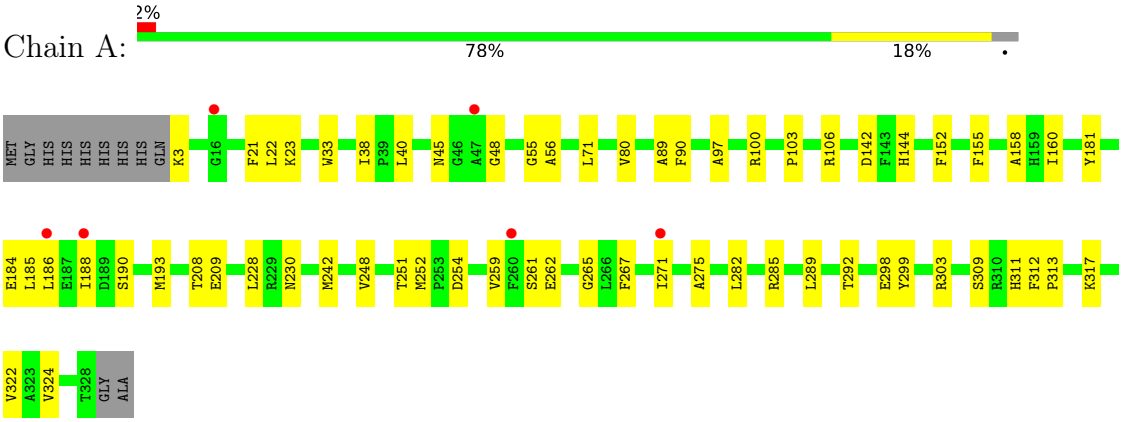
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	J	118	Total O 118 118	0	0
5	K	118	Total O 118 118	0	0
5	L	107	Total O 107 107	0	0

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 electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density (RSRZ > 2). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

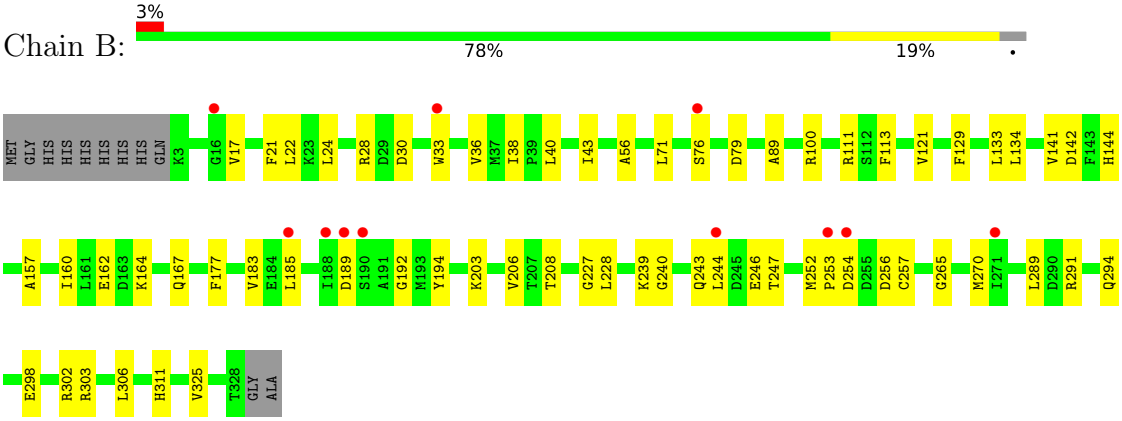
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

Chain A:



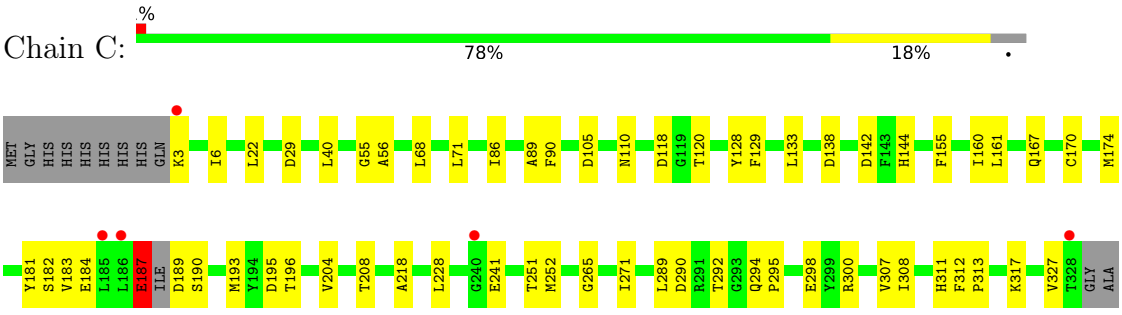
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

Chain B:



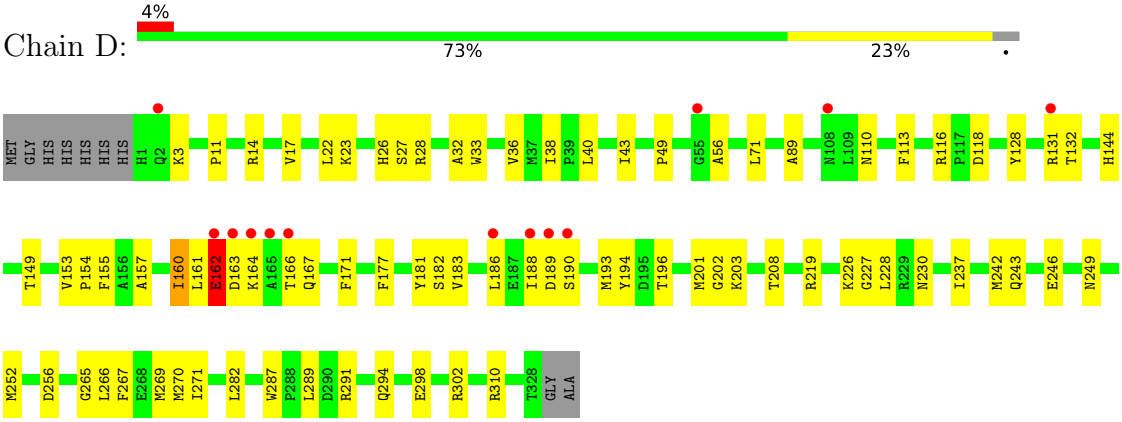
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

Chain C:



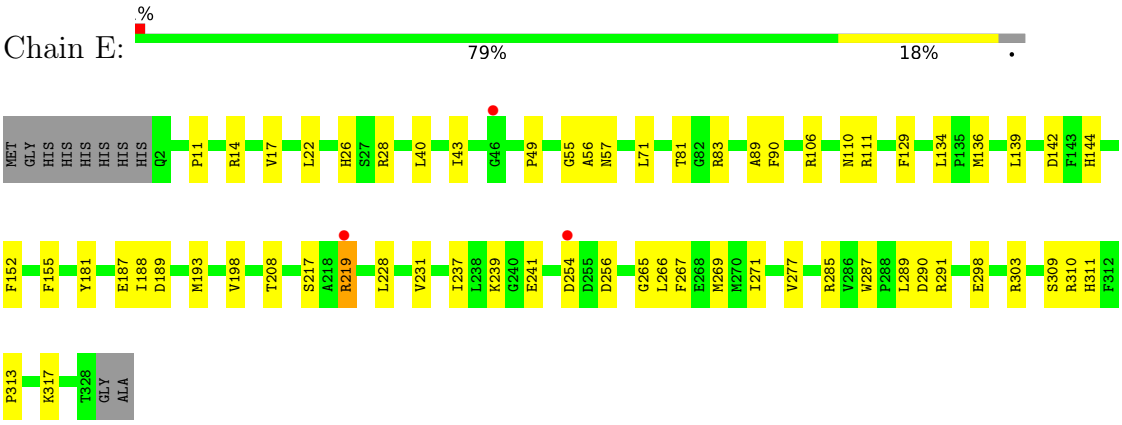
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

Chain D:



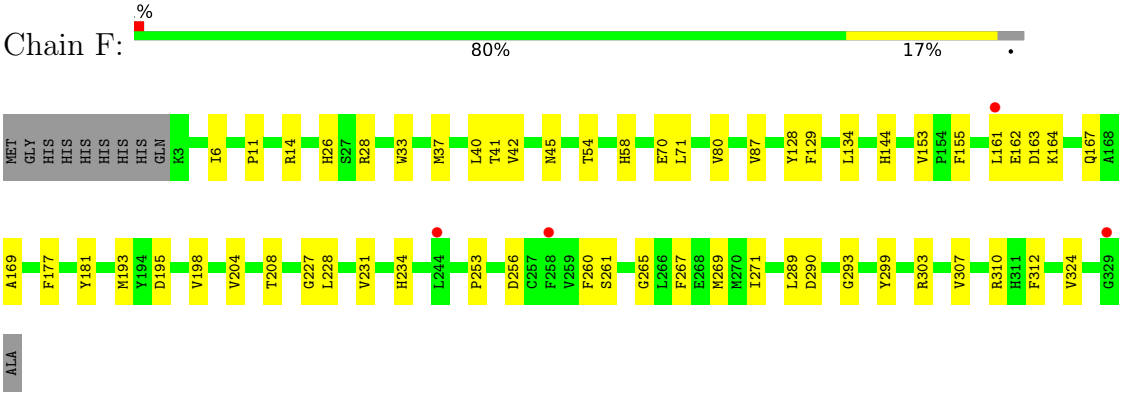
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

Chain E:



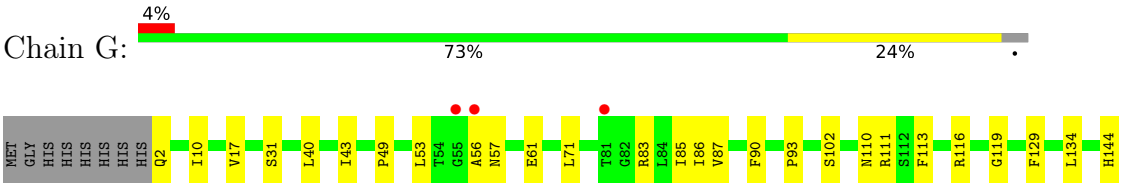
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

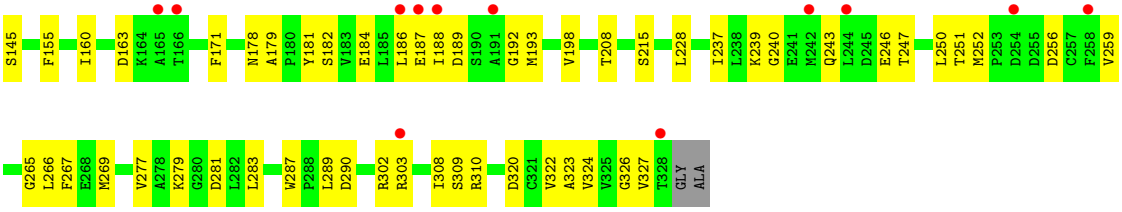
Chain F:



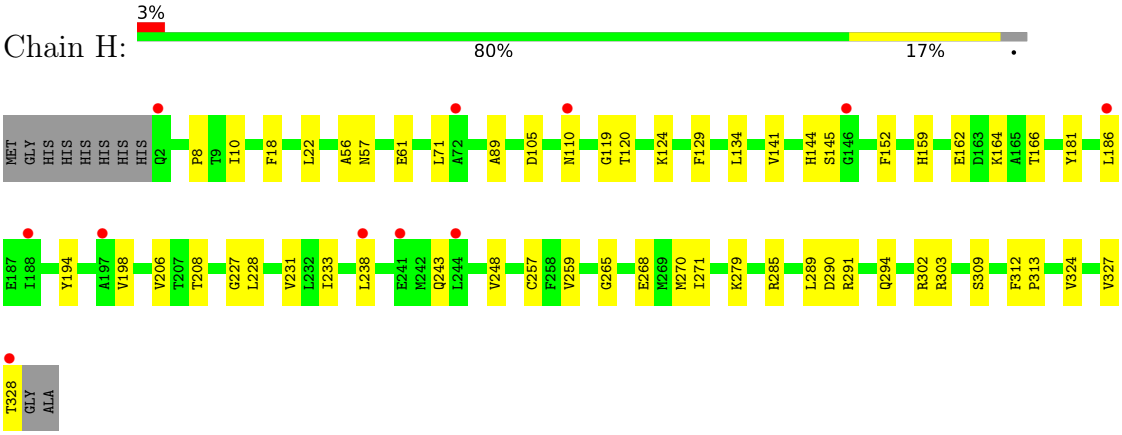
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

Chain G:

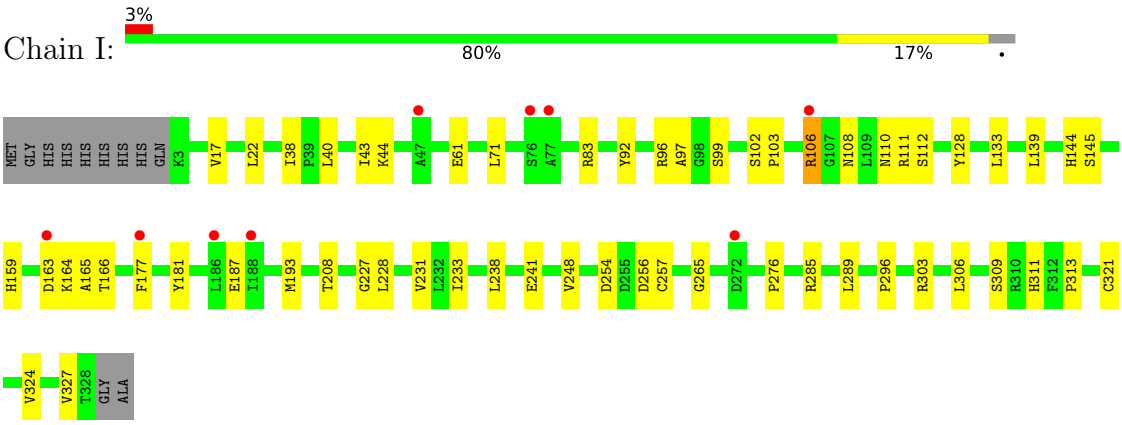




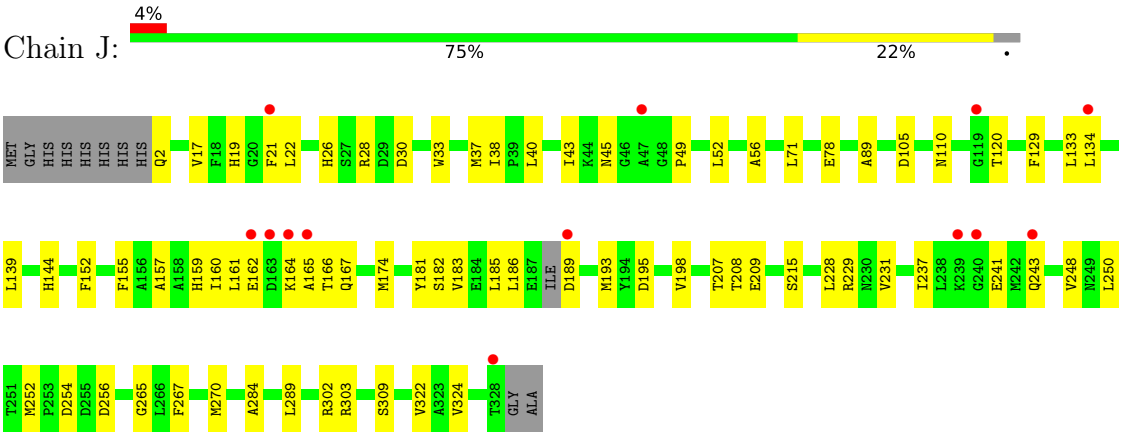
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase



• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

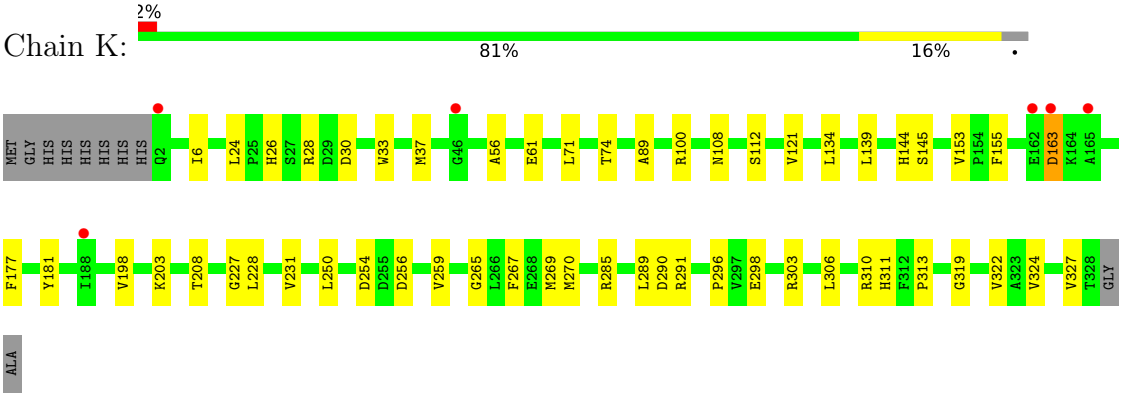


• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase



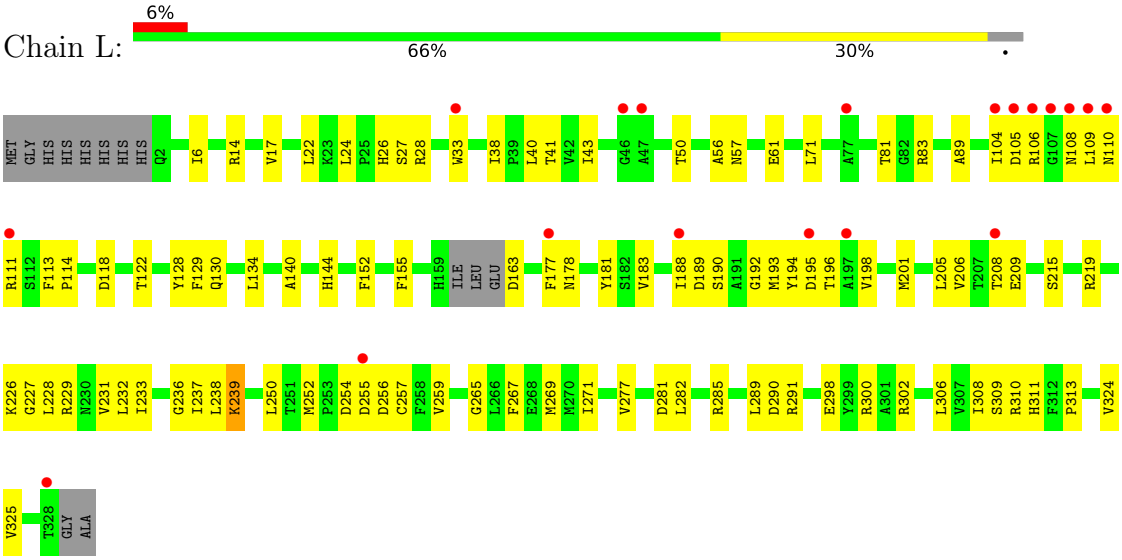
• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

Chain K:



• Molecule 1: N-acetyl-L-2,4-diaminobutyric acid deacetylase

Chain L:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	76.67Å 145.95Å 164.12Å 90.00° 92.30° 90.00°	Depositor
Resolution (Å)	46.64 – 2.50 46.64 – 2.50	Depositor EDS
% Data completeness (in resolution range)	98.7 (46.64-2.50) 98.8 (46.64-2.50)	Depositor EDS
R_{merge}	0.21	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.06 (at 2.27Å)	Xtriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, R_{free}	0.209 , 0.262 0.207 , 0.259	Depositor DCC
R_{free} test set	1568 reflections (0.94%)	wwPDB-VP
Wilson B-factor (Å^2)	39.3	Xtriage
Anisotropy	0.089	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 59.8	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.32$	Xtriage
Estimated twinning fraction	0.022 for h,-k,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	30865	wwPDB-VP
Average B, all atoms (Å^2)	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 24.38 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 3.8815e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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: ACT, ZN, DAB

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	0.14	0/2495	0.38	0/3390
1	B	0.15	0/2495	0.41	0/3390
1	C	0.18	0/2487	0.44	1/3379 (0.0%)
1	D	0.26	2/2515 (0.1%)	0.50	5/3417 (0.1%)
1	E	0.17	0/2504	0.40	1/3402 (0.0%)
1	F	0.15	0/2499	0.39	0/3395
1	G	0.16	0/2504	0.44	0/3402
1	H	0.15	0/2504	0.41	0/3402
1	I	0.22	1/2495 (0.0%)	0.46	0/3390
1	J	0.16	0/2495	0.40	0/3388
1	K	0.18	0/2504	0.43	1/3402 (0.0%)
1	L	0.16	0/2478	0.43	0/3365
All	All	0.18	3/29975 (0.0%)	0.42	8/40722 (0.0%)

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	A	0	1
1	C	0	1
1	D	0	3
1	G	0	1
1	J	0	1
1	K	0	1
1	L	0	1
All	All	0	9

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	131	ARG	NE-CZ	7.71	1.41	1.33
1	I	106	ARG	CD-NE	6.20	1.54	1.46
1	D	131	ARG	CZ-NH1	-5.56	1.25	1.32

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	D	131	ARG	NE-CZ-NH2	7.01	125.51	119.20
1	D	162	GLU	CA-C-N	6.16	132.22	122.61
1	D	162	GLU	C-N-CA	6.16	132.22	122.61
1	K	163	ASP	CA-CB-CG	-5.63	106.97	112.60
1	D	162	GLU	N-CA-C	5.48	119.12	109.80
1	E	219	ARG	NE-CZ-NH2	5.39	124.05	119.20
1	D	131	ARG	CB-CG-CD	5.12	123.08	111.30
1	C	187	GLU	N-CA-C	5.00	121.46	110.80

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	188	ILE	Peptide
1	C	187	GLU	Peptide
1	D	160	ILE	Peptide
1	D	161	LEU	Peptide
1	D	162	GLU	Peptide
1	G	188	ILE	Peptide
1	J	162	GLU	Peptide
1	K	163	ASP	Peptide
1	L	239	LYS	Peptide

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2442	0	2423	45	0
1	B	2442	0	2423	45	3
1	C	2434	0	2412	40	1
1	D	2461	0	2441	57	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	E	2451	0	2431	42	0
1	F	2446	0	2426	42	0
1	G	2451	0	2431	63	0
1	H	2451	0	2431	37	0
1	I	2442	0	2423	42	1
1	J	2443	0	2419	52	0
1	K	2451	0	2431	37	0
1	L	2426	0	2402	81	4
2	A	1	0	0	0	0
2	B	1	0	0	0	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	G	1	0	0	0	0
2	H	1	0	0	0	0
2	I	1	0	0	0	0
2	J	1	0	0	0	0
2	L	1	0	0	0	0
3	A	8	0	8	1	0
3	B	8	0	9	2	3
3	D	8	0	9	0	0
3	E	8	0	9	1	2
3	F	8	0	9	0	0
3	J	8	0	9	1	0
3	K	8	0	9	2	0
4	C	4	0	3	0	0
4	G	4	0	3	0	0
4	H	4	0	3	0	0
5	A	144	0	0	6	0
5	B	130	0	0	4	0
5	C	130	0	0	7	0
5	D	111	0	0	4	0
5	E	117	0	0	4	0
5	F	131	0	0	2	0
5	G	121	0	0	10	0
5	H	112	0	0	4	0
5	I	108	0	0	5	0
5	J	118	0	0	7	0
5	K	118	0	0	0	0
5	L	107	0	0	9	0
All	All	30865	0	29164	564	7

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 10.

All (564) 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:22:LEU:HG	1:B:40:LEU:HD22	1.28	1.06
1:I:22:LEU:HG	1:I:40:LEU:HD22	1.34	1.05
1:I:103:PRO:HA	1:I:106:ARG:HH21	1.23	1.03
1:D:22:LEU:HG	1:D:40:LEU:HD22	1.40	1.00
1:G:303:ARG:NH1	1:G:303:ARG:HB3	1.80	0.97
1:G:303:ARG:HB3	1:G:303:ARG:HH11	1.28	0.97
1:G:256:ASP:HB2	1:G:303:ARG:HD2	1.55	0.87
1:J:229:ARG:NH2	5:J:502:HOH:O	2.06	0.87
1:G:303:ARG:HH11	1:G:303:ARG:CB	1.89	0.85
1:L:109:LEU:HD22	1:L:111:ARG:H	1.40	0.84
1:H:271:ILE:HD12	1:H:271:ILE:O	1.78	0.83
1:E:269:MET:HE3	1:E:310:ARG:HB2	1.61	0.82
1:I:99:SER:CB	5:I:501:HOH:O	2.26	0.81
1:L:111:ARG:NH1	5:L:501:HOH:O	2.13	0.81
1:G:239:LYS:HD2	1:G:240:GLY:H	1.45	0.81
1:C:68:LEU:HD12	1:C:86:ILE:HG23	1.64	0.80
1:G:269:MET:HE3	1:G:310:ARG:HB2	1.65	0.78
1:J:302:ARG:NH1	5:J:504:HOH:O	2.17	0.76
1:K:254:ASP:OD2	1:K:303:ARG:NH2	2.18	0.76
1:D:162:GLU:HG3	1:D:167:GLN:OE1	1.85	0.76
1:B:239:LYS:HD2	1:B:240:GLY:H	1.51	0.75
1:L:109:LEU:HD22	1:L:111:ARG:HB2	1.67	0.75
1:H:271:ILE:HD12	1:H:271:ILE:C	2.12	0.75
1:A:185:LEU:O	5:A:501:HOH:O	2.05	0.74
1:L:111:ARG:HG3	1:L:193:MET:HA	1.67	0.74
1:B:265:GLY:HA2	1:B:289:LEU:HG	1.68	0.74
1:A:324:VAL:HG21	1:K:33:TRP:HZ3	1.54	0.73
1:G:279:LYS:HG2	1:G:303:ARG:HA	1.69	0.73
1:H:159:HIS:HD2	1:H:186:LEU:HA	1.52	0.73
1:L:256:ASP:OD1	1:L:302:ARG:NH1	2.23	0.71
1:L:269:MET:HE3	1:L:310:ARG:HB2	1.70	0.71
1:F:155:PHE:HB3	1:F:181:TYR:HB2	1.71	0.70
1:J:254:ASP:HB2	1:J:303:ARG:HH12	1.56	0.70
1:L:219:ARG:NH2	5:L:504:HOH:O	2.25	0.70
1:K:269:MET:HE3	1:K:310:ARG:HB2	1.73	0.70
1:J:22:LEU:HG	1:J:40:LEU:HD22	1.74	0.70
1:B:162:GLU:OE2	5:B:501:HOH:O	2.10	0.69
1:E:106:ARG:NH1	5:E:503:HOH:O	2.25	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:A:402:DAB:HA	1:K:33:TRP:HE1	1.58	0.69
1:L:50:THR:HG22	1:L:83:ARG:HB3	1.74	0.69
1:A:185:LEU:HD23	1:A:252:MET:HE1	1.75	0.69
1:D:186:LEU:H	1:D:252:MET:HE3	1.57	0.69
1:D:294:GLN:OE1	5:D:501:HOH:O	2.11	0.69
1:G:90:PHE:N	5:G:504:HOH:O	2.24	0.69
1:J:241:GLU:N	5:J:502:HOH:O	2.16	0.68
1:I:99:SER:OG	5:I:501:HOH:O	2.09	0.68
1:A:3:LYS:N	5:A:505:HOH:O	2.27	0.68
1:A:265:GLY:HA2	1:A:289:LEU:HG	1.75	0.68
1:L:193:MET:HB3	1:L:195:ASP:OD1	1.93	0.68
1:H:105:ASP:OD2	1:H:120:THR:HB	1.94	0.68
1:K:265:GLY:HA2	1:K:289:LEU:HG	1.76	0.68
1:A:262:GLU:O	1:D:291:ARG:NH1	2.25	0.68
1:C:265:GLY:HA2	1:C:289:LEU:HG	1.75	0.67
1:D:155:PHE:HB3	1:D:181:TYR:HB2	1.76	0.67
1:F:271:ILE:HD13	1:F:307:VAL:HG21	1.76	0.67
1:E:254:ASP:OD2	5:E:501:HOH:O	2.11	0.67
1:D:162:GLU:OE2	1:D:167:GLN:OE1	2.12	0.67
1:C:155:PHE:HB3	1:C:181:TYR:HB2	1.77	0.66
1:J:161:LEU:H	1:J:167:GLN:NE2	1.93	0.66
1:G:290:ASP:OD1	5:G:501:HOH:O	2.13	0.66
1:D:265:GLY:HA2	1:D:289:LEU:HG	1.77	0.65
1:K:285:ARG:NH1	1:K:298:GLU:OE2	2.29	0.65
1:D:3:LYS:NZ	5:D:507:HOH:O	2.28	0.65
1:I:265:GLY:HA2	1:I:289:LEU:HG	1.79	0.65
1:F:269:MET:HE3	1:F:310:ARG:HB2	1.78	0.65
1:J:52:LEU:HD23	1:J:134:LEU:HD12	1.77	0.65
1:H:265:GLY:HA2	1:H:289:LEU:HG	1.79	0.64
1:D:269:MET:HE3	1:D:310:ARG:HB2	1.80	0.64
1:B:22:LEU:HG	1:B:40:LEU:CD2	2.17	0.64
1:L:109:LEU:HD22	1:L:111:ARG:N	2.12	0.64
1:C:187:GLU:N	1:C:187:GLU:OE1	2.31	0.64
1:E:26:HIS:CD2	1:E:28:ARG:HD3	2.33	0.63
1:K:254:ASP:HB3	1:K:256:ASP:H	1.62	0.63
1:K:177:PHE:CD1	1:K:227:GLY:HA3	2.34	0.62
1:I:17:VAL:HG13	1:I:43:ILE:HG12	1.82	0.62
1:G:56:ALA:N	5:G:504:HOH:O	2.32	0.62
1:L:155:PHE:HB3	1:L:181:TYR:HB2	1.82	0.62
1:L:265:GLY:HA2	1:L:289:LEU:HG	1.82	0.62
1:B:160:ILE:HA	1:B:167:GLN:HE21	1.63	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:177:PHE:CD1	1:D:227:GLY:HA3	2.34	0.62
1:I:103:PRO:HA	1:I:106:ARG:NH2	2.07	0.62
1:D:71:LEU:HD22	1:D:228:LEU:HD21	1.81	0.62
1:E:71:LEU:HD22	1:E:228:LEU:HD21	1.80	0.62
1:G:49:PRO:HG2	1:G:237:ILE:HG12	1.81	0.62
1:D:23:LYS:NZ	5:D:509:HOH:O	2.30	0.61
1:F:177:PHE:CD1	1:F:227:GLY:HA3	2.34	0.61
1:D:166:THR:HG21	1:D:202:GLY:HA2	1.82	0.61
1:C:71:LEU:HD22	1:C:228:LEU:HD21	1.82	0.61
1:B:177:PHE:CD1	1:B:227:GLY:HA3	2.36	0.61
1:D:160:ILE:O	1:D:162:GLU:HG3	2.00	0.61
1:G:160:ILE:HG12	1:G:186:LEU:HB2	1.82	0.61
1:I:177:PHE:CD1	1:I:227:GLY:HA3	2.36	0.61
1:C:271:ILE:HD11	1:C:307:VAL:HG21	1.83	0.61
1:E:56:ALA:HB3	1:E:89:ALA:HA	1.82	0.61
1:I:17:VAL:HG22	1:I:43:ILE:HG23	1.82	0.61
1:C:174:MET:SD	1:C:182:SER:HB3	2.41	0.61
1:G:116:ARG:NH2	5:G:510:HOH:O	2.34	0.60
1:J:265:GLY:HA2	1:J:289:LEU:HG	1.83	0.60
1:I:163:ASP:OD1	5:I:502:HOH:O	2.16	0.60
1:G:71:LEU:HD22	1:G:228:LEU:HD21	1.81	0.60
1:L:227:GLY:O	1:L:231:VAL:HG22	2.01	0.60
1:B:17:VAL:HG22	1:B:43:ILE:HG12	1.82	0.60
1:D:56:ALA:HB3	1:D:89:ALA:HA	1.82	0.60
1:H:279:LYS:NZ	5:H:501:HOH:O	2.10	0.60
1:L:232:LEU:HB3	1:L:238:LEU:HD12	1.82	0.60
1:C:218:ALA:O	5:C:501:HOH:O	2.17	0.59
1:D:26:HIS:CD2	1:D:28:ARG:HD3	2.37	0.59
1:H:270:MET:HA	1:H:270:MET:HE2	1.84	0.59
1:L:81:THR:OG1	1:L:236:GLY:O	2.20	0.59
1:J:164:LYS:HB3	1:J:166:THR:H	1.67	0.59
1:F:153:VAL:HG23	1:F:155:PHE:HD2	1.66	0.59
1:A:282:LEU:HD21	1:A:285:ARG:HD3	1.84	0.59
1:L:177:PHE:CD1	1:L:227:GLY:HA3	2.36	0.59
1:L:105:ASP:OD1	1:L:108:ASN:HB2	2.02	0.59
1:G:243:GLN:NE2	5:G:512:HOH:O	2.35	0.58
1:A:254:ASP:OD2	1:A:303:ARG:NH2	2.37	0.58
1:C:183:VAL:HG11	1:C:252:MET:HE3	1.84	0.58
1:E:271:ILE:HD13	1:E:277:VAL:HG12	1.84	0.58
1:A:100:ARG:NH1	5:A:508:HOH:O	2.34	0.58
1:A:230:ASN:HB3	1:A:242:MET:HE3	1.85	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:157:ALA:HB1	1:J:185:LEU:HD13	1.85	0.58
1:E:187:GLU:OE2	3:E:402:DAB:ND	2.36	0.58
1:G:279:LYS:HE3	1:G:303:ARG:HA	1.84	0.58
1:K:56:ALA:HB3	1:K:89:ALA:HA	1.86	0.57
1:J:26:HIS:CD2	1:J:28:ARG:HD3	2.40	0.57
1:H:291:ARG:HD3	1:H:294:GLN:HG3	1.87	0.57
1:L:109:LEU:HD21	1:L:111:ARG:HD3	1.85	0.57
1:D:164:LYS:HG3	1:D:166:THR:H	1.70	0.57
1:F:71:LEU:HD22	1:F:228:LEU:HD21	1.86	0.57
1:G:110:ASN:O	1:G:111:ARG:HD3	2.04	0.57
1:D:154:PRO:HG3	1:D:219:ARG:HH12	1.70	0.57
1:I:103:PRO:CA	1:I:106:ARG:HH21	2.09	0.57
1:L:190:SER:HG	1:L:196:THR:HG1	1.52	0.57
1:A:285:ARG:HG2	1:A:298:GLU:HG2	1.86	0.56
1:H:61:GLU:HB3	1:H:145:SER:HB2	1.87	0.56
1:L:56:ALA:HB3	1:L:89:ALA:HA	1.86	0.56
1:H:141:VAL:HG22	1:H:206:VAL:HB	1.87	0.56
1:B:28:ARG:HG3	1:B:30:ASP:HB2	1.86	0.56
1:G:302:ARG:NH2	5:G:516:HOH:O	2.38	0.56
1:H:71:LEU:HD22	1:H:228:LEU:HD21	1.88	0.56
1:F:33:TRP:HZ3	1:K:324:VAL:HG21	1.71	0.56
1:I:108:ASN:HD21	1:I:111:ARG:HH11	1.54	0.56
1:A:56:ALA:HB3	1:A:89:ALA:HA	1.87	0.56
1:H:271:ILE:C	1:H:271:ILE:CD1	2.78	0.56
1:B:270:MET:HE2	1:B:270:MET:HA	1.87	0.56
1:J:243:GLN:NE2	5:J:501:HOH:O	1.83	0.55
1:C:252:MET:HE2	1:C:308:ILE:HD11	1.88	0.55
1:D:162:GLU:OE1	1:E:241:GLU:OE2	2.23	0.55
1:E:129:PHE:O	1:E:134:LEU:HB2	2.06	0.55
1:K:100:ARG:HH12	3:K:401:DAB:HD1	1.53	0.55
1:E:22:LEU:HG	1:E:40:LEU:HD22	1.89	0.55
1:J:2:GLN:NE2	5:J:516:HOH:O	2.38	0.55
1:F:26:HIS:CD2	1:F:28:ARG:HD3	2.42	0.55
1:L:189:ASP:HA	5:L:502:HOH:O	2.05	0.55
1:L:309:SER:HB3	1:L:324:VAL:HG12	1.89	0.55
1:K:155:PHE:HB3	1:K:181:TYR:HB2	1.89	0.55
1:L:188:ILE:O	5:L:502:HOH:O	2.18	0.55
1:B:142:ASP:OD2	1:B:144:HIS:NE2	2.36	0.55
1:K:270:MET:HE3	1:K:285:ARG:HE	1.72	0.55
1:L:109:LEU:CD2	1:L:111:ARG:H	2.15	0.55
1:B:291:ARG:HH21	1:B:294:GLN:CD	2.15	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:110:ASN:N	5:H:505:HOH:O	2.30	0.55
1:D:49:PRO:HG2	1:D:237:ILE:HG13	1.88	0.55
1:D:22:LEU:HG	1:D:40:LEU:CD2	2.26	0.55
1:E:217:SER:HB2	1:E:219:ARG:HH21	1.72	0.55
1:F:11:PRO:HG3	1:F:14:ARG:NH2	2.22	0.55
1:K:71:LEU:HD22	1:K:228:LEU:HD21	1.89	0.54
1:D:17:VAL:HG13	1:D:43:ILE:HG12	1.88	0.54
1:L:269:MET:HG3	1:L:271:ILE:O	2.07	0.54
1:B:56:ALA:HB3	1:B:89:ALA:HA	1.89	0.54
1:C:3:LYS:NZ	5:C:518:HOH:O	2.34	0.54
1:J:302:ARG:NH2	5:J:518:HOH:O	2.40	0.54
1:G:61:GLU:HB3	1:G:145:SER:HB2	1.90	0.54
1:L:144:HIS:HB2	1:L:208:THR:O	2.08	0.54
1:J:183:VAL:HG22	1:J:250:LEU:HB2	1.90	0.54
1:C:294:GLN:HG2	1:C:295:PRO:HD2	1.90	0.53
1:K:61:GLU:HB3	1:K:145:SER:HB2	1.89	0.53
1:C:298:GLU:OE1	1:C:300:ARG:NH2	2.41	0.53
1:G:10:ILE:HD11	1:G:40:LEU:HD23	1.90	0.53
1:D:282:LEU:HD11	1:D:298:GLU:HB3	1.91	0.53
1:I:311:HIS:HB2	1:I:321:CYS:O	2.09	0.53
1:L:152:PHE:CD1	1:L:309:SER:HB2	2.43	0.53
1:B:177:PHE:CE1	1:B:227:GLY:HA3	2.44	0.53
1:C:292:THR:HB	1:L:41:THR:OG1	2.09	0.53
1:E:17:VAL:HG22	1:E:43:ILE:HG12	1.91	0.53
1:G:303:ARG:NH1	1:G:303:ARG:CB	2.57	0.53
1:J:28:ARG:NE	1:J:30:ASP:OD1	2.41	0.53
1:A:292:THR:OG1	5:A:502:HOH:O	2.15	0.53
1:I:112:SER:OG	5:I:503:HOH:O	2.19	0.53
1:L:71:LEU:HD22	1:L:228:LEU:HD21	1.90	0.53
1:L:104:ILE:C	1:L:106:ARG:H	2.15	0.53
1:I:102:SER:O	1:I:106:ARG:NH2	2.42	0.53
1:D:116:ARG:HH21	1:D:118:ASP:CG	2.17	0.53
1:E:254:ASP:HB3	1:E:256:ASP:H	1.74	0.53
1:A:33:TRP:CZ3	1:F:324:VAL:HG21	2.45	0.52
1:F:129:PHE:O	1:F:134:LEU:HB2	2.09	0.52
1:E:155:PHE:HB3	1:E:181:TYR:HB2	1.92	0.52
1:G:239:LYS:HD2	1:G:240:GLY:N	2.19	0.52
1:G:277:VAL:HG23	1:G:281:ASP:HB2	1.90	0.52
1:B:160:ILE:HA	1:B:167:GLN:NE2	2.24	0.52
1:L:311:HIS:CE1	1:L:313:PRO:HD2	2.44	0.52
1:F:256:ASP:HB3	1:F:303:ARG:HG3	1.92	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:271:ILE:CD1	1:F:307:VAL:HG21	2.39	0.52
1:L:291:ARG:NH1	5:L:505:HOH:O	2.28	0.52
1:K:134:LEU:HD11	1:K:198:VAL:HG22	1.91	0.52
1:D:188:ILE:HG13	1:D:189:ASP:N	2.25	0.52
1:H:268:GLU:HG2	1:H:270:MET:HE3	1.92	0.52
1:B:100:ARG:HH22	3:B:402:DAB:H	1.57	0.51
1:C:187:GLU:HG2	1:C:190:SER:N	2.25	0.51
1:H:152:PHE:CD1	1:H:309:SER:HB2	2.46	0.51
1:B:111:ARG:NH1	1:B:189:ASP:O	2.42	0.51
1:C:22:LEU:HG	1:C:40:LEU:HD22	1.92	0.51
1:F:265:GLY:HA2	1:F:289:LEU:HG	1.93	0.51
1:J:22:LEU:HB2	1:J:38:ILE:HB	1.93	0.51
1:C:170:CYS:HA	1:C:204:VAL:HG23	1.92	0.51
1:G:134:LEU:HD11	1:G:198:VAL:HG22	1.93	0.51
1:J:186:LEU:O	5:J:505:HOH:O	2.19	0.51
1:C:138:ASP:OD1	5:C:502:HOH:O	2.18	0.51
1:F:261:SER:HA	1:F:299:TYR:CE2	2.45	0.51
1:G:250:LEU:HD12	1:G:326:GLY:C	2.35	0.51
1:J:49:PRO:HG2	1:J:237:ILE:HG13	1.92	0.50
1:H:8:PRO:HB3	1:H:22:LEU:HD23	1.93	0.50
1:F:11:PRO:HG3	1:F:14:ARG:HH21	1.76	0.50
1:L:233:ILE:HA	1:L:238:LEU:O	2.12	0.50
1:A:48:GLY:O	5:A:503:HOH:O	2.19	0.50
1:B:71:LEU:HD22	1:B:228:LEU:HD21	1.93	0.50
1:B:257:CYS:HB3	1:B:325:VAL:O	2.11	0.50
1:L:285:ARG:NH1	1:L:298:GLU:OE2	2.44	0.50
1:C:193:MET:HE2	1:C:195:ASP:HB2	1.93	0.50
1:L:114:PRO:HA	1:L:130:GLN:HE21	1.76	0.50
1:C:187:GLU:OE1	5:C:503:HOH:O	2.20	0.50
1:G:155:PHE:HB3	1:G:181:TYR:HB2	1.94	0.50
1:I:311:HIS:CE1	1:I:313:PRO:HD2	2.46	0.50
1:A:267:PHE:HE1	1:A:322:VAL:HG13	1.77	0.50
1:E:217:SER:HB2	1:E:219:ARG:NH2	2.26	0.50
1:F:40:LEU:CD2	1:F:42:VAL:HG23	2.42	0.50
1:J:56:ALA:HB3	1:J:89:ALA:HA	1.94	0.50
1:D:270:MET:O	1:D:271:ILE:HD13	2.12	0.49
1:F:40:LEU:HD23	1:F:41:THR:N	2.26	0.49
1:J:159:HIS:HB2	1:J:161:LEU:HD21	1.94	0.49
1:C:56:ALA:HB3	1:C:89:ALA:HA	1.93	0.49
1:G:251:THR:OG1	5:G:502:HOH:O	2.19	0.49
1:I:97:ALA:HB2	1:I:103:PRO:HG3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:164:LYS:HE3	1:I:166:THR:HG23	1.92	0.49
1:E:267:PHE:CE2	1:E:269:MET:HE2	2.47	0.49
1:D:230:ASN:HB3	1:D:242:MET:HE3	1.94	0.49
1:I:108:ASN:ND2	1:I:111:ARG:HH11	2.10	0.49
1:L:229:ARG:NE	5:L:516:HOH:O	2.44	0.49
1:A:21:PHE:HA	1:A:40:LEU:HD23	1.93	0.49
1:F:293:GLY:HA3	1:J:19:HIS:CE1	2.48	0.49
1:G:163:ASP:OD1	1:G:163:ASP:N	2.45	0.49
1:G:93:PRO:HB2	1:G:102:SER:HB2	1.95	0.49
1:I:309:SER:HB3	1:I:324:VAL:HB	1.95	0.49
1:B:157:ALA:HA	1:B:183:VAL:O	2.13	0.49
1:D:186:LEU:HB2	1:D:252:MET:O	2.12	0.49
1:J:152:PHE:CD1	1:J:309:SER:HB2	2.47	0.49
1:K:139:LEU:HD21	1:K:231:VAL:HG12	1.95	0.49
1:K:198:VAL:HG13	1:K:203:LYS:HB2	1.94	0.49
1:G:17:VAL:HG13	1:G:43:ILE:HG12	1.95	0.48
1:G:279:LYS:CG	1:G:303:ARG:HA	2.38	0.48
1:G:283:LEU:HD13	1:G:323:ALA:HB3	1.94	0.48
1:H:227:GLY:O	1:H:231:VAL:HG13	2.12	0.48
1:C:292:THR:OG1	5:C:504:HOH:O	2.20	0.48
1:J:267:PHE:HE1	1:J:322:VAL:HG13	1.77	0.48
1:B:134:LEU:O	1:B:203:LYS:NZ	2.46	0.48
1:L:26:HIS:CE1	1:L:28:ARG:HD3	2.48	0.48
1:D:27:SER:OG	1:D:32:ALA:O	2.25	0.48
1:G:110:ASN:O	1:G:193:MET:HA	2.13	0.48
1:G:267:PHE:CE2	1:G:269:MET:HE2	2.48	0.48
1:J:71:LEU:HD22	1:J:228:LEU:HD21	1.95	0.48
1:A:71:LEU:HD22	1:A:228:LEU:HD21	1.95	0.48
1:D:188:ILE:HG13	1:D:189:ASP:H	1.78	0.48
1:G:2:GLN:NE2	5:G:521:HOH:O	2.45	0.48
1:G:160:ILE:HG13	1:G:160:ILE:O	2.13	0.48
1:H:162:GLU:H	1:H:162:GLU:CD	2.21	0.48
1:H:144:HIS:HB2	1:H:208:THR:O	2.14	0.48
1:A:312:PHE:O	1:G:215:SER:HB2	2.13	0.48
1:D:266:LEU:HB3	1:D:287:TRP:HB2	1.96	0.48
1:K:250:LEU:HD21	1:K:306:LEU:HD12	1.95	0.48
1:L:178:ASN:HB3	1:L:226:LYS:HZ2	1.79	0.48
1:A:190:SER:HA	1:A:193:MET:HE2	1.95	0.47
1:A:317:LYS:HE3	1:K:30:ASP:HB3	1.95	0.47
1:E:110:ASN:O	1:E:193:MET:HA	2.14	0.47
1:F:33:TRP:HE1	3:K:401:DAB:HG3	1.79	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:92:TYR:OH	1:I:96:ARG:NH1	2.44	0.47
1:L:14:ARG:HD3	5:L:595:HOH:O	2.14	0.47
1:L:250:LEU:HD21	1:L:306:LEU:HD12	1.96	0.47
1:L:282:LEU:HA	1:L:300:ARG:HG2	1.96	0.47
1:C:190:SER:HB3	1:C:196:THR:OG1	2.13	0.47
1:E:152:PHE:CD1	1:E:309:SER:HB2	2.49	0.47
1:I:128:TYR:CE2	1:I:133:LEU:HD11	2.48	0.47
1:D:256:ASP:OD1	1:D:302:ARG:NH2	2.47	0.47
1:F:161:LEU:HB2	1:F:167:GLN:HB2	1.96	0.47
1:G:83:ARG:HD2	1:G:85:ILE:HD11	1.96	0.47
1:D:162:GLU:CG	1:D:167:GLN:OE1	2.61	0.47
1:D:149:THR:HG21	1:G:31:SER:HA	1.96	0.47
1:E:144:HIS:HB2	1:E:208:THR:O	2.14	0.47
1:I:144:HIS:HB2	1:I:208:THR:O	2.14	0.47
1:L:290:ASP:OD1	1:L:291:ARG:HD2	2.14	0.47
1:G:256:ASP:HB2	1:G:303:ARG:CD	2.38	0.47
1:A:22:LEU:HG	1:A:40:LEU:HD22	1.96	0.47
1:G:57:ASN:HB3	1:G:144:HIS:CE1	2.50	0.47
1:J:254:ASP:HB2	1:J:303:ARG:NH1	2.28	0.47
1:L:195:ASP:OD1	1:L:195:ASP:N	2.42	0.47
1:C:317:LYS:NZ	5:C:521:HOH:O	2.38	0.47
1:G:178:ASN:ND2	1:G:247:THR:OG1	2.48	0.47
1:G:187:GLU:OE1	1:G:187:GLU:N	2.41	0.47
1:F:40:LEU:HD21	1:F:42:VAL:HG23	1.97	0.47
1:I:71:LEU:HD22	1:I:228:LEU:HD21	1.96	0.47
1:D:164:LYS:HG3	1:D:166:THR:HG23	1.97	0.46
1:E:11:PRO:HB2	1:E:14:ARG:HG3	1.97	0.46
1:J:139:LEU:HD21	1:J:231:VAL:HG12	1.97	0.46
1:K:26:HIS:CD2	1:K:28:ARG:HD3	2.49	0.46
1:B:113:PHE:O	1:B:192:GLY:HA2	2.15	0.46
1:L:178:ASN:HB3	1:L:226:LYS:NZ	2.31	0.46
1:E:139:LEU:HD21	1:E:231:VAL:HG12	1.98	0.46
1:H:159:HIS:CD2	1:H:186:LEU:HA	2.42	0.46
1:L:109:LEU:HD22	1:L:111:ARG:CB	2.41	0.46
1:L:267:PHE:CE2	1:L:269:MET:HE2	2.50	0.46
1:B:246:GLU:HG2	1:B:247:THR:N	2.30	0.46
1:E:55:GLY:O	1:E:90:PHE:N	2.47	0.46
1:F:45:ASN:HB3	1:F:80:VAL:O	2.15	0.46
1:F:177:PHE:CE1	1:F:227:GLY:HA3	2.50	0.46
1:H:10:ILE:HD12	1:H:18:PHE:HB2	1.98	0.46
1:H:57:ASN:ND2	1:H:110:ASN:OD1	2.48	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:285:ARG:NH1	5:H:513:HOH:O	2.41	0.46
1:J:144:HIS:HB2	1:J:208:THR:O	2.15	0.46
1:L:109:LEU:CD2	1:L:111:ARG:HD3	2.45	0.46
1:L:129:PHE:O	1:L:134:LEU:HB2	2.15	0.46
1:L:236:GLY:HA2	1:L:239:LYS:HE3	1.98	0.46
1:D:11:PRO:HG3	1:D:14:ARG:HE	1.80	0.46
1:F:253:PRO:HG2	1:F:303:ARG:NH2	2.30	0.46
1:G:324:VAL:HG21	1:J:33:TRP:HZ3	1.81	0.46
1:L:105:ASP:CG	1:L:108:ASN:HB2	2.41	0.46
1:B:100:ARG:NH2	3:B:402:DAB:H	2.14	0.46
1:E:83:ARG:HH12	1:E:136:MET:HE3	1.81	0.46
1:E:188:ILE:H	1:E:188:ILE:HD12	1.80	0.46
1:E:265:GLY:HA2	1:E:289:LEU:HG	1.97	0.46
1:G:113:PHE:O	1:G:192:GLY:HA2	2.16	0.46
1:A:311:HIS:CE1	1:A:313:PRO:HD2	2.51	0.46
1:B:253:PRO:HB3	1:D:246:GLU:HG2	1.98	0.46
1:E:134:LEU:HD21	1:E:198:VAL:HG22	1.98	0.46
1:G:111:ARG:NH1	1:G:189:ASP:O	2.48	0.46
1:G:129:PHE:O	1:G:134:LEU:HB2	2.16	0.46
1:L:81:THR:O	1:L:237:ILE:HA	2.16	0.46
1:A:142:ASP:OD2	1:A:144:HIS:NE2	2.48	0.46
1:A:155:PHE:CE2	1:A:209:GLU:HB2	2.51	0.46
1:C:144:HIS:HB2	1:C:208:THR:O	2.16	0.46
1:D:267:PHE:CE2	1:D:269:MET:HE2	2.51	0.46
1:I:61:GLU:HB3	1:I:145:SER:HB2	1.97	0.46
1:J:181:TYR:CD1	1:J:248:VAL:HB	2.51	0.46
1:K:290:ASP:C	1:K:291:ARG:HG3	2.41	0.46
1:C:311:HIS:CE1	1:C:313:PRO:HD2	2.51	0.45
1:I:254:ASP:HB3	1:I:256:ASP:H	1.80	0.45
1:K:303:ARG:HD3	1:K:327:VAL:HG11	1.99	0.45
1:A:55:GLY:O	1:A:90:PHE:N	2.46	0.45
1:A:158:ALA:O	1:A:184:GLU:HA	2.16	0.45
1:D:113:PHE:CE2	1:D:194:TYR:HD1	2.34	0.45
1:I:257:CYS:SG	1:I:303:ARG:HD2	2.55	0.45
1:K:259:VAL:O	1:K:322:VAL:N	2.48	0.45
1:K:267:PHE:CE2	1:K:269:MET:HE2	2.51	0.45
1:B:113:PHE:CE2	1:B:194:TYR:HD1	2.34	0.45
1:J:189:ASP:N	1:J:189:ASP:OD1	2.47	0.45
1:K:6:ILE:HG12	1:K:24:LEU:HB2	1.98	0.45
1:D:201:MET:HE2	1:D:203:LYS:HE2	1.98	0.45
1:G:265:GLY:HA2	1:G:289:LEU:HG	1.99	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:181:TYR:CD1	1:I:248:VAL:HB	2.50	0.45
1:I:238:LEU:O	5:I:504:HOH:O	2.20	0.45
1:J:21:PHE:CD2	1:J:37:MET:HB3	2.52	0.45
1:E:237:ILE:O	1:E:239:LYS:NZ	2.50	0.45
1:L:177:PHE:CE1	1:L:227:GLY:HA3	2.51	0.45
1:D:33:TRP:HZ3	1:J:324:VAL:HG21	1.81	0.45
1:E:142:ASP:OD2	1:E:144:HIS:NE2	2.49	0.45
1:F:267:PHE:CE2	1:F:269:MET:HE2	2.52	0.45
1:G:309:SER:HB3	1:G:324:VAL:HB	1.98	0.45
1:I:285:ARG:HB3	1:I:296:PRO:HB2	1.99	0.45
1:B:239:LYS:HD2	1:B:240:GLY:N	2.24	0.45
1:C:251:THR:OG1	1:C:327:VAL:HB	2.15	0.45
1:G:144:HIS:HB2	1:G:208:THR:O	2.17	0.45
1:L:57:ASN:OD1	1:L:110:ASN:HB3	2.17	0.45
1:L:104:ILE:C	1:L:106:ARG:N	2.75	0.45
1:B:164:LYS:HD2	1:B:167:GLN:OE1	2.17	0.45
1:C:142:ASP:OD2	1:C:144:HIS:NE2	2.48	0.45
1:C:241:GLU:O	5:C:505:HOH:O	2.21	0.45
1:F:312:PHE:O	1:J:215:SER:HB2	2.17	0.45
1:C:160:ILE:HD11	1:C:184:GLU:OE1	2.17	0.45
1:F:161:LEU:C	1:F:163:ASP:H	2.25	0.45
1:G:182:SER:OG	1:G:247:THR:HG21	2.16	0.45
1:J:17:VAL:HG13	1:J:43:ILE:HG12	1.98	0.45
1:L:155:PHE:CZ	1:L:209:GLU:HB2	2.51	0.45
1:F:134:LEU:HD11	1:F:198:VAL:HG22	1.98	0.45
1:K:285:ARG:HD3	1:K:296:PRO:HG2	1.99	0.45
1:D:167:GLN:NE2	1:D:171:PHE:CZ	2.80	0.44
1:E:285:ARG:HG2	1:E:298:GLU:HG2	2.00	0.44
1:K:74:THR:HG22	1:K:74:THR:O	2.17	0.44
1:D:177:PHE:CE1	1:D:227:GLY:HA3	2.52	0.44
1:B:144:HIS:HB2	1:B:208:THR:O	2.17	0.44
1:H:233:ILE:HA	1:H:238:LEU:O	2.17	0.44
1:J:256:ASP:O	1:J:302:ARG:HB2	2.16	0.44
1:J:270:MET:HG2	1:J:284:ALA:HA	1.99	0.44
1:C:105:ASP:OD2	1:C:120:THR:HB	2.17	0.44
1:I:22:LEU:HG	1:I:40:LEU:CD2	2.25	0.44
1:I:276:PRO:HA	1:I:306:LEU:HD23	1.98	0.44
1:A:23:LYS:HE3	1:F:260:PHE:CD1	2.52	0.44
1:C:290:ASP:OD1	1:C:290:ASP:N	2.49	0.44
1:F:164:LYS:HA	1:F:167:GLN:HB3	1.99	0.44
1:G:160:ILE:CG1	1:G:186:LEU:HB2	2.45	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:45:ASN:HB3	1:A:80:VAL:O	2.17	0.44
1:K:144:HIS:HB2	1:K:208:THR:O	2.18	0.44
1:A:184:GLU:HG2	1:A:251:THR:HG22	2.00	0.43
1:B:311:HIS:ND1	5:B:510:HOH:O	2.35	0.43
1:D:182:SER:HB2	1:D:249:ASN:OD1	2.18	0.43
1:I:110:ASN:O	1:I:193:MET:HA	2.18	0.43
1:J:129:PHE:HA	1:J:133:LEU:HB2	2.00	0.43
1:L:109:LEU:HD23	1:L:110:ASN:N	2.32	0.43
1:L:134:LEU:HD21	1:L:198:VAL:HG22	1.99	0.43
1:D:144:HIS:HB2	1:D:208:THR:O	2.18	0.43
1:F:144:HIS:HB2	1:F:208:THR:O	2.17	0.43
1:G:259:VAL:O	1:G:322:VAL:N	2.51	0.43
1:L:163:ASP:OD1	1:L:163:ASP:N	2.51	0.43
1:E:311:HIS:CE1	1:E:313:PRO:HD2	2.54	0.43
1:A:144:HIS:HB2	1:A:208:THR:O	2.18	0.43
1:H:56:ALA:HB3	1:H:89:ALA:HA	2.01	0.43
1:C:6:ILE:HD12	1:C:128:TYR:HB2	2.00	0.43
1:D:164:LYS:HD2	1:D:164:LYS:HA	1.65	0.43
1:D:243:GLN:O	5:D:502:HOH:O	2.21	0.43
1:H:181:TYR:CD1	1:H:248:VAL:HB	2.54	0.43
1:L:22:LEU:HB2	1:L:38:ILE:HB	2.00	0.43
1:A:155:PHE:CZ	1:A:209:GLU:HB2	2.54	0.43
1:C:129:PHE:HA	1:C:133:LEU:HB2	2.00	0.43
1:E:290:ASP:OD1	1:E:291:ARG:NH1	2.52	0.43
1:A:282:LEU:HD11	1:A:285:ARG:HG3	1.99	0.43
1:D:36:VAL:HG12	1:D:38:ILE:HG13	2.01	0.43
1:H:129:PHE:O	1:H:134:LEU:HB2	2.19	0.43
1:J:105:ASP:OD2	1:J:120:THR:HB	2.19	0.43
1:K:177:PHE:CE1	1:K:227:GLY:HA3	2.54	0.43
1:I:303:ARG:HD3	1:I:327:VAL:CG2	2.48	0.43
1:K:303:ARG:HD3	1:K:327:VAL:CG1	2.49	0.43
1:D:128:TYR:O	1:D:132:THR:HB	2.19	0.43
1:L:254:ASP:OD1	1:L:255:ASP:N	2.51	0.43
1:B:22:LEU:HB2	1:B:38:ILE:HB	2.00	0.43
1:D:190:SER:O	1:D:196:THR:OG1	2.26	0.43
1:E:81:THR:CB	1:E:239:LYS:HZ1	2.32	0.42
1:J:174:MET:SD	1:J:182:SER:HB3	2.58	0.42
1:E:57:ASN:HB3	1:E:144:HIS:CE1	2.54	0.42
1:F:162:GLU:O	1:F:162:GLU:HG2	2.18	0.42
1:I:22:LEU:HB2	1:I:38:ILE:HB	2.01	0.42
1:L:134:LEU:HD23	1:L:201:MET:HE3	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:134:LEU:HD11	1:H:198:VAL:HG22	2.00	0.42
1:H:303:ARG:HD3	1:H:327:VAL:HG22	2.01	0.42
1:L:252:MET:HE2	1:L:308:ILE:CD1	2.49	0.42
1:F:193:MET:HE2	1:F:195:ASP:OD2	2.20	0.42
1:H:119:GLY:O	1:H:124:LYS:NZ	2.39	0.42
1:K:108:ASN:O	1:K:112:SER:OG	2.33	0.42
1:B:298:GLU:O	5:B:502:HOH:O	2.21	0.42
1:C:187:GLU:HG2	1:C:189:ASP:N	2.35	0.42
1:D:162:GLU:HB3	1:D:163:ASP:H	1.46	0.42
1:A:152:PHE:CE1	1:A:309:SER:HB2	2.55	0.42
1:L:118:ASP:OD1	1:L:118:ASP:N	2.53	0.42
1:A:97:ALA:HB2	1:A:103:PRO:HG3	2.02	0.42
1:E:256:ASP:HB3	1:E:303:ARG:HG3	2.02	0.42
1:F:54:THR:HG22	1:F:87:VAL:HB	2.02	0.42
1:I:44:LYS:HD2	1:I:83:ARG:HD3	2.02	0.42
1:J:267:PHE:CE1	1:J:322:VAL:HG13	2.55	0.42
1:B:121:VAL:HG23	5:B:584:HOH:O	2.19	0.42
1:E:254:ASP:OD2	1:E:303:ARG:NH1	2.53	0.42
1:H:164:LYS:C	1:H:166:THR:H	2.27	0.42
1:J:155:PHE:CE2	1:J:209:GLU:HB2	2.55	0.42
1:J:164:LYS:HE3	1:J:165:ALA:H	1.84	0.42
1:L:183:VAL:HG11	1:L:252:MET:HE3	2.01	0.42
1:A:186:LEU:HB2	1:A:252:MET:O	2.20	0.42
1:A:261:SER:HA	1:A:299:TYR:CE1	2.55	0.42
1:B:306:LEU:O	1:B:325:VAL:HA	2.20	0.42
1:I:159:HIS:ND1	1:I:187:GLU:HB3	2.34	0.42
1:L:61:GLU:OE1	5:L:503:HOH:O	2.21	0.42
1:L:152:PHE:CE1	1:L:309:SER:HB2	2.55	0.42
1:J:134:LEU:HD21	1:J:198:VAL:HG22	2.02	0.42
1:A:106:ARG:NH1	5:A:517:HOH:O	2.52	0.41
1:A:259:VAL:O	1:A:322:VAL:N	2.53	0.41
1:G:116:ARG:HH21	1:G:119:GLY:HA2	1.85	0.41
1:G:179:ALA:O	1:G:247:THR:HG23	2.20	0.41
1:J:110:ASN:O	1:J:193:MET:HA	2.19	0.41
1:L:205:LEU:HG	1:L:206:VAL:N	2.34	0.41
1:L:259:VAL:HA	5:L:580:HOH:O	2.20	0.41
1:E:303:ARG:NH2	5:E:522:HOH:O	2.53	0.41
1:G:266:LEU:HB3	1:G:287:TRP:HB2	2.02	0.41
1:H:194:TYR:O	1:H:198:VAL:HG23	2.20	0.41
1:K:153:VAL:HB	1:K:181:TYR:CE1	2.55	0.41
1:L:267:PHE:CZ	1:L:269:MET:HE2	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:49:PRO:HG2	1:E:237:ILE:HG13	2.02	0.41
1:E:266:LEU:HB3	1:E:287:TRP:HB2	2.01	0.41
1:G:252:MET:SD	1:G:308:ILE:HD11	2.60	0.41
1:H:243:GLN:HG2	5:H:529:HOH:O	2.20	0.41
1:H:259:VAL:HG22	1:H:302:ARG:HG3	2.02	0.41
1:I:164:LYS:HG3	1:I:165:ALA:N	2.34	0.41
1:L:17:VAL:HA	1:L:43:ILE:HD13	2.01	0.41
1:L:113:PHE:CE2	1:L:194:TYR:HD1	2.38	0.41
1:A:152:PHE:CD1	1:A:309:SER:HB2	2.55	0.41
1:F:169:ALA:HB1	1:F:204:VAL:HG22	2.01	0.41
1:G:303:ARG:HH12	1:G:327:VAL:HG22	1.85	0.41
1:J:185:LEU:HG	1:J:252:MET:HE2	2.02	0.41
1:B:141:VAL:HG22	1:B:206:VAL:CG2	2.50	0.41
1:B:141:VAL:HA	1:B:206:VAL:HG23	2.02	0.41
1:F:58:HIS:ND1	5:F:502:HOH:O	2.22	0.41
1:F:290:ASP:HB2	5:G:523:HOH:O	2.21	0.41
1:G:320:ASP:OD1	1:G:320:ASP:N	2.54	0.41
1:L:22:LEU:HG	1:L:40:LEU:HD22	2.03	0.41
1:B:129:PHE:HA	1:B:133:LEU:HB2	2.02	0.41
1:G:40:LEU:HD12	1:G:87:VAL:HG22	2.01	0.41
1:G:53:LEU:HD12	1:G:86:ILE:HG12	2.03	0.41
1:G:246:GLU:HG3	5:G:608:HOH:O	2.19	0.41
1:L:111:ARG:NH1	1:L:194:TYR:H	2.18	0.41
1:L:113:PHE:O	1:L:192:GLY:HA2	2.20	0.41
1:B:185:LEU:HD23	1:B:252:MET:SD	2.60	0.41
1:L:277:VAL:HG23	1:L:281:ASP:HB2	2.01	0.41
1:A:271:ILE:HG22	1:A:275:ALA:HB3	2.02	0.41
1:B:24:LEU:HB3	1:B:36:VAL:HB	2.03	0.41
1:C:110:ASN:O	1:C:193:MET:HA	2.20	0.41
1:C:161:LEU:HB2	1:C:167:GLN:HB2	2.03	0.41
1:E:317:LYS:NZ	5:E:508:HOH:O	2.37	0.41
1:F:6:ILE:HD12	1:F:128:TYR:HB2	2.03	0.41
1:F:231:VAL:HA	1:F:234:HIS:HB3	2.01	0.41
1:L:6:ILE:HG12	1:L:24:LEU:HB2	2.01	0.41
1:L:105:ASP:OD2	1:L:122:THR:OG1	2.29	0.41
1:A:262:GLU:HG3	1:K:37:MET:HE1	2.03	0.41
1:B:243:GLN:O	1:B:244:LEU:HD23	2.19	0.41
1:B:243:GLN:C	1:B:244:LEU:HD23	2.46	0.41
1:B:254:ASP:OD1	1:B:303:ARG:NH2	2.53	0.41
1:B:256:ASP:O	1:B:302:ARG:HB2	2.21	0.41
1:E:106:ARG:HE	1:E:106:ARG:HB2	1.71	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:171:PHE:CZ	1:G:184:GLU:HG2	2.56	0.41
1:J:160:ILE:C	1:J:161:LEU:HD23	2.46	0.41
1:K:24:LEU:HD21	1:K:121:VAL:HG13	2.03	0.41
1:B:21:PHE:HE1	1:H:290:ASP:O	2.03	0.41
1:C:118:ASP:OD1	1:C:118:ASP:N	2.53	0.41
1:D:110:ASN:O	1:D:193:MET:HA	2.20	0.41
1:D:226:LYS:HG3	1:D:243:GLN:HB2	2.02	0.41
1:E:111:ARG:NH1	1:E:189:ASP:O	2.51	0.41
1:H:257:CYS:O	1:H:324:VAL:HA	2.21	0.41
1:I:241:GLU:H	1:I:241:GLU:CD	2.29	0.41
1:D:157:ALA:HA	1:D:183:VAL:O	2.21	0.40
1:F:37:MET:HE3	1:K:319:GLY:HA2	2.03	0.40
1:J:45:ASN:ND2	1:J:78:GLU:HA	2.36	0.40
1:A:22:LEU:HB2	1:A:38:ILE:HB	2.02	0.40
1:C:55:GLY:O	1:C:90:PHE:N	2.48	0.40
1:D:160:ILE:O	1:D:167:GLN:OE1	2.39	0.40
1:I:139:LEU:HD21	1:I:231:VAL:HG12	2.03	0.40
1:A:160:ILE:HD11	1:A:184:GLU:CD	2.45	0.40
1:A:181:TYR:CD2	1:A:248:VAL:HB	2.55	0.40
1:B:76:SER:OG	1:B:79:ASP:N	2.49	0.40
1:C:312:PHE:O	1:L:215:SER:HB2	2.22	0.40
1:D:153:VAL:HG23	1:D:155:PHE:HD2	1.86	0.40
1:J:193:MET:HE2	1:J:195:ASP:OD2	2.22	0.40
1:K:311:HIS:CE1	1:K:313:PRO:HD2	2.56	0.40
1:L:6:ILE:HD12	1:L:128:TYR:HB2	2.04	0.40
1:L:257:CYS:HB3	1:L:325:VAL:O	2.20	0.40
1:I:177:PHE:CE1	1:I:227:GLY:HA3	2.55	0.40
1:I:233:ILE:HA	1:I:238:LEU:O	2.22	0.40
1:J:155:PHE:HB3	1:J:181:TYR:HB2	2.02	0.40
1:L:140:ALA:HB3	1:L:198:VAL:HG11	2.02	0.40
1:F:70:GLU:OE2	5:F:501:HOH:O	2.22	0.40
1:H:312:PHE:HB3	1:H:313:PRO:HD3	2.02	0.40
1:J:152:PHE:HE2	3:J:402:DAB:HG3	1.86	0.40
1:J:157:ALA:HB3	1:J:207:THR:HG23	2.03	0.40

All (7) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:L:33:TRP:CE2	3:B:402:DAB:ND[1_545]	1.44	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:33:TRP:CZ2	3:E:402:DAB:CG[2_555]	1.49	0.71
1:L:33:TRP:CZ2	3:B:402:DAB:ND[1_545]	1.66	0.54
1:B:100:ARG:NH1	1:L:27:SER:OG[1_565]	2.08	0.12
1:L:33:TRP:NE1	3:B:402:DAB:ND[1_545]	2.10	0.10
1:B:33:TRP:CE2	3:E:402:DAB:CG[2_555]	2.15	0.05
1:C:29:ASP:OD2	1:I:106:ARG:NH1[2_645]	2.15	0.05

5.3 Torsion angles (i)

5.3.1 Protein backbone (i)

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	324/337 (96%)	318 (98%)	6 (2%)	0	100	100
1	B	324/337 (96%)	318 (98%)	6 (2%)	0	100	100
1	C	323/337 (96%)	315 (98%)	8 (2%)	0	100	100
1	D	326/337 (97%)	314 (96%)	12 (4%)	0	100	100
1	E	325/337 (96%)	322 (99%)	3 (1%)	0	100	100
1	F	325/337 (96%)	319 (98%)	6 (2%)	0	100	100
1	G	325/337 (96%)	316 (97%)	9 (3%)	0	100	100
1	H	325/337 (96%)	319 (98%)	6 (2%)	0	100	100
1	I	324/337 (96%)	320 (99%)	4 (1%)	0	100	100
1	J	322/337 (96%)	318 (99%)	4 (1%)	0	100	100
1	K	325/337 (96%)	320 (98%)	5 (2%)	0	100	100
1	L	320/337 (95%)	308 (96%)	12 (4%)	0	100	100
All	All	3888/4044 (96%)	3807 (98%)	81 (2%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all 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	257/265 (97%)	257 (100%)	0	100	100
1	B	257/265 (97%)	257 (100%)	0	100	100
1	C	256/265 (97%)	256 (100%)	0	100	100
1	D	259/265 (98%)	259 (100%)	0	100	100
1	E	258/265 (97%)	258 (100%)	0	100	100
1	F	257/265 (97%)	257 (100%)	0	100	100
1	G	258/265 (97%)	258 (100%)	0	100	100
1	H	258/265 (97%)	257 (100%)	1 (0%)	89	96
1	I	257/265 (97%)	257 (100%)	0	100	100
1	J	257/265 (97%)	257 (100%)	0	100	100
1	K	258/265 (97%)	258 (100%)	0	100	100
1	L	255/265 (96%)	255 (100%)	0	100	100
All	All	3087/3180 (97%)	3086 (100%)	1 (0%)	100	100

All (1) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	H	328	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	234	HIS
1	C	249	ASN
1	D	130	GLN
1	E	249	ASN
1	F	130	GLN
1	G	234	HIS
1	I	45	ASN
1	I	69	HIS

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Mol	Chain	Res	Type
1	I	130	GLN
1	I	159	HIS
1	I	221	ASN
1	J	26	HIS
1	J	167	GLN
1	J	249	ASN
1	K	69	HIS
1	L	130	GLN
1	L	221	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 20 ligands modelled in this entry, 10 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	$\#\|Z\| > 2$
3	DAB	F	401	-	6,7,7	0.83	0	6,8,8	0.86	0
4	ACT	G	402	-	3,3,3	1.31	0	3,3,3	1.36	0
3	DAB	D	402	2	6,7,7	0.85	0	6,8,8	0.89	0
4	ACT	H	402	2	3,3,3	1.29	0	3,3,3	1.49	0
3	DAB	B	402	2	6,7,7	0.84	0	6,8,8	1.23	1 (16%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\|>2$	Counts	RMSZ	$\#\|Z\|>2$
4	ACT	C	402	2	3,3,3	1.21	0	3,3,3	1.55	0
3	DAB	K	401	-	6,7,7	0.81	0	6,8,8	0.90	0
3	DAB	E	402	2	6,7,7	0.81	0	6,8,8	0.98	0
3	DAB	J	402	2	6,7,7	0.79	0	6,8,8	1.01	0
3	DAB	A	402	2,1	6,7,7	0.84	0	6,8,8	0.85	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
3	DAB	F	401	-	-	1/7/7/7	-
3	DAB	D	402	2	-	3/7/7/7	-
3	DAB	B	402	2	-	3/7/7/7	-
3	DAB	K	401	-	-	5/7/7/7	-
3	DAB	E	402	2	-	0/7/7/7	-
3	DAB	J	402	2	-	4/7/7/7	-
3	DAB	A	402	2,1	-	2/7/7/7	-

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
3	B	402	DAB	CB-CA-C	-2.23	105.00	110.30

There are no chirality outliers.

All (18) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	D	402	DAB	CA-CB-CG-ND
3	J	402	DAB	O-C-CA-N
3	J	402	DAB	CA-CB-CG-ND
3	K	401	DAB	O-C-CA-N
3	K	401	DAB	CA-CB-CG-ND
3	J	402	DAB	OXT-C-CA-N
3	K	401	DAB	OXT-C-CA-N
3	B	402	DAB	OXT-C-CA-N
3	A	402	DAB	OXT-C-CA-N
3	A	402	DAB	O-C-CA-N

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Mol	Chain	Res	Type	Atoms
3	B	402	DAB	O-C-CA-N
3	K	401	DAB	OXT-C-CA-CB
3	B	402	DAB	C-CA-CB-CG
3	K	401	DAB	O-C-CA-CB
3	D	402	DAB	O-C-CA-CB
3	D	402	DAB	OXT-C-CA-CB
3	J	402	DAB	OXT-C-CA-CB
3	F	401	DAB	N-CA-CB-CG

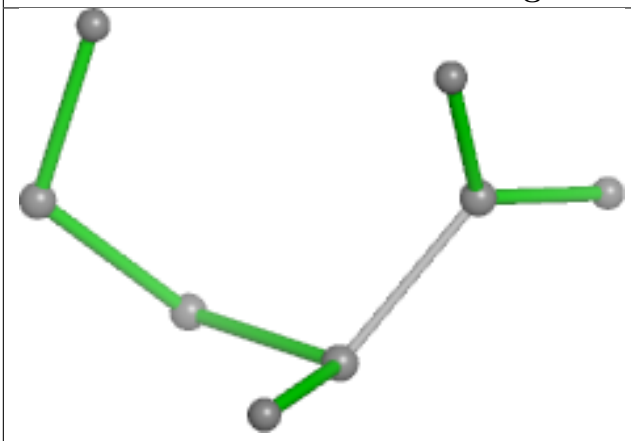
There are no ring outliers.

5 monomers are involved in 12 short contacts:

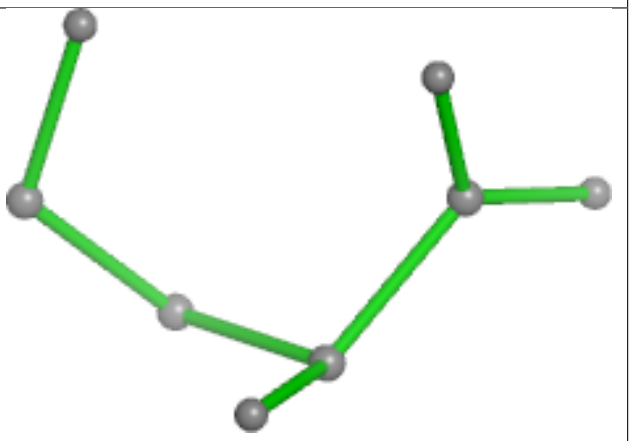
Mol	Chain	Res	Type	Clashes	Symm-Clashes
3	B	402	DAB	2	3
3	K	401	DAB	2	0
3	E	402	DAB	1	2
3	J	402	DAB	1	0
3	A	402	DAB	1	0

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 then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

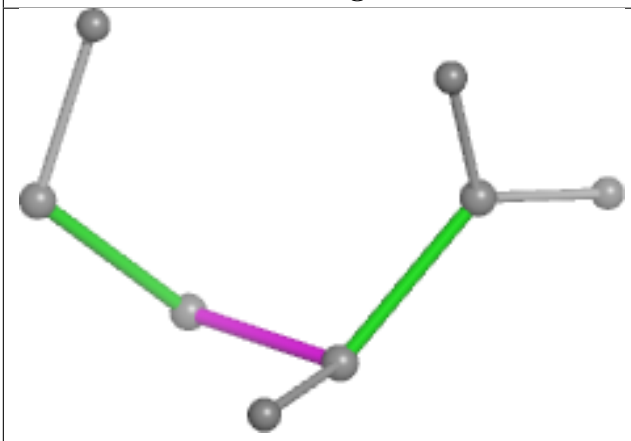
Ligand DAB F 401



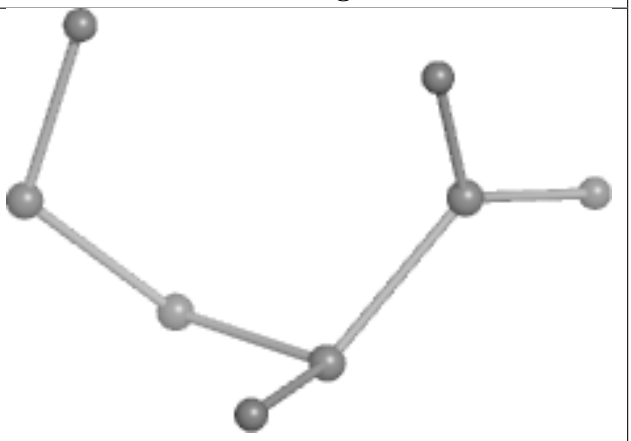
Bond lengths



Bond angles

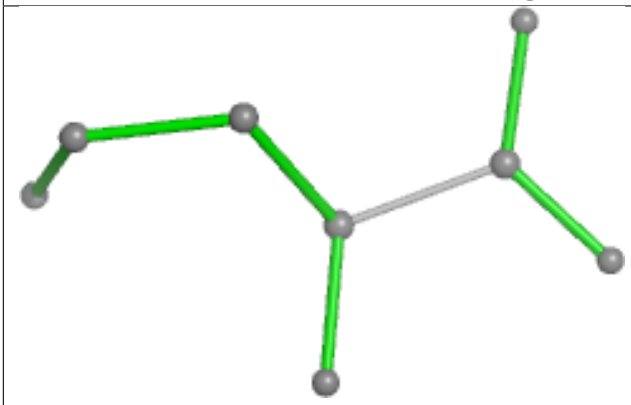


Torsions

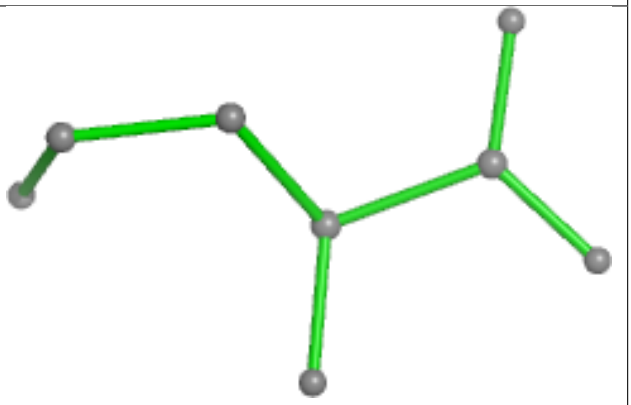


Rings

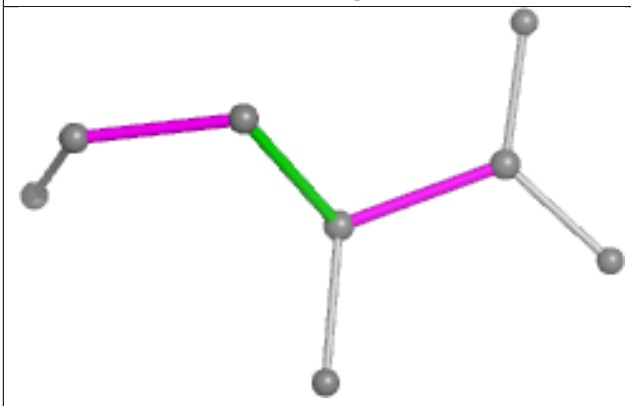
Ligand DAB D 402



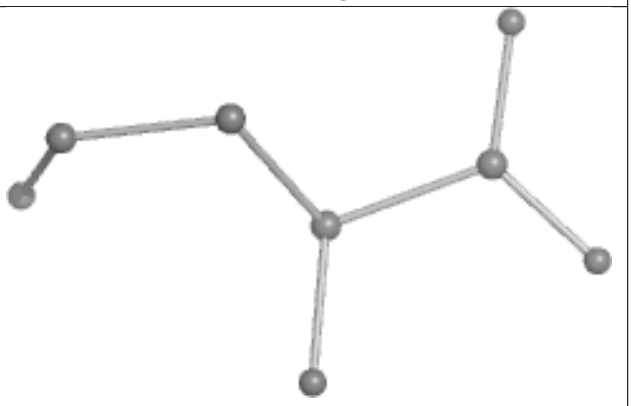
Bond lengths



Bond angles

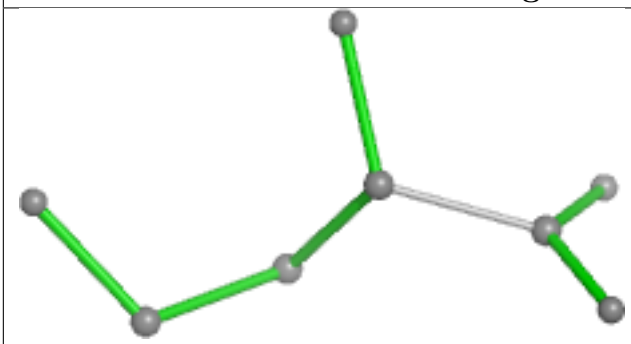


Torsions



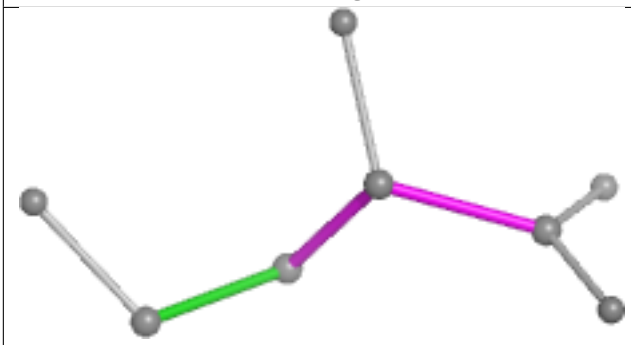
Rings

Ligand DAB B 402

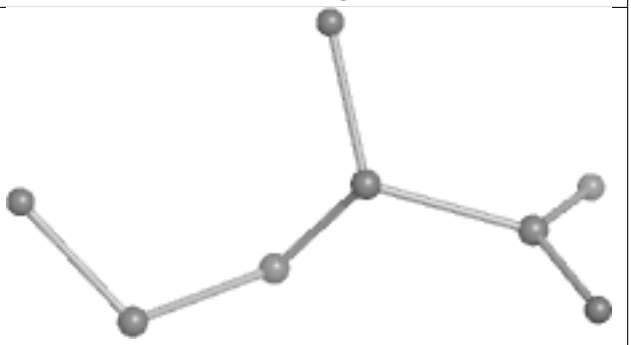


Bond lengths

Bond angles

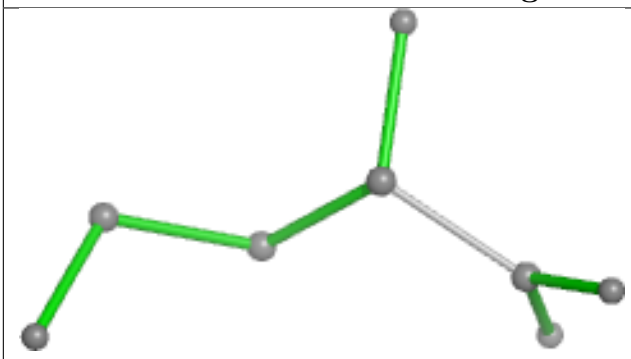


Torsions

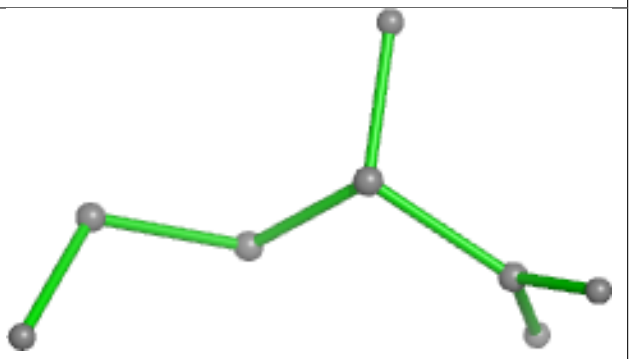


Rings

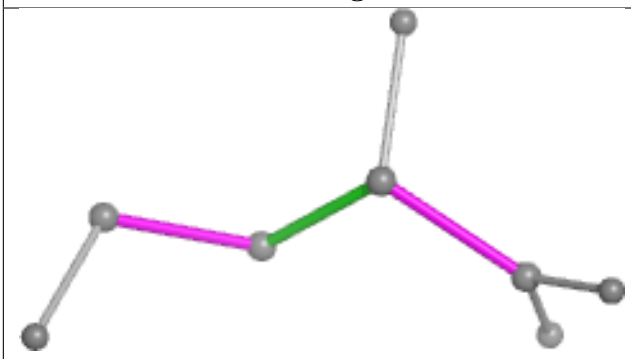
Ligand DAB K 401



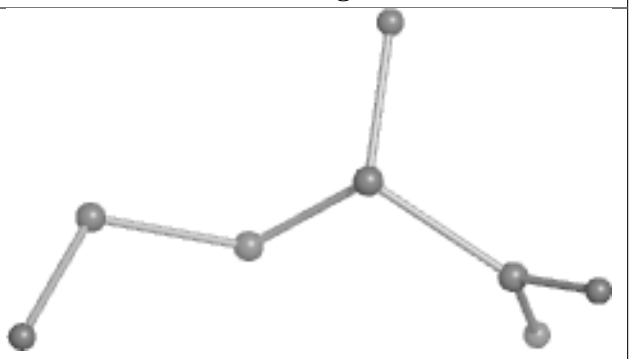
Bond lengths



Bond angles

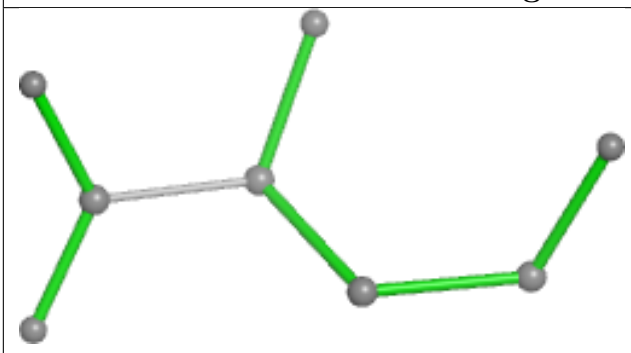


Torsions

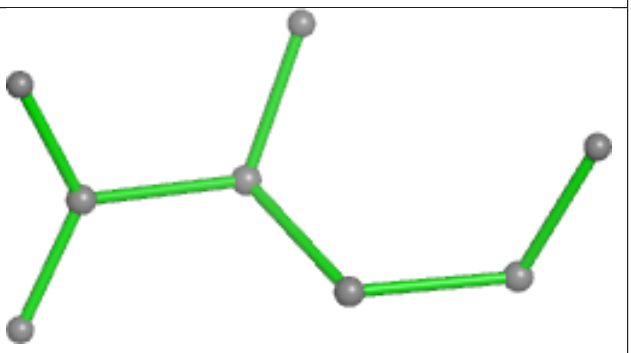


Rings

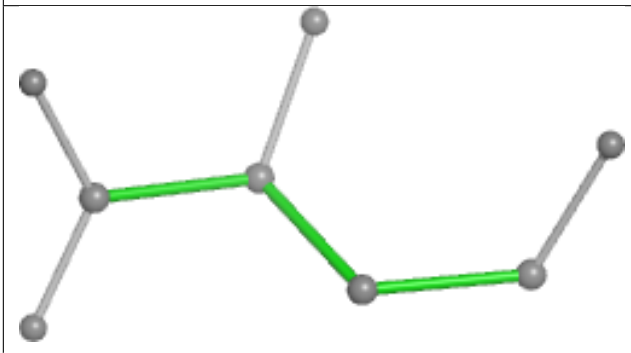
Ligand DAB E 402



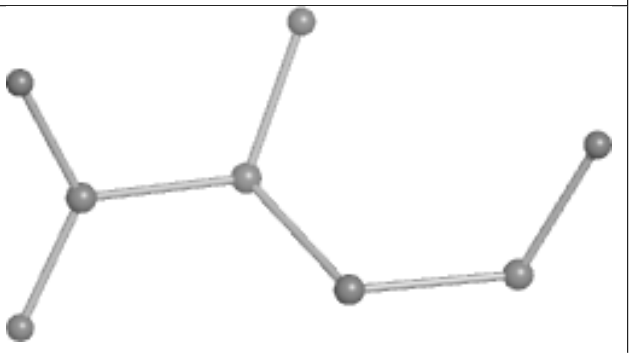
Bond lengths



Bond angles

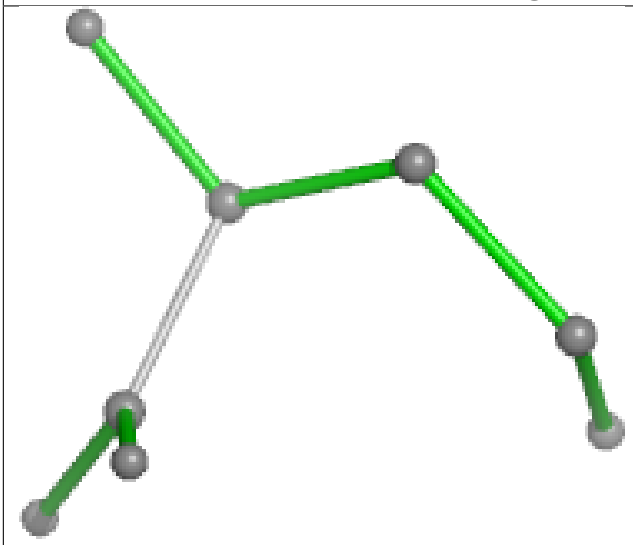


Torsions

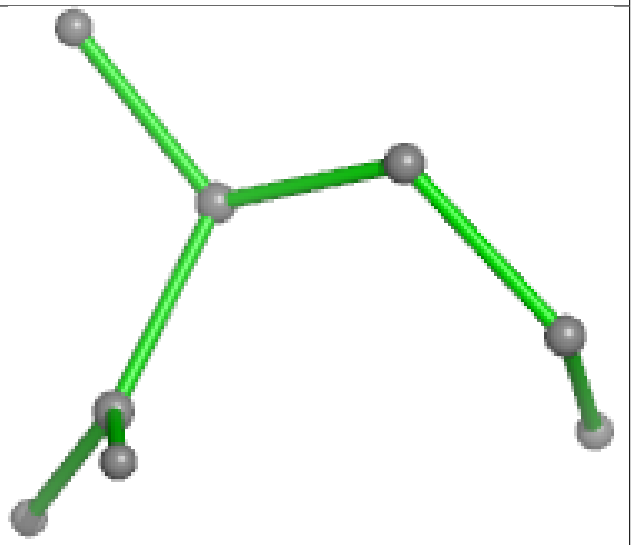


Rings

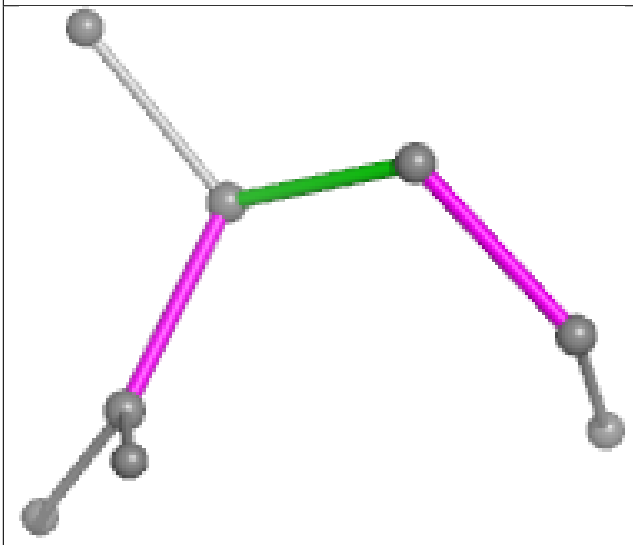
Ligand DAB J 402



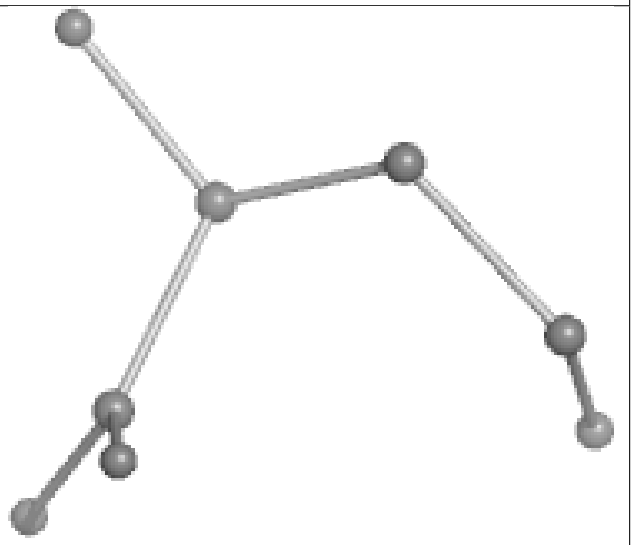
Bond lengths



Bond angles

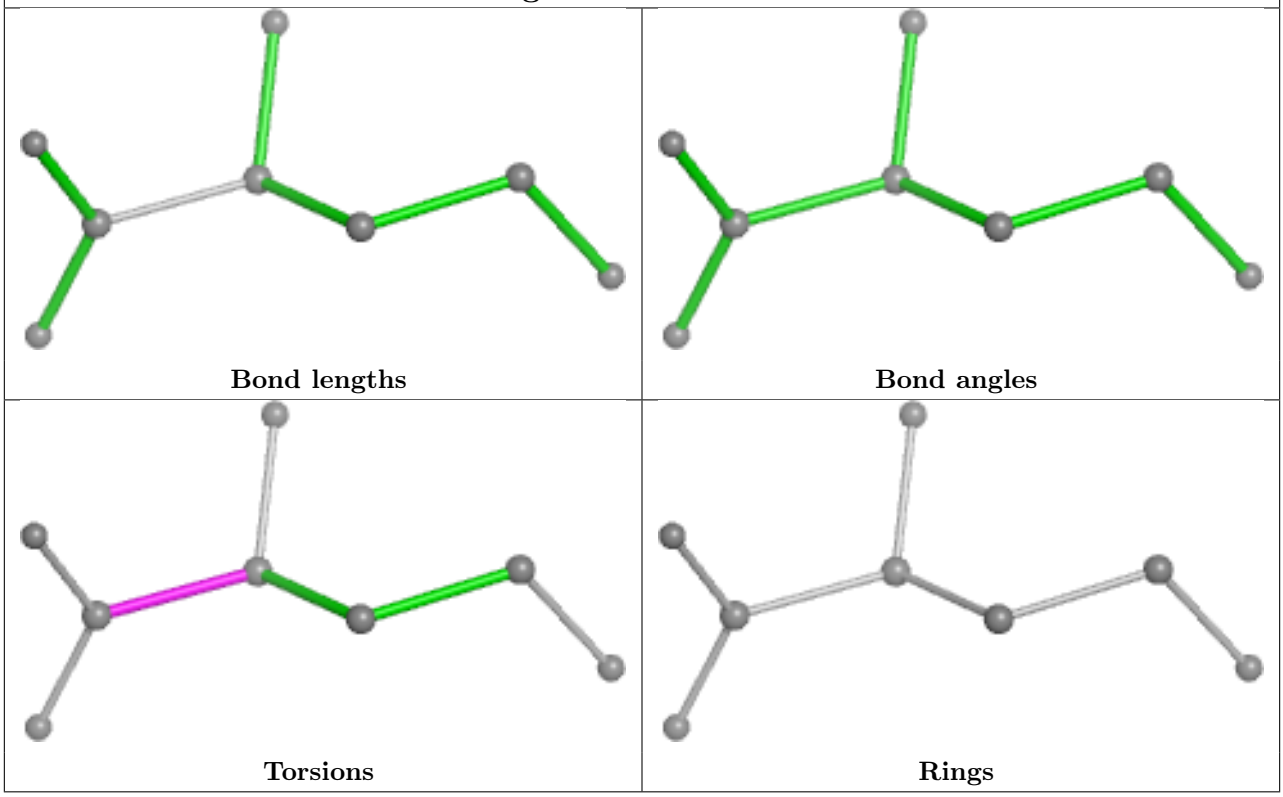


Torsions



Rings

Ligand DAB A 402



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, 95^{th} 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	326/337 (96%)	0.08	6 (1%)	67	64	28, 41, 72, 125	0
1	B	326/337 (96%)	0.22	11 (3%)	48	45	27, 44, 74, 139	0
1	C	325/337 (96%)	0.17	5 (1%)	71	68	24, 44, 73, 115	0
1	D	328/337 (97%)	0.19	13 (3%)	43	39	25, 43, 76, 132	0
1	E	327/337 (97%)	0.09	3 (0%)	81	78	28, 43, 68, 95	0
1	F	327/337 (97%)	0.12	4 (1%)	76	73	26, 44, 66, 92	0
1	G	327/337 (97%)	0.41	15 (4%)	38	35	30, 48, 83, 117	0
1	H	327/337 (97%)	0.29	11 (3%)	48	45	31, 48, 84, 125	0
1	I	326/337 (96%)	0.35	9 (2%)	55	51	29, 51, 88, 139	0
1	J	326/337 (96%)	0.26	13 (3%)	43	39	29, 47, 83, 138	0
1	K	327/337 (97%)	0.33	6 (1%)	67	64	31, 48, 76, 130	0
1	L	324/337 (96%)	0.66	19 (5%)	29	27	34, 60, 92, 130	0
All	All	3916/4044 (96%)	0.26	115 (2%)	54	50	24, 46, 80, 139	0

All (115) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	K	163	ASP	8.4
1	L	107	GLY	6.7
1	L	108	ASN	6.0
1	J	119	GLY	5.3
1	C	240	GLY	4.9
1	K	188	ILE	4.8
1	K	165	ALA	4.7
1	I	188	ILE	4.6
1	D	131	ARG	4.4
1	D	162	GLU	4.1
1	B	16	GLY	4.1

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Mol	Chain	Res	Type	RSRZ
1	L	188	ILE	3.9
1	L	77	ALA	3.8
1	D	188	ILE	3.7
1	J	165	ALA	3.7
1	J	163	ASP	3.7
1	A	188	ILE	3.5
1	G	186	LEU	3.4
1	D	164	LYS	3.4
1	B	188	ILE	3.3
1	E	254	ASP	3.2
1	L	105	ASP	3.1
1	L	109	LEU	3.0
1	A	16	GLY	3.0
1	I	272	ASP	3.0
1	L	197	ALA	3.0
1	L	111	ARG	2.9
1	L	106	ARG	2.9
1	G	56	ALA	2.7
1	L	195	ASP	2.7
1	G	328	THR	2.7
1	A	186	LEU	2.7
1	H	186	LEU	2.7
1	J	134	LEU	2.7
1	I	163	ASP	2.7
1	C	3	LYS	2.7
1	D	190	SER	2.7
1	F	244	LEU	2.6
1	C	328	THR	2.6
1	H	241	GLU	2.6
1	D	163	ASP	2.6
1	J	162	GLU	2.6
1	B	185	LEU	2.6
1	F	161	LEU	2.6
1	G	254	ASP	2.6
1	C	186	LEU	2.5
1	G	191	ALA	2.5
1	G	258	PHE	2.5
1	G	187	GLU	2.5
1	G	188	ILE	2.5
1	J	189	ASP	2.5
1	E	46	GLY	2.5
1	J	164	LYS	2.5

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Mol	Chain	Res	Type	RSRZ
1	L	328	THR	2.5
1	J	47	ALA	2.5
1	G	55	GLY	2.5
1	J	239	LYS	2.5
1	B	271	ILE	2.4
1	J	243	GLN	2.4
1	G	303	ARG	2.4
1	D	166	THR	2.4
1	H	244	LEU	2.4
1	I	177	PHE	2.4
1	I	47	ALA	2.4
1	L	104	ILE	2.4
1	I	76	SER	2.4
1	D	165	ALA	2.4
1	L	33	TRP	2.4
1	H	110	ASN	2.3
1	G	244	LEU	2.3
1	F	258	PHE	2.3
1	D	108	ASN	2.3
1	I	106	ARG	2.3
1	B	190	SER	2.3
1	K	46	GLY	2.3
1	H	197	ALA	2.3
1	C	185	LEU	2.3
1	H	72	ALA	2.3
1	I	186	LEU	2.2
1	J	240	GLY	2.2
1	D	2	GLN	2.2
1	H	188	ILE	2.2
1	L	47	ALA	2.2
1	F	329	GLY	2.2
1	L	46	GLY	2.2
1	G	242	MET	2.2
1	J	21	PHE	2.2
1	L	255	ASP	2.2
1	B	254	ASP	2.2
1	B	244	LEU	2.2
1	D	55	GLY	2.2
1	B	253	PRO	2.2
1	B	189	ASP	2.2
1	H	2	GLN	2.2
1	D	186	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	H	146	GLY	2.1
1	H	328	THR	2.1
1	J	328	THR	2.1
1	B	76	SER	2.1
1	L	177	PHE	2.1
1	A	47	ALA	2.1
1	D	189	ASP	2.1
1	B	33	TRP	2.1
1	L	208	THR	2.1
1	A	271	ILE	2.1
1	H	238	LEU	2.1
1	G	165	ALA	2.1
1	G	81	THR	2.0
1	K	2	GLN	2.0
1	K	162	GLU	2.0
1	L	110	ASN	2.0
1	I	77	ALA	2.0
1	A	260	PHE	2.0
1	G	166	THR	2.0
1	E	219	ARG	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 (i)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95^{th} 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
3	DAB	E	402	8/8	0.55	0.24	59,77,89,95	0
4	ACT	G	402	4/4	0.55	0.29	82,83,83,83	0
4	ACT	H	402	4/4	0.69	0.16	75,75,76,76	0

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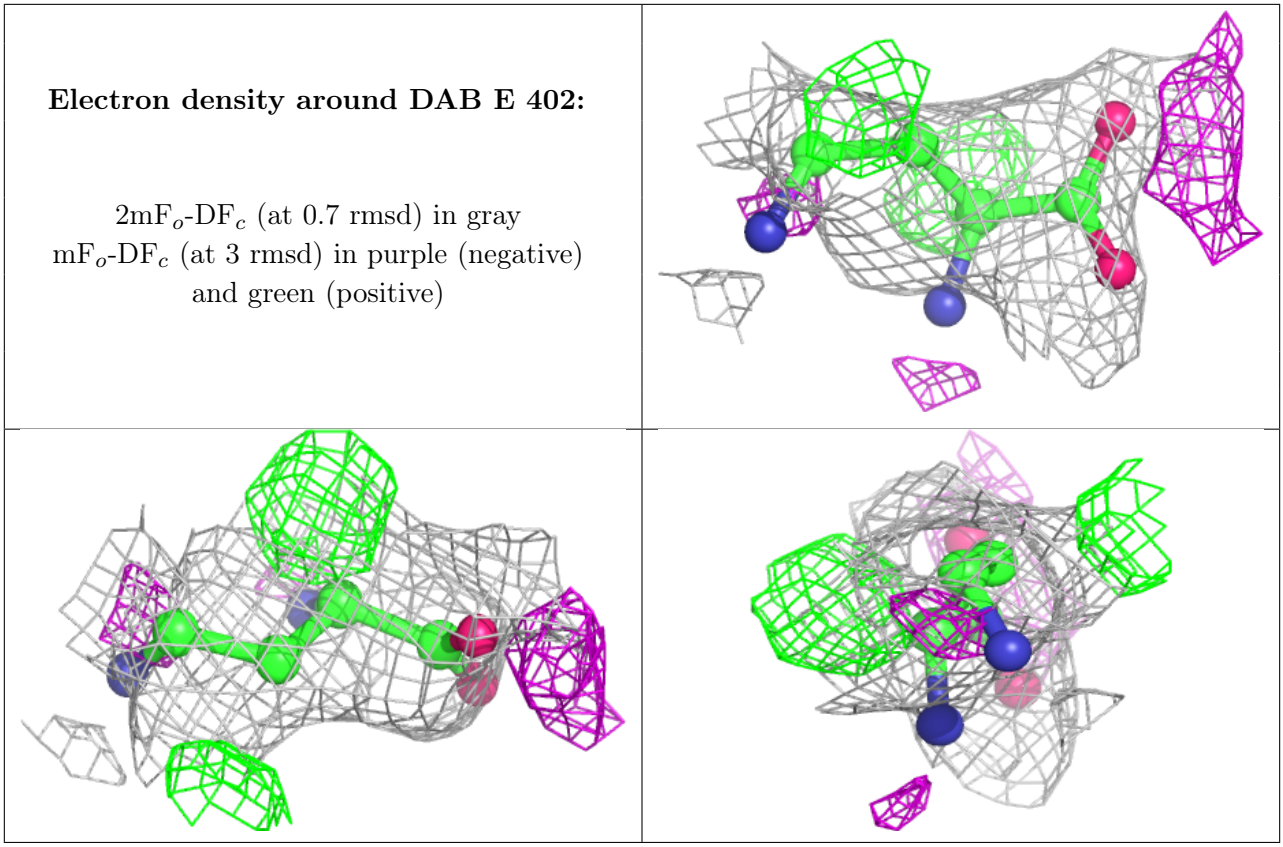
Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
3	DAB	D	402	8/8	0.72	0.24	84,85,86,86	0
2	ZN	G	401	1/1	0.75	0.29	83,83,83,83	0
3	DAB	B	402	8/8	0.75	0.18	59,76,78,81	0
3	DAB	K	401	8/8	0.77	0.22	90,91,93,93	0
3	DAB	F	401	8/8	0.79	0.16	61,62,63,64	0
2	ZN	D	401	1/1	0.79	0.18	134,134,134,134	0
4	ACT	C	402	4/4	0.80	0.28	110,110,111,112	0
2	ZN	L	401	1/1	0.80	0.12	133,133,133,133	0
2	ZN	H	401	1/1	0.80	0.17	132,132,132,132	0
3	DAB	A	402	8/8	0.82	0.21	100,101,105,105	0
3	DAB	J	402	8/8	0.82	0.20	85,87,89,90	0
2	ZN	C	401	1/1	0.86	0.17	114,114,114,114	0
2	ZN	E	401	1/1	0.88	0.24	101,101,101,101	0
2	ZN	J	401	1/1	0.93	0.17	72,72,72,72	0
2	ZN	B	401	1/1	0.93	0.16	84,84,84,84	0
2	ZN	A	401	1/1	0.96	0.12	101,101,101,101	0
2	ZN	I	401	1/1	0.96	0.10	95,95,95,95	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.

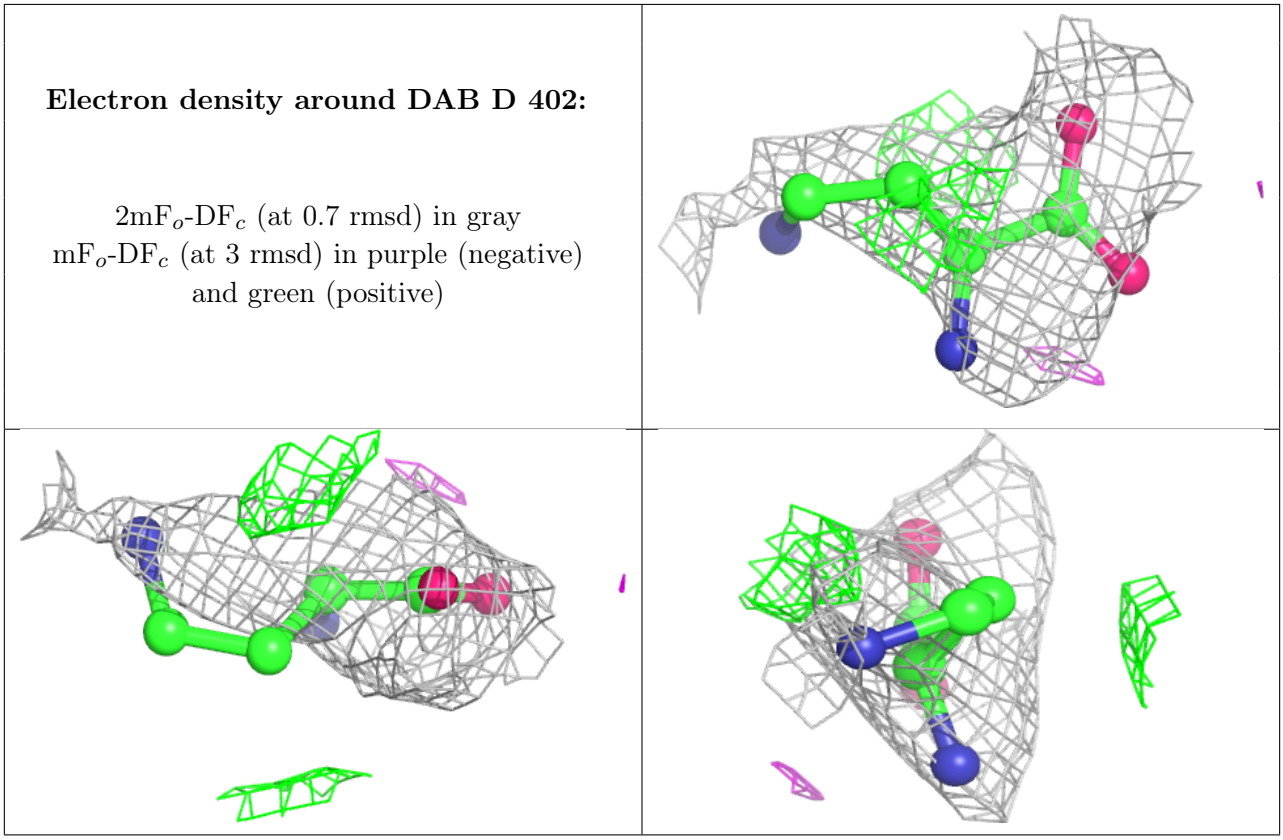
Electron density around DAB E 402:

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



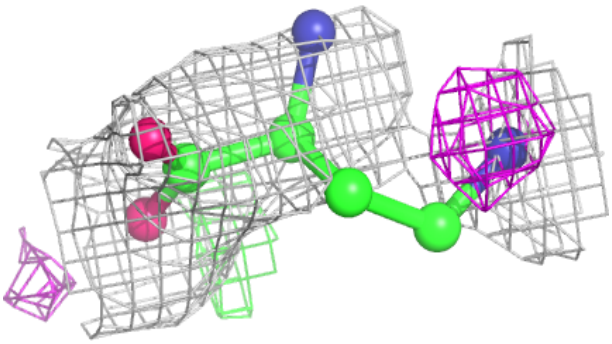
Electron density around DAB D 402:

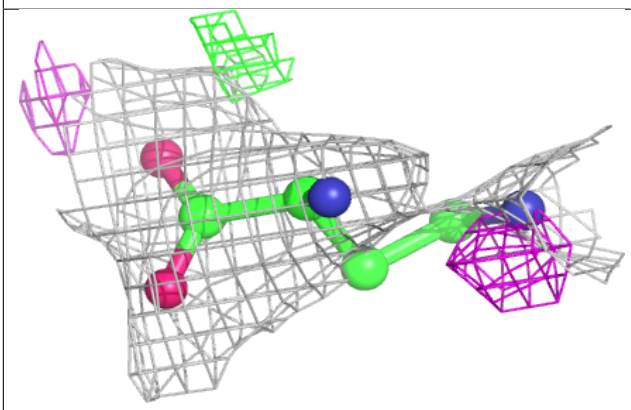
$2mF_o$-DF_c (at 0.7 rmsd) in gray
mF_o-DF_c (at 3 rmsd) in purple (negative) and green (positive)

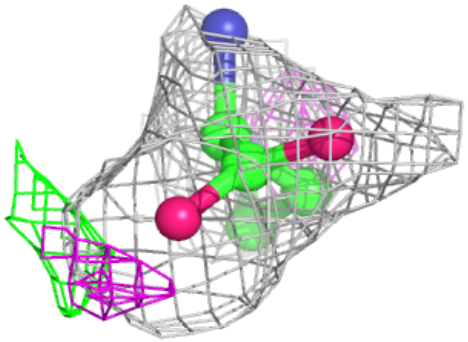


Electron density around DAB B 402:

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

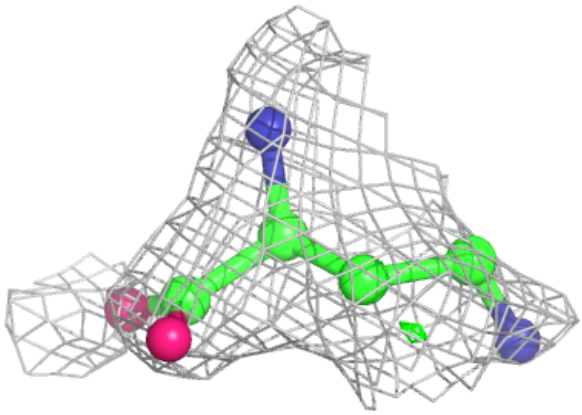


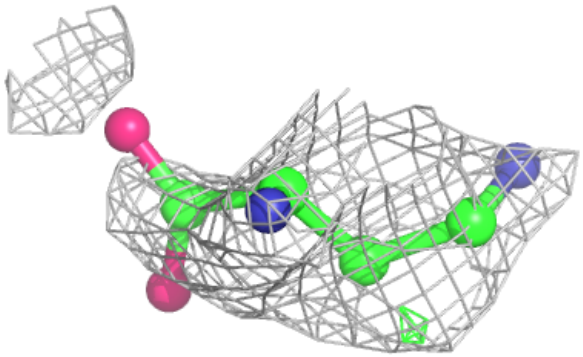


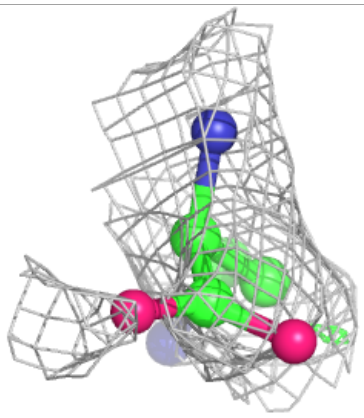


Electron density around DAB K 401:

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

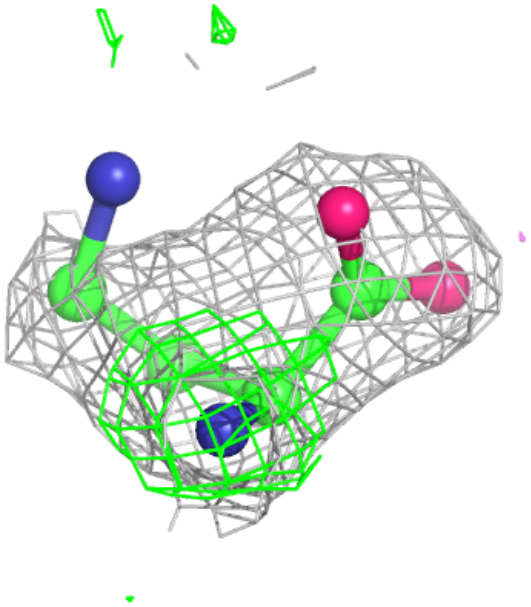


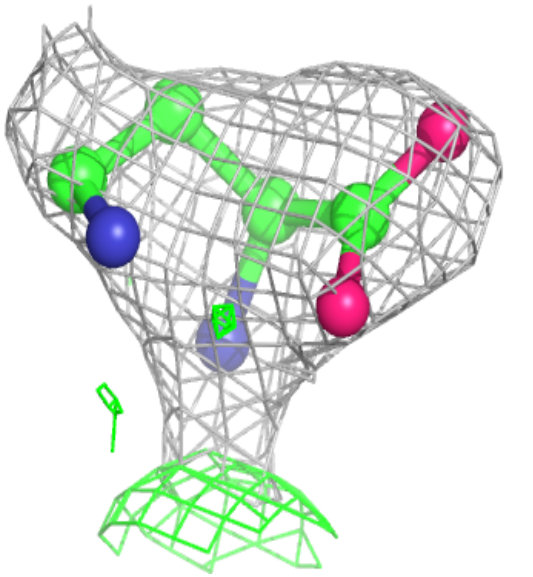


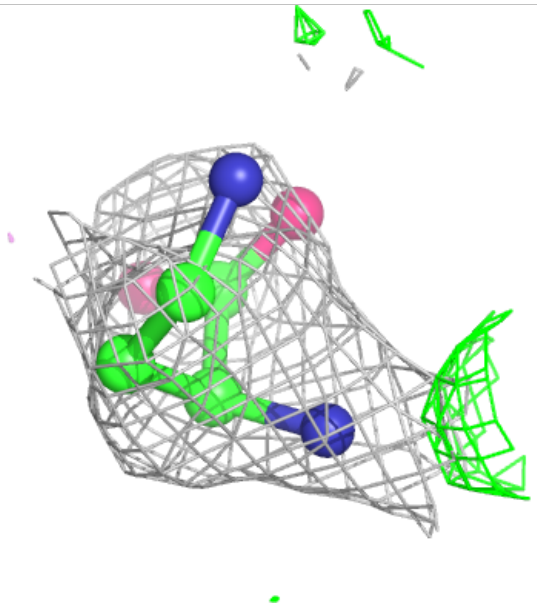


Electron density around DAB F 401:

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

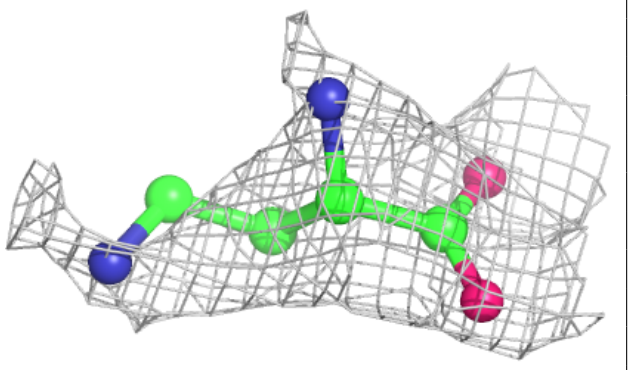


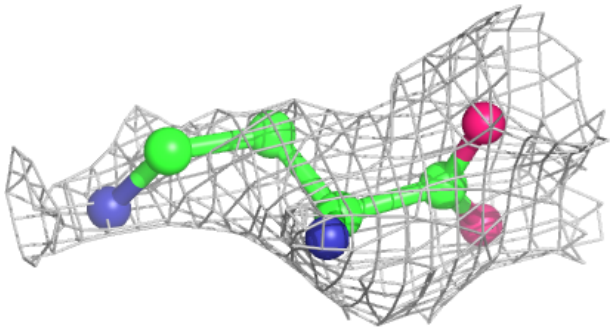


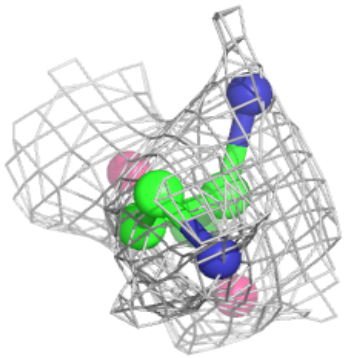


Electron density around DAB A 402:

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

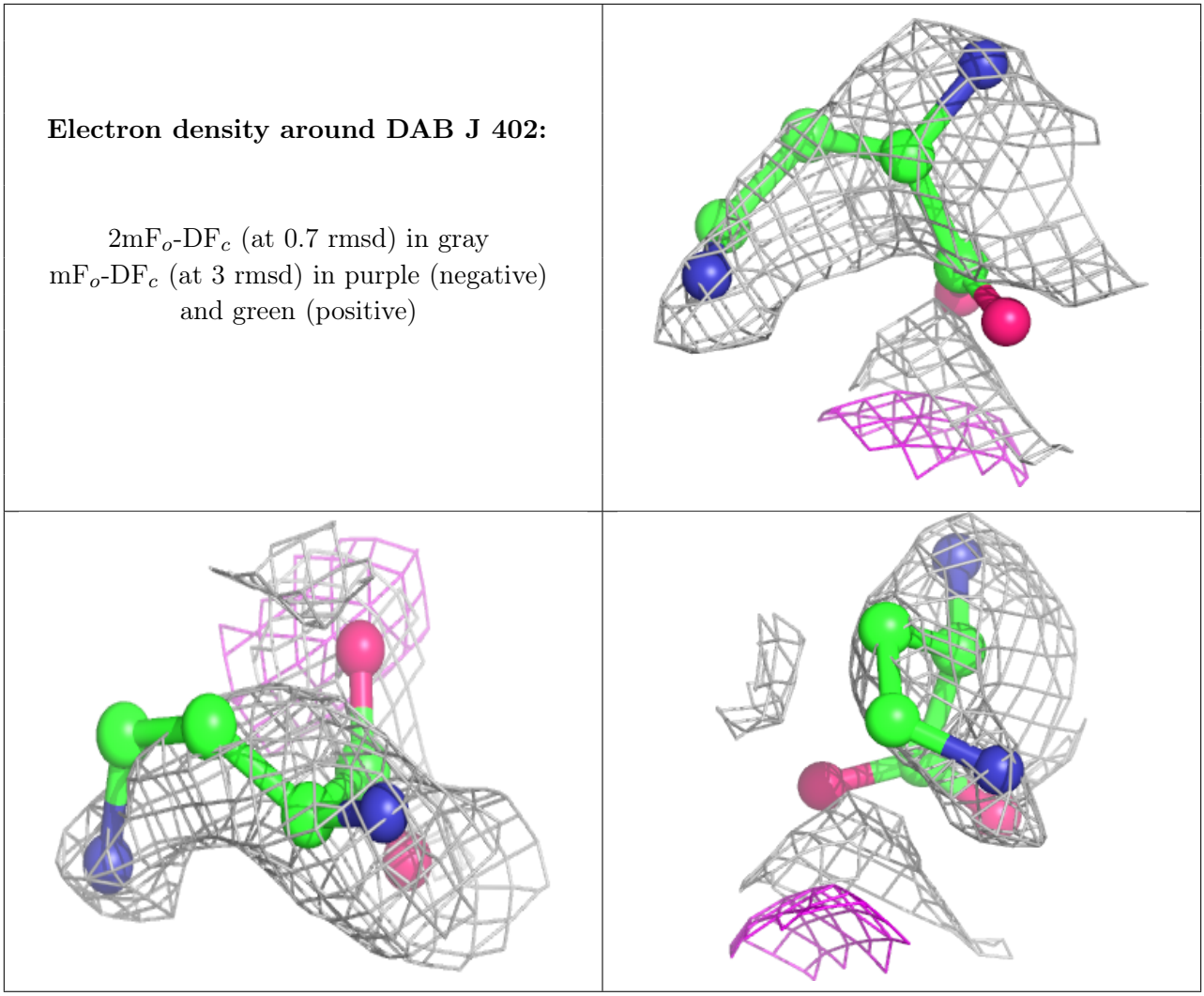






Electron density around DAB J 402:

$2mF_o$-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

There are no such residues in this entry.