Full wwPDB X-ray Structure Validation Report (i)

Aug 23, 2023 – 01:33 PM EDT

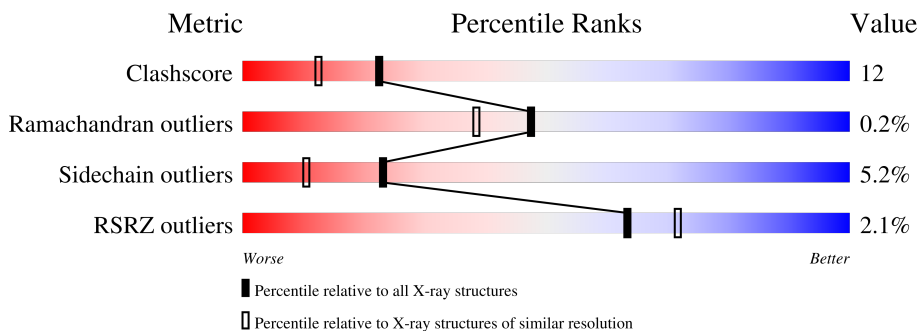|		
PDB ID	:	3EJX
Title	:	Crystal structure of diaminopimelate epimerase from Arabidopsis thaliana in complex with LL-AziDAP
Authors	:	Pillai, B.; Moorthie, V.A.; Cherney, M.M.; Vederas, J.C.; James, M.N.G.
Deposited on	:	2008-09-18
Resolution	:	1.95 Å(reported)

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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 1.95 Å.

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

Metric	Percentile Ranks	Value
Clashscore		12
Ramachandran outliers		0.2%
Sidechain outliers		5.2%
RSRZ outliers		2.1%

Worse   *Better*

▮ Percentile relative to all X-ray structures

⊓ Percentile relative to X-ray structures of similar resolution

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	2705 (1.96-1.96)
Ramachandran outliers	138981	2678 (1.96-1.96)
Sidechain outliers	138945	2678 (1.96-1.96)
RSRZ outliers	127900	2539 (1.96-1.96)

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	317	75% · 14% · 9%
1	B	317	% · 75% · 14% · 9%
1	C	317	% · 75% · 13% · 9%
1	D	317	3% · 78% · 14% · 5%
1	E	317	3% · 73% · 15% · 9%
1	F	317	4% · 77% · 15% · 5%

2 Entry composition ⓘ

There are 3 unique types of molecules in this entry. The entry contains 15115 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 Diaminopimelate epimerase, chloroplastic.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	287	Total	C	N	O	S	0	0	0
			2169	1363	377	413	16			
1	B	288	Total	C	N	O	S	0	0	0
			2179	1369	380	414	16			
1	C	287	Total	C	N	O	S	0	0	0
			2169	1363	377	413	16			
1	D	301	Total	C	N	O	S	6	0	0
			2273	1430	393	434	16			
1	E	287	Total	C	N	O	S	0	0	0
			2169	1363	377	413	16			
1	F	301	Total	C	N	O	S	6	0	0
			2273	1430	393	434	16			

There are 36 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	312	HIS	-	expression tag	UNP Q9LFG2
A	313	HIS	-	expression tag	UNP Q9LFG2
A	314	HIS	-	expression tag	UNP Q9LFG2
A	315	HIS	-	expression tag	UNP Q9LFG2
A	316	HIS	-	expression tag	UNP Q9LFG2
A	317	HIS	-	expression tag	UNP Q9LFG2
B	312	HIS	-	expression tag	UNP Q9LFG2
B	313	HIS	-	expression tag	UNP Q9LFG2
B	314	HIS	-	expression tag	UNP Q9LFG2
B	315	HIS	-	expression tag	UNP Q9LFG2
B	316	HIS	-	expression tag	UNP Q9LFG2
B	317	HIS	-	expression tag	UNP Q9LFG2
C	312	HIS	-	expression tag	UNP Q9LFG2
C	313	HIS	-	expression tag	UNP Q9LFG2
C	314	HIS	-	expression tag	UNP Q9LFG2
C	315	HIS	-	expression tag	UNP Q9LFG2
C	316	HIS	-	expression tag	UNP Q9LFG2

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Chain	Residue	Modelled	Actual	Comment	Reference
C	317	HIS	-	expression tag	UNP Q9LFG2
D	312	HIS	-	expression tag	UNP Q9LFG2
D	313	HIS	-	expression tag	UNP Q9LFG2
D	314	HIS	-	expression tag	UNP Q9LFG2
D	315	HIS	-	expression tag	UNP Q9LFG2
D	316	HIS	-	expression tag	UNP Q9LFG2
D	317	HIS	-	expression tag	UNP Q9LFG2
E	312	HIS	-	expression tag	UNP Q9LFG2
E	313	HIS	-	expression tag	UNP Q9LFG2
E	314	HIS	-	expression tag	UNP Q9LFG2
E	315	HIS	-	expression tag	UNP Q9LFG2
E	316	HIS	-	expression tag	UNP Q9LFG2
E	317	HIS	-	expression tag	UNP Q9LFG2
F	312	HIS	-	expression tag	UNP Q9LFG2
F	313	HIS	-	expression tag	UNP Q9LFG2
F	314	HIS	-	expression tag	UNP Q9LFG2
F	315	HIS	-	expression tag	UNP Q9LFG2
F	316	HIS	-	expression tag	UNP Q9LFG2
F	317	HIS	-	expression tag	UNP Q9LFG2

- Molecule 2 is (2S,6S)-2,6-DIAMINO-2-METHYLHEPTANEDIOIC ACID (three-letter code: ZDP) (formula: $C_8H_{16}N_2O_4$).
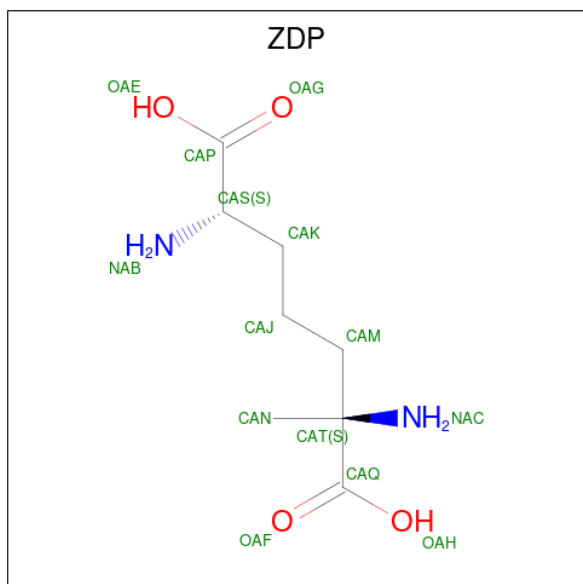
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	A	1	Total	C	N	O	0	0
			14	8	2	4		

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	B	1	Total 14	C 8	N 2	O 4	0	0
2	C	1	Total 14	C 8	N 2	O 4	0	0
2	D	1	Total 14	C 8	N 2	O 4	0	0
2	E	1	Total 14	C 8	N 2	O 4	0	0
2	F	1	Total 14	C 8	N 2	O 4	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	339	Total 339	O 339	0	0
3	B	338	Total 338	O 338	0	0
3	C	317	Total 317	O 317	0	0
3	D	280	Total 280	O 280	0	0
3	E	293	Total 293	O 293	0	0
3	F	232	Total 232	O 232	0	0

3 Residue-property plots ⓘ

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and 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.
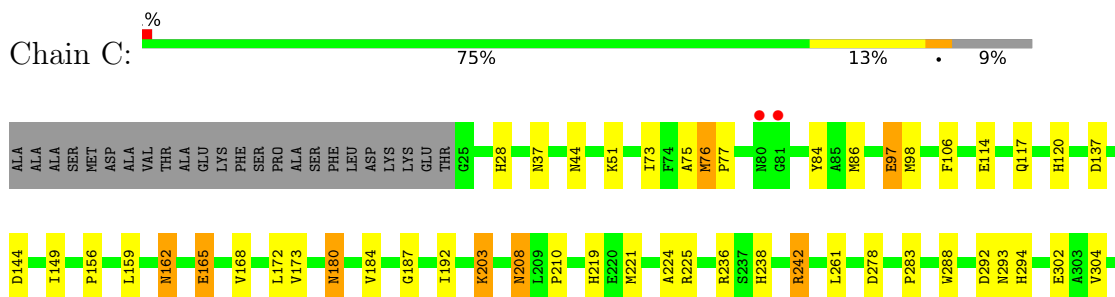
• Molecule 1: Diaminopimelate epimerase, chloroplastic
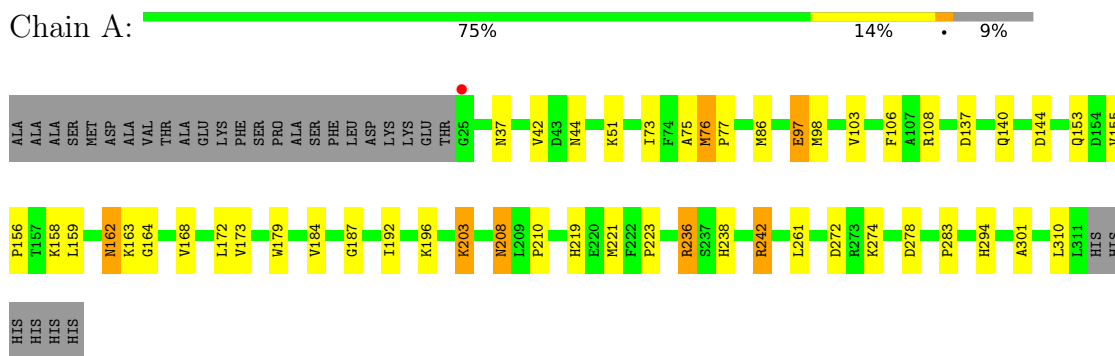
• Molecule 1: Diaminopimelate epimerase, chloroplastic
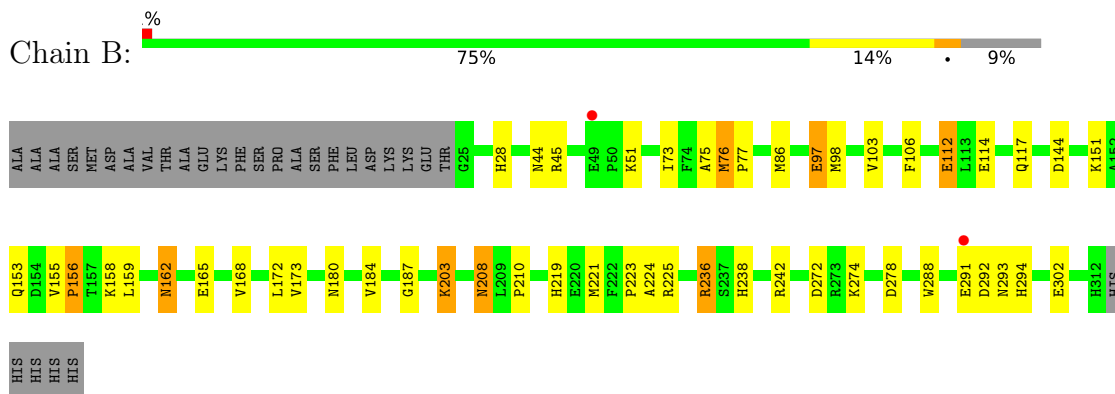
• Molecule 1: Diaminopimelate epimerase, chloroplastic

L311 HIS HIS HIS HIS HIS

• Molecule 1: Diaminopimelate epimerase, chloroplastic

Chain D:

3%

78%　　　　　14%　　5%

ALA ALA ALA SER MET ASP ALA VAL THR ALA E11 F18 L19 K22 E23 T24 H28 N37 N44 E49 P50 K51 I73 F74 A75 M76 P77 G81 T82 M86 E97 M98 V103 F106 A107 R108 N115 L116 Q117 G118 K119 H120 D137 D138 G139

D144 I149 L150 K151 A152 Q153 L159 N162 V168 L172 V173 N180 V184 S185 K203 N208 L209 P210 H219 E220 M221 R236 S237 H238 R242 G269 D272 D278 W288 K289 N293 H294 L310 L311 HIS HIS HIS HIS HIS

• Molecule 1: Diaminopimelate epimerase, chloroplastic

Chain E:

3%

73%　　　　　15%　　9%

ALA ALA ALA SER MET ASP ALA VAL THR ALA GLU LYS PHE SER PRO ALA SER PHE LEU ASP LYS LYS GLU THR G25 H28 V42 D43 N44 R45 D46 E49 P50 K51 I73 F74 A75 M76 P77 N80 M86 E97 M98 V103 F106 A107 R108 E112 L113 E114

N115 L116 Q117 G118 K119 H120 S121 F122 E134 I135 Q136 D137 D138 G139 D144 I149 Q153 T157 K158 L159 N162 K163 G164 E165 V168 L172 V173 W179 N180 V184 S185 M186 G187 K196 K203 N208 L209 P210 H219 E220 M221 F222 P223 A224 R225

R236 S237 H238 R242 D272 D278 H294 L311 HIS HIS HIS HIS HIS

• Molecule 1: Diaminopimelate epimerase, chloroplastic

Chain F:

4%

77%　　　　　15%　　5%

ALA ALA ALA SER MET ASP ALA VAL THR ALA E11 L19 D20 K21 K22 E23 T24 V42 D43 N44 R45 D46 S47 S48 E49 P50 K51 I73 F74 A75 M76 P77 G78 V79 M86 E97 M98 V103 F106 A107 R108 E114 N115 L116 Q117 F122 P133 E134 I135 Q136

D137 D138 G139 D144 K151 A152 Q153 D154 V155 P156 T157 K158 L159 N162 V168 L172 V173 N180 V184 K203 N208 L209 P210 H219 E220 M221 F222 P223 A224 R225 R236 S237 H238 R242 D272 R273 K274 D278 E287 W288 E291 D292 N293 H294

A301 Y306 L311 HIS HIS HIS HIS HIS

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	102.54Å 136.44Å 102.57Å 90.00° 119.54° 90.00°	Depositor
Resolution (Å)	50.00 – 1.95 42.14 – 1.94	Depositor EDS
% Data completeness (in resolution range)	(Not available) (50.00-1.95) 97.7 (42.14-1.94)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$<I/\sigma(I)>$ [1]	2.46 (at 1.95Å)	Xtriage
Refinement program	CNS	Depositor
R, R_{free}	0.179 , 0.208 0.175 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å^2)	23.8	Xtriage
Anisotropy	0.250	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.38 , 55.1	EDS
L-test for twinning [2]	$<|L|> = 0.50, <L^2> = 0.33$	Xtriage
Estimated twinning fraction	0.001 for -h-l,k,h 0.001 for l,k,-h-l 0.014 for h,-k,-h-l 0.013 for -h-l,-k,l 0.014 for l,-k,h	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	15115	wwPDB-VP
Average B, all atoms (Å^2)	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.18% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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: ZDP

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	0.53	0/2214	0.78	4/2998 (0.1%)
1	B	0.51	0/2225	0.74	3/3013 (0.1%)
1	C	0.52	0/2214	0.76	4/2998 (0.1%)
1	D	0.54	2/2321 (0.1%)	0.76	4/3141 (0.1%)
1	E	0.49	0/2214	0.74	3/2998 (0.1%)
1	F	0.45	0/2321	0.78	5/3141 (0.2%)
All	All	0.51	2/13509 (0.0%)	0.76	23/18289 (0.1%)

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	D	97	GLU	CD-OE1	-8.59	1.16	1.25
1	D	97	GLU	CD-OE2	-6.28	1.18	1.25

All (23) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	F	225	ARG	NE-CZ-NH1	-11.67	114.47	120.30
1	F	225	ARG	NE-CZ-NH2	11.11	125.85	120.30
1	A	242	ARG	NE-CZ-NH2	-10.34	115.13	120.30
1	D	97	GLU	OE1-CD-OE2	-9.33	112.11	123.30
1	A	242	ARG	NE-CZ-NH1	8.05	124.33	120.30
1	D	242	ARG	NE-CZ-NH2	-7.27	116.67	120.30
1	E	242	ARG	NE-CZ-NH2	-7.13	116.73	120.30
1	C	242	ARG	NE-CZ-NH2	-7.10	116.75	120.30
1	F	242	ARG	NE-CZ-NH2	-7.03	116.79	120.30
1	B	242	ARG	NE-CZ-NH1	-6.55	117.02	120.30
1	D	242	ARG	NE-CZ-NH1	6.36	123.48	120.30
1	C	242	ARG	NE-CZ-NH1	6.13	123.36	120.30
1	E	242	ARG	NE-CZ-NH1	6.11	123.36	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	203	LYS	N-CA-C	-5.48	96.22	111.00
1	E	203	LYS	N-CA-C	-5.41	96.40	111.00
1	F	203	LYS	N-CA-C	-5.41	96.40	111.00
1	B	242	ARG	NE-CZ-NH2	5.41	123.00	120.30
1	D	203	LYS	N-CA-C	-5.39	96.44	111.00
1	C	203	LYS	N-CA-C	-5.28	96.73	111.00
1	A	203	LYS	N-CA-C	-5.25	96.83	111.00
1	A	164	GLY	N-CA-C	-5.15	100.23	113.10
1	C	37	ASN	N-CA-C	-5.07	97.31	111.00
1	F	23	GLU	N-CA-C	5.06	124.67	111.00

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	2169	0	2121	50	0
1	B	2179	0	2128	53	0
1	C	2169	0	2121	50	0
1	D	2273	0	2217	58	0
1	E	2169	0	2121	48	0
1	F	2273	0	2217	53	0
2	A	14	0	13	0	0
2	B	14	0	13	0	0
2	C	14	0	13	0	0
2	D	14	0	13	0	0
2	E	14	0	13	0	0
2	F	14	0	13	0	0
3	A	339	0	0	7	0
3	B	338	0	0	6	0
3	C	317	0	0	7	0
3	D	280	0	0	7	0
3	E	293	0	0	3	0
3	F	232	0	0	4	0
All	All	15115	0	13003	305	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 12.

All (305) 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:E:162:ASN:HD21	1:E:168:VAL:H	1.09	0.99
1:E:157:THR:HG22	1:E:159:LEU:H	1.31	0.96
1:A:162:ASN:HD21	1:A:168:VAL:H	1.12	0.95
1:F:162:ASN:HD21	1:F:168:VAL:H	1.07	0.94
1:C:162:ASN:HD21	1:C:168:VAL:H	1.08	0.92
1:E:219:HIS:HD2	1:E:221:MET:H	1.16	0.91
1:C:219:HIS:HD2	1:C:221:MET:H	1.19	0.90
1:D:219:HIS:HD2	1:D:221:MET:H	1.19	0.89
1:F:219:HIS:HD2	1:F:221:MET:H	1.21	0.87
1:B:162:ASN:HD21	1:B:168:VAL:H	1.18	0.87
1:A:219:HIS:HD2	1:A:221:MET:H	1.20	0.87
1:B:219:HIS:HD2	1:B:221:MET:H	1.18	0.86
1:D:162:ASN:HD21	1:D:168:VAL:H	1.19	0.85
1:F:162:ASN:HD22	1:F:162:ASN:H	1.26	0.80
1:E:162:ASN:HD22	1:E:162:ASN:H	1.27	0.80
1:C:73:ILE:HG21	1:C:86:MET:HE2	1.65	0.79
1:C:162:ASN:HD22	1:C:162:ASN:H	1.30	0.78
1:A:162:ASN:HD22	1:A:162:ASN:H	1.33	0.77
1:F:44:ASN:HD21	1:F:51:LYS:H	1.29	0.77
1:B:291:GLU:CD	1:B:291:GLU:H	1.87	0.76
1:C:44:ASN:HD21	1:C:51:LYS:H	1.34	0.76
1:B:158:LYS:HE3	1:B:223:PRO:HG3	1.66	0.75
1:B:44:ASN:HD21	1:B:51:LYS:H	1.37	0.72
1:D:44:ASN:HD21	1:D:51:LYS:H	1.37	0.72
1:A:44:ASN:HD21	1:A:51:LYS:H	1.37	0.72
1:A:137:ASP:HB3	1:C:28:HIS:CD2	2.25	0.72
1:B:162:ASN:H	1:B:162:ASN:HD22	1.36	0.71
1:A:153:GLN:HG2	3:A:803:HOH:O	1.92	0.70
1:C:73:ILE:CG2	1:C:86:MET:HE2	2.22	0.69
1:C:86:MET:HE3	1:C:106:PHE:HB2	1.74	0.69
1:E:44:ASN:HD21	1:E:51:LYS:H	1.37	0.69
1:F:158:LYS:HE3	1:F:223:PRO:HG3	1.74	0.69
1:C:144:ASP:OD1	1:C:294:HIS:HD2	1.76	0.69
1:F:44:ASN:HD21	1:F:51:LYS:N	1.90	0.68
1:C:242:ARG:HD3	3:C:984:HOH:O	1.92	0.68
1:C:162:ASN:ND2	1:C:168:VAL:H	1.89	0.68
1:C:159:LEU:HD23	1:C:221:MET:HE2	1.76	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:108:ARG:HD2	1:F:301:ALA:HB3	1.74	0.67
1:A:86:MET:HE3	1:A:106:PHE:HB2	1.77	0.67
1:D:162:ASN:H	1:D:162:ASN:HD22	1.43	0.67
1:D:219:HIS:CD2	1:D:221:MET:H	2.09	0.66
1:E:219:HIS:CD2	1:E:221:MET:H	2.07	0.66
1:A:219:HIS:CD2	1:A:221:MET:H	2.10	0.65
1:D:151:LYS:HE2	1:D:153:GLN:HE21	1.62	0.65
1:B:151:LYS:HE2	1:B:153:GLN:HE21	1.62	0.65
1:B:159:LEU:HD23	1:B:221:MET:HE2	1.80	0.64
1:A:158:LYS:HE3	1:A:223:PRO:HG3	1.79	0.64
1:D:28:HIS:CE1	1:F:22:LYS:HD2	2.33	0.64
1:E:242:ARG:HD3	3:E:831:HOH:O	1.97	0.64
1:F:44:ASN:ND2	1:F:51:LYS:H	1.94	0.64
1:A:173:VAL:O	1:A:219:HIS:HE1	1.80	0.64
1:D:151:LYS:HE2	1:D:153:GLN:NE2	2.13	0.64
1:E:86:MET:HE3	1:E:106:PHE:HB2	1.78	0.64
1:A:159:LEU:HD23	1:A:221:MET:HE2	1.78	0.63
1:E:162:ASN:HD22	1:E:162:ASN:N	1.96	0.63
1:A:73:ILE:HG21	1:A:86:MET:HE2	1.80	0.63
1:E:144:ASP:OD1	1:E:294:HIS:HD2	1.81	0.63
1:F:173:VAL:O	1:F:219:HIS:HE1	1.81	0.63
1:B:219:HIS:CD2	1:B:221:MET:H	2.08	0.63
1:B:112:GLU:HG2	3:B:796:HOH:O	1.99	0.62
1:B:173:VAL:O	1:B:219:HIS:HE1	1.82	0.62
1:C:173:VAL:O	1:C:219:HIS:HE1	1.81	0.62
1:F:159:LEU:HD23	1:F:221:MET:HE2	1.81	0.62
1:C:162:ASN:HD22	1:C:162:ASN:N	1.96	0.62
1:F:151:LYS:HE2	1:F:153:GLN:HG2	1.82	0.62
1:F:44:ASN:ND2	1:F:51:LYS:HG3	2.15	0.62
1:B:144:ASP:OD1	1:B:294:HIS:HD2	1.83	0.62
1:B:73:ILE:HG21	1:B:86:MET:HE2	1.81	0.61
1:D:159:LEU:HD23	1:D:221:MET:CE	2.31	0.61
1:D:162:ASN:ND2	1:D:168:VAL:H	1.96	0.61
1:D:242:ARG:HD3	3:D:691:HOH:O	2.00	0.61
1:D:242:ARG:HD2	3:D:707:HOH:O	1.99	0.61
1:F:108:ARG:NH1	1:F:139:GLY:O	2.32	0.61
1:B:45:ARG:NH1	1:B:114:GLU:OE1	2.34	0.61
1:A:162:ASN:HD22	1:A:162:ASN:N	1.99	0.61
1:D:44:ASN:HD21	1:D:51:LYS:N	1.98	0.61
1:B:159:LEU:HD23	1:B:221:MET:CE	2.31	0.61
1:C:44:ASN:HD21	1:C:51:LYS:N	1.99	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:159:LEU:HD23	1:D:221:MET:HE2	1.83	0.61
1:F:219:HIS:CD2	1:F:221:MET:H	2.11	0.61
1:F:73:ILE:HG21	1:F:86:MET:HE2	1.83	0.60
1:A:44:ASN:ND2	1:A:51:LYS:HG3	2.16	0.60
1:F:144:ASP:OD1	1:F:294:HIS:HD2	1.85	0.60
1:D:19:LEU:HD12	1:E:113:LEU:HD21	1.84	0.60
1:D:86:MET:HE3	1:D:106:PHE:HB2	1.83	0.60
1:D:73:ILE:HG21	1:D:86:MET:HE2	1.83	0.59
1:E:44:ASN:HD21	1:E:51:LYS:N	2.00	0.59
1:F:23:GLU:O	1:F:24:THR:O	2.20	0.59
1:A:44:ASN:HD21	1:A:51:LYS:N	2.00	0.59
1:B:302:GLU:HG3	3:B:780:HOH:O	2.02	0.59
1:C:159:LEU:HD23	1:C:221:MET:CE	2.32	0.59
1:B:51:LYS:NZ	3:B:505:HOH:O	2.36	0.58
1:A:73:ILE:CG2	1:A:86:MET:HE2	2.34	0.58
1:C:242:ARG:HD2	3:C:934:HOH:O	2.04	0.58
1:E:242:ARG:HD2	3:E:830:HOH:O	2.04	0.58
1:B:28:HIS:CD2	1:C:137:ASP:HB3	2.38	0.58
1:B:86:MET:HE3	1:B:106:PHE:HB2	1.84	0.58
1:F:46:ASP:HB2	3:F:911:HOH:O	2.03	0.58
1:B:44:ASN:HD21	1:B:51:LYS:N	2.01	0.58
1:E:119:LYS:HE3	1:E:137:ASP:OD2	2.04	0.58
1:E:173:VAL:O	1:E:219:HIS:HE1	1.87	0.58
1:F:159:LEU:HD23	1:F:221:MET:CE	2.34	0.58
1:D:22:LYS:NZ	1:D:22:LYS:HB3	2.18	0.57
1:A:242:ARG:HD2	3:A:782:HOH:O	2.03	0.57
1:C:149:ILE:HD13	3:C:973:HOH:O	2.04	0.57
1:B:291:GLU:CD	1:B:291:GLU:N	2.57	0.57
1:D:144:ASP:OD1	1:D:294:HIS:HD2	1.87	0.57
1:E:238:HIS:HE1	1:E:278:ASP:OD2	1.88	0.57
1:C:219:HIS:CD2	1:C:221:MET:H	2.10	0.57
1:B:73:ILE:CG2	1:B:86:MET:HE2	2.35	0.57
1:B:151:LYS:HE3	1:B:165:GLU:HG2	1.87	0.56
1:D:115:ASN:ND2	1:D:117:GLN:OE1	2.38	0.56
1:D:18:PHE:CZ	1:D:22:LYS:HD2	2.41	0.56
1:C:73:ILE:HG21	1:C:86:MET:CE	2.36	0.56
1:E:86:MET:HE2	1:E:106:PHE:HD2	1.70	0.56
1:D:44:ASN:ND2	1:D:51:LYS:H	2.03	0.56
1:F:134:GLU:HG2	1:F:136:GLN:NE2	2.21	0.55
1:E:73:ILE:HG21	1:E:86:MET:HE2	1.87	0.55
1:D:173:VAL:O	1:D:219:HIS:HE1	1.90	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:76:MET:HB3	1:C:77:PRO:HD2	1.87	0.55
1:E:44:ASN:ND2	1:E:51:LYS:H	2.04	0.55
1:F:76:MET:HB3	1:F:77:PRO:HD2	1.88	0.55
1:D:86:MET:HE2	1:D:106:PHE:HD2	1.71	0.55
1:D:76:MET:HB3	1:D:77:PRO:HD2	1.88	0.55
1:E:153:GLN:CD	1:E:153:GLN:H	2.10	0.55
1:D:288:TRP:HE1	1:D:293:ASN:ND2	2.05	0.55
1:A:144:ASP:OD1	1:A:294:HIS:HD2	1.89	0.55
1:F:225:ARG:HD3	3:F:854:HOH:O	2.07	0.54
1:F:86:MET:HE3	1:F:106:PHE:HB2	1.90	0.54
1:B:44:ASN:ND2	1:B:51:LYS:H	2.04	0.54
1:C:208:ASN:HD22	1:C:210:PRO:HD2	1.73	0.54
1:E:134:GLU:HG2	1:E:136:GLN:NE2	2.23	0.54
1:C:44:ASN:ND2	1:C:51:LYS:HG3	2.23	0.53
1:D:44:ASN:ND2	1:D:51:LYS:HG3	2.23	0.53
1:D:219:HIS:HD2	1:D:221:MET:N	1.99	0.53
1:C:44:ASN:ND2	1:C:51:LYS:H	2.02	0.53
1:B:274:LYS:HG3	3:B:812:HOH:O	2.07	0.53
1:D:116:LEU:HD22	1:D:120:HIS:CE1	2.43	0.53
1:E:236:ARG:NH1	1:E:272:ASP:OD1	2.41	0.53
1:E:208:ASN:HD22	1:E:210:PRO:HD2	1.73	0.53
1:B:162:ASN:ND2	1:B:168:VAL:H	1.98	0.53
1:D:22:LYS:HD3	1:E:28:HIS:ND1	2.24	0.53
1:E:76:MET:HB3	1:E:77:PRO:HD2	1.91	0.53
1:E:86:MET:CE	1:E:106:PHE:HB2	2.39	0.53
1:F:242:ARG:HD2	3:F:870:HOH:O	2.07	0.52
1:D:119:LYS:HE3	1:D:137:ASP:OD2	2.10	0.52
1:F:162:ASN:HD22	1:F:162:ASN:N	1.96	0.52
1:D:208:ASN:HD22	1:D:210:PRO:HD2	1.75	0.52
1:B:288:TRP:HE1	1:B:293:ASN:ND2	2.08	0.52
1:C:51:LYS:NZ	3:C:953:HOH:O	2.28	0.52
1:B:44:ASN:ND2	1:B:51:LYS:HG3	2.24	0.52
1:B:208:ASN:HD22	1:B:210:PRO:HD2	1.74	0.52
1:B:76:MET:HB3	1:B:77:PRO:HD2	1.91	0.52
1:C:238:HIS:HE1	1:C:278:ASP:OD2	1.93	0.52
1:A:86:MET:HE2	1:A:106:PHE:HD2	1.74	0.51
1:D:73:ILE:CG2	1:D:86:MET:HE2	2.40	0.51
1:A:242:ARG:HD3	3:A:655:HOH:O	2.10	0.51
1:B:75:ALA:HA	1:B:106:PHE:CE2	2.44	0.51
1:B:238:HIS:HE1	1:B:278:ASP:OD2	1.94	0.51
1:A:76:MET:HB3	1:A:77:PRO:HD2	1.91	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:162:ASN:ND2	1:A:168:VAL:H	1.95	0.51
1:D:116:LEU:HB3	1:D:120:HIS:CD2	2.45	0.51
1:A:44:ASN:ND2	1:A:51:LYS:H	2.06	0.51
1:A:238:HIS:HE1	1:A:278:ASP:OD2	1.93	0.51
1:E:44:ASN:ND2	1:E:51:LYS:HG3	2.26	0.51
1:D:238:HIS:HE1	1:D:278:ASP:OD2	1.92	0.51
1:F:122:PHE:O	1:F:133:PRO:HD2	2.11	0.51
1:F:208:ASN:HD22	1:F:210:PRO:HD2	1.75	0.50
1:A:159:LEU:HD23	1:A:221:MET:CE	2.41	0.50
1:E:238:HIS:CE1	1:E:278:ASP:OD2	2.64	0.50
1:B:238:HIS:HD2	3:B:810:HOH:O	1.95	0.50
1:F:86:MET:HE2	1:F:106:PHE:HD2	1.76	0.50
1:F:242:ARG:HD3	3:F:871:HOH:O	2.12	0.50
1:B:236:ARG:NH1	1:B:272:ASP:OD1	2.46	0.49
1:A:219:HIS:HD2	1:A:221:MET:N	2.00	0.49
1:B:97:GLU:CG	1:B:187:GLY:O	2.61	0.49
1:A:310:LEU:HB2	3:A:833:HOH:O	2.13	0.49
1:D:310:LEU:N	1:D:310:LEU:HD12	2.28	0.49
1:A:97:GLU:HG2	1:A:187:GLY:C	2.33	0.49
1:B:86:MET:HE3	1:B:103:VAL:HA	1.96	0.48
1:F:162:ASN:ND2	1:F:168:VAL:H	1.91	0.48
1:A:236:ARG:NH1	1:A:272:ASP:OD1	2.46	0.48
1:B:162:ASN:HD22	1:B:162:ASN:N	2.02	0.48
1:C:97:GLU:CG	1:C:187:GLY:O	2.62	0.47
1:B:73:ILE:HG21	1:B:86:MET:CE	2.44	0.47
1:B:117:GLN:NE2	3:B:797:HOH:O	2.42	0.47
1:C:75:ALA:HA	1:C:106:PHE:CE2	2.49	0.47
1:E:73:ILE:CG2	1:E:86:MET:HE2	2.44	0.47
1:E:163:LYS:HD3	1:E:168:VAL:HG21	1.97	0.47
1:A:75:ALA:HA	1:A:106:PHE:CE2	2.49	0.47
1:A:86:MET:CE	1:A:106:PHE:HB2	2.43	0.47
1:A:274:LYS:HG3	3:A:814:HOH:O	2.15	0.47
1:E:219:HIS:HD2	1:E:221:MET:N	1.98	0.47
1:A:208:ASN:HD22	1:A:210:PRO:HD2	1.78	0.47
1:C:117:GLN:HA	1:C:117:GLN:NE2	2.30	0.47
1:E:158:LYS:HE3	1:E:223:PRO:HG3	1.95	0.47
1:A:73:ILE:HG21	1:A:86:MET:CE	2.44	0.47
1:F:22:LYS:HA	1:F:22:LYS:HD3	1.58	0.47
1:B:97:GLU:HG3	1:B:187:GLY:O	2.15	0.47
1:D:86:MET:CE	1:D:106:PHE:HB2	2.44	0.47
1:D:108:ARG:NH2	1:D:139:GLY:O	2.43	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:86:MET:CE	1:F:106:PHE:HB2	2.45	0.47
1:A:208:ASN:HD22	1:A:208:ASN:C	2.19	0.46
1:F:155:VAL:N	1:F:156:PRO:HA	2.30	0.46
1:A:155:VAL:N	1:A:156:PRO:HA	2.31	0.46
1:B:292:ASP:O	1:B:293:ASN:HB3	2.15	0.46
1:E:86:MET:HE2	1:E:106:PHE:CD2	2.47	0.46
1:F:224:ALA:O	1:F:225:ARG:HB2	2.15	0.46
1:E:97:GLU:HG2	1:E:187:GLY:C	2.35	0.46
1:E:86:MET:HE3	1:E:103:VAL:HA	1.97	0.46
1:F:151:LYS:HE2	1:F:153:GLN:HE21	1.80	0.46
1:B:224:ALA:O	1:B:225:ARG:HB2	2.16	0.46
1:C:97:GLU:HG2	1:C:187:GLY:C	2.36	0.46
1:C:288:TRP:HE1	1:C:293:ASN:ND2	2.13	0.46
1:A:238:HIS:CE1	1:A:278:ASP:OD2	2.69	0.46
1:E:224:ALA:O	1:E:225:ARG:HB2	2.16	0.46
1:F:73:ILE:CG2	1:F:86:MET:HE2	2.45	0.46
1:C:224:ALA:O	1:C:225:ARG:HB2	2.15	0.45
1:E:108:ARG:NH2	1:E:139:GLY:O	2.40	0.45
1:A:163:LYS:HD2	3:A:822:HOH:O	2.16	0.45
1:B:97:GLU:HG2	1:B:187:GLY:C	2.36	0.45
1:C:238:HIS:CE1	1:C:278:ASP:OD2	2.70	0.45
1:C:238:HIS:HD2	3:C:868:HOH:O	2.00	0.45
1:F:236:ARG:NH1	1:F:272:ASP:OD1	2.50	0.45
1:F:274:LYS:HG2	1:F:287:GLU:HB2	1.98	0.45
1:F:208:ASN:ND2	1:F:210:PRO:HD2	2.32	0.45
1:B:208:ASN:ND2	1:B:210:PRO:HD2	2.31	0.45
1:D:149:ILE:HB	1:D:185:SER:HB3	1.98	0.45
1:F:75:ALA:HA	1:F:106:PHE:CE2	2.52	0.45
1:B:219:HIS:HD2	1:B:221:MET:N	2.00	0.45
1:A:159:LEU:HA	1:A:221:MET:CE	2.47	0.44
1:E:203:LYS:NZ	3:E:829:HOH:O	2.50	0.44
1:A:97:GLU:CG	1:A:187:GLY:O	2.66	0.44
1:B:165:GLU:N	1:B:165:GLU:CD	2.71	0.44
1:D:162:ASN:HD22	1:D:162:ASN:N	2.07	0.44
1:E:115:ASN:ND2	1:E:117:GLN:OE1	2.50	0.44
1:D:18:PHE:CE2	1:D:22:LYS:HD2	2.53	0.44
1:D:236:ARG:NH1	1:D:272:ASP:OD1	2.50	0.44
1:E:208:ASN:ND2	1:E:210:PRO:HD2	2.32	0.44
1:B:208:ASN:HD22	1:B:208:ASN:C	2.20	0.44
1:F:208:ASN:HD22	1:F:208:ASN:C	2.20	0.44
1:C:304:VAL:O	1:D:310:LEU:HD13	2.18	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:159:LEU:N	1:A:221:MET:HE3	2.33	0.43
1:D:208:ASN:ND2	1:D:210:PRO:HD2	2.33	0.43
1:C:180:ASN:HD22	1:C:180:ASN:HA	1.62	0.43
1:C:208:ASN:ND2	1:C:210:PRO:HD2	2.32	0.43
1:E:97:GLU:CG	1:E:187:GLY:O	2.66	0.43
1:E:208:ASN:HD22	1:E:208:ASN:C	2.20	0.43
1:A:86:MET:HE3	1:A:106:PHE:CB	2.45	0.43
1:F:219:HIS:HD2	1:F:221:MET:N	2.03	0.43
1:F:238:HIS:HE1	1:F:278:ASP:OD2	2.02	0.43
1:D:238:HIS:HD2	3:D:687:HOH:O	2.00	0.43
1:F:288:TRP:HE1	1:F:293:ASN:ND2	2.16	0.43
1:A:86:MET:HE2	1:A:106:PHE:CD2	2.53	0.43
1:B:155:VAL:N	1:B:156:PRO:HA	2.34	0.43
1:C:208:ASN:HD22	1:C:208:ASN:C	2.21	0.43
1:F:114:GLU:OE1	1:F:114:GLU:HA	2.18	0.43
1:A:192:ILE:HG12	1:A:261:LEU:HA	2.01	0.43
1:C:302:GLU:HG3	3:C:783:HOH:O	2.19	0.43
1:D:294:HIS:HE1	3:D:695:HOH:O	2.01	0.43
1:E:159:LEU:HD23	1:E:221:MET:HE2	2.00	0.43
1:F:180:ASN:HD22	1:F:180:ASN:HA	1.64	0.43
1:D:22:LYS:H	1:D:22:LYS:HG2	1.41	0.42
1:E:180:ASN:HD22	1:E:180:ASN:HA	1.63	0.42
1:F:86:MET:HE3	1:F:103:VAL:HA	2.00	0.42
1:C:84:TYR:OH	1:C:114:GLU:OE2	2.22	0.42
1:D:238:HIS:CE1	1:D:278:ASP:OD2	2.71	0.42
1:B:180:ASN:HD22	1:B:180:ASN:HA	1.63	0.42
1:D:86:MET:HE3	1:D:103:VAL:HA	2.00	0.42
1:F:23:GLU:O	1:F:24:THR:C	2.57	0.42
1:C:86:MET:HE3	1:C:106:PHE:CB	2.45	0.42
1:D:310:LEU:N	1:D:310:LEU:CD1	2.83	0.42
1:E:75:ALA:HA	1:E:106:PHE:CE2	2.55	0.42
1:E:149:ILE:HB	1:E:185:SER:HB3	2.01	0.42
1:A:208:ASN:ND2	1:A:210:PRO:HD2	2.34	0.42
1:E:162:ASN:ND2	1:E:168:VAL:H	1.93	0.42
1:B:86:MET:HE2	1:B:106:PHE:HD2	1.84	0.42
1:D:86:MET:HE2	1:D:106:PHE:CD2	2.52	0.42
1:F:274:LYS:HB3	1:F:274:LYS:HE2	1.87	0.42
1:A:86:MET:HE3	1:A:103:VAL:HA	2.01	0.42
1:C:292:ASP:O	1:C:293:ASN:HB3	2.20	0.42
1:C:97:GLU:HG3	1:C:187:GLY:O	2.20	0.42
1:D:269:GLY:HA2	3:D:706:HOH:O	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:F:86:MET:HE2	1:F:106:PHE:CD2	2.53	0.41
1:D:180:ASN:HD22	1:D:180:ASN:HA	1.62	0.41
1:D:153:GLN:HG2	3:D:726:HOH:O	2.20	0.41
1:D:289:LYS:NZ	3:D:746:HOH:O	2.52	0.41
1:D:75:ALA:HA	1:D:106:PHE:CE2	2.56	0.41
1:B:238:HIS:CE1	1:B:278:ASP:OD2	2.72	0.41
1:A:108:ARG:CD	1:A:301:ALA:HB3	2.51	0.41
1:A:140:GLN:NE2	3:A:780:HOH:O	2.54	0.41
1:C:192:ILE:HG12	1:C:261:LEU:HA	2.03	0.41
1:F:162:ASN:N	1:F:162:ASN:ND2	2.67	0.41
1:A:179:TRP:HA	1:A:196:LYS:HA	2.02	0.40
1:B:114:GLU:CD	1:C:120:HIS:HE1	2.24	0.40
1:D:18:PHE:O	1:D:22:LYS:HG2	2.21	0.40
1:E:179:TRP:HA	1:E:196:LYS:HA	2.04	0.40
1:A:97:GLU:HG2	1:A:187:GLY:O	2.21	0.40
1:B:159:LEU:HA	1:B:221:MET:CE	2.51	0.40
1:C:86:MET:CE	1:C:106:PHE:HB2	2.48	0.40
1:F:19:LEU:HD12	1:F:19:LEU:HA	1.84	0.40
1:C:165:GLU:HG2	3:C:861:HOH:O	2.21	0.40
1:C:219:HIS:HD2	1:C:221:MET:N	2.01	0.40
1:D:208:ASN:HD22	1:D:208:ASN:C	2.24	0.40
1:C:117:GLN:HA	1:C:117:GLN:HE21	1.86	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	285/317 (90%)	279 (98%)	6 (2%)	0	100	100
1	B	286/317 (90%)	279 (98%)	7 (2%)	0	100	100
1	C	285/317 (90%)	277 (97%)	8 (3%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	D	299/317 (94%)	287 (96%)	11 (4%)	1 (0%)	41	30
1	E	285/317 (90%)	281 (99%)	4 (1%)	0	100	100
1	F	299/317 (94%)	290 (97%)	6 (2%)	3 (1%)	15	6
All	All	1739/1902 (91%)	1693 (97%)	42 (2%)	4 (0%)	47	38

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	F	23	GLU
1	F	24	THR
1	D	82	THR
1	F	21	LYS

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	231/255 (91%)	219 (95%)	12 (5%)	23	10
1	B	232/255 (91%)	221 (95%)	11 (5%)	26	13
1	C	231/255 (91%)	218 (94%)	13 (6%)	21	9
1	D	242/255 (95%)	231 (96%)	11 (4%)	27	15
1	E	231/255 (91%)	217 (94%)	14 (6%)	18	7
1	F	242/255 (95%)	230 (95%)	12 (5%)	24	11
All	All	1409/1530 (92%)	1336 (95%)	73 (5%)	23	10

All (73) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	37	ASN
1	A	42	VAL
1	A	76	MET
1	A	97	GLU

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Mol	Chain	Res	Type
1	A	98	MET
1	A	162	ASN
1	A	172	LEU
1	A	184	VAL
1	A	203	LYS
1	A	208	ASN
1	A	236	ARG
1	A	283	PRO
1	B	76	MET
1	B	97	GLU
1	B	98	MET
1	B	112	GLU
1	B	156	PRO
1	B	162	ASN
1	B	172	LEU
1	B	184	VAL
1	B	203	LYS
1	B	208	ASN
1	B	236	ARG
1	C	76	MET
1	C	97	GLU
1	C	98	MET
1	C	156	PRO
1	C	162	ASN
1	C	165	GLU
1	C	172	LEU
1	C	180	ASN
1	C	184	VAL
1	C	203	LYS
1	C	208	ASN
1	C	236	ARG
1	C	283	PRO
1	D	22	LYS
1	D	37	ASN
1	D	76	MET
1	D	98	MET
1	D	115	ASN
1	D	162	ASN
1	D	172	LEU
1	D	184	VAL
1	D	203	LYS
1	D	208	ASN

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Mol	Chain	Res	Type
1	D	236	ARG
1	E	42	VAL
1	E	76	MET
1	E	97	GLU
1	E	98	MET
1	E	112	GLU
1	E	115	ASN
1	E	122	PHE
1	E	162	ASN
1	E	165	GLU
1	E	172	LEU
1	E	184	VAL
1	E	203	LYS
1	E	208	ASN
1	E	236	ARG
1	F	19	LEU
1	F	42	VAL
1	F	76	MET
1	F	97	GLU
1	F	98	MET
1	F	115	ASN
1	F	162	ASN
1	F	172	LEU
1	F	184	VAL
1	F	203	LYS
1	F	208	ASN
1	F	236	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (76) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	44	ASN
1	A	54	GLN
1	A	115	ASN
1	A	117	GLN
1	A	140	GLN
1	A	162	ASN
1	A	180	ASN
1	A	208	ASN
1	A	219	HIS
1	A	238	HIS
1	A	293	ASN

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Mol	Chain	Res	Type
1	A	294	HIS
1	B	44	ASN
1	B	54	GLN
1	B	115	ASN
1	B	117	GLN
1	B	140	GLN
1	B	153	GLN
1	B	162	ASN
1	B	180	ASN
1	B	208	ASN
1	B	219	HIS
1	B	238	HIS
1	B	290	GLN
1	B	293	ASN
1	B	294	HIS
1	C	44	ASN
1	C	54	GLN
1	C	115	ASN
1	C	117	GLN
1	C	140	GLN
1	C	162	ASN
1	C	180	ASN
1	C	208	ASN
1	C	219	HIS
1	C	238	HIS
1	C	293	ASN
1	C	294	HIS
1	D	44	ASN
1	D	54	GLN
1	D	115	ASN
1	D	117	GLN
1	D	120	HIS
1	D	153	GLN
1	D	162	ASN
1	D	180	ASN
1	D	208	ASN
1	D	219	HIS
1	D	238	HIS
1	D	290	GLN
1	D	293	ASN
1	D	294	HIS
1	E	44	ASN

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Mol	Chain	Res	Type
1	E	54	GLN
1	E	115	ASN
1	E	117	GLN
1	E	162	ASN
1	E	180	ASN
1	E	208	ASN
1	E	219	HIS
1	E	238	HIS
1	E	293	ASN
1	E	294	HIS
1	F	44	ASN
1	F	115	ASN
1	F	117	GLN
1	F	136	GLN
1	F	153	GLN
1	F	162	ASN
1	F	180	ASN
1	F	208	ASN
1	F	219	HIS
1	F	238	HIS
1	F	290	GLN
1	F	293	ASN
1	F	294	HIS

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 monosaccharides in this entry.

5.6 Ligand geometry (i)

6 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
2	ZDP	B	500	-	9,13,13	1.11	0	9,18,18	0.90	0
2	ZDP	E	500	-	9,13,13	1.12	0	9,18,18	0.86	0
2	ZDP	A	500	-	9,13,13	1.13	1 (11%)	9,18,18	0.89	0
2	ZDP	C	500	-	9,13,13	1.21	1 (11%)	9,18,18	0.87	0
2	ZDP	D	500	-	9,13,13	1.18	1 (11%)	9,18,18	0.77	0
2	ZDP	F	500	-	9,13,13	1.21	1 (11%)	9,18,18	0.84	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
2	ZDP	B	500	-	-	6/17/17/17	-
2	ZDP	E	500	-	-	7/17/17/17	-
2	ZDP	A	500	-	-	6/17/17/17	-
2	ZDP	C	500	-	-	6/17/17/17	-
2	ZDP	D	500	-	-	6/17/17/17	-
2	ZDP	F	500	-	-	7/17/17/17	-

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	F	500	ZDP	OAF-CAQ	2.20	1.29	1.22
2	C	500	ZDP	OAF-CAQ	2.14	1.29	1.22
2	A	500	ZDP	OAF-CAQ	2.07	1.28	1.22
2	D	500	ZDP	OAF-CAQ	2.01	1.28	1.22

There are no bond angle outliers.

There are no chirality outliers.

All (38) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	500	ZDP	OAF-CAQ-CAT-CAM
2	A	500	ZDP	OAH-CAQ-CAT-NAC
2	B	500	ZDP	OAF-CAQ-CAT-CAM
2	B	500	ZDP	OAH-CAQ-CAT-NAC
2	C	500	ZDP	OAF-CAQ-CAT-CAM
2	C	500	ZDP	OAH-CAQ-CAT-NAC
2	D	500	ZDP	OAF-CAQ-CAT-CAM
2	D	500	ZDP	OAH-CAQ-CAT-NAC
2	E	500	ZDP	OAF-CAQ-CAT-CAM
2	E	500	ZDP	OAH-CAQ-CAT-NAC
2	F	500	ZDP	OAF-CAQ-CAT-CAM
2	F	500	ZDP	OAH-CAQ-CAT-NAC
2	B	500	ZDP	CAM-CAJ-CAK-CAS
2	C	500	ZDP	CAM-CAJ-CAK-CAS
2	A	500	ZDP	CAM-CAJ-CAK-CAS
2	A	500	ZDP	OAH-CAQ-CAT-CAM
2	B	500	ZDP	OAH-CAQ-CAT-CAM
2	C	500	ZDP	OAH-CAQ-CAT-CAM
2	D	500	ZDP	OAH-CAQ-CAT-CAM
2	E	500	ZDP	OAH-CAQ-CAT-CAM
2	F	500	ZDP	OAH-CAQ-CAT-CAM
2	D	500	ZDP	CAM-CAJ-CAK-CAS
2	F	500	ZDP	CAM-CAJ-CAK-CAS
2	E	500	ZDP	CAM-CAJ-CAK-CAS
2	E	500	ZDP	CAJ-CAM-CAT-CAN
2	F	500	ZDP	CAJ-CAM-CAT-CAN
2	C	500	ZDP	OAF-CAQ-CAT-CAN
2	D	500	ZDP	OAF-CAQ-CAT-CAN
2	E	500	ZDP	OAF-CAQ-CAT-CAN
2	F	500	ZDP	OAF-CAQ-CAT-CAN
2	A	500	ZDP	OAF-CAQ-CAT-CAN
2	B	500	ZDP	OAF-CAQ-CAT-CAN
2	C	500	ZDP	OAH-CAQ-CAT-CAN
2	D	500	ZDP	OAH-CAQ-CAT-CAN
2	E	500	ZDP	OAH-CAQ-CAT-CAN
2	F	500	ZDP	OAH-CAQ-CAT-CAN
2	A	500	ZDP	OAH-CAQ-CAT-CAN
2	B	500	ZDP	OAH-CAQ-CAT-CAN

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 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	287/317 (90%)	-0.02	1 (0%)	94	96	14, 19, 33, 42	0
1	B	288/317 (90%)	-0.15	2 (0%)	87	92	14, 21, 35, 48	0
1	C	287/317 (90%)	-0.27	2 (0%)	87	92	15, 21, 36, 46	0
1	D	301/317 (94%)	-0.07	9 (2%)	50	59	16, 24, 46, 62	2 (0%)
1	E	287/317 (90%)	0.02	10 (3%)	44	53	16, 23, 44, 50	0
1	F	301/317 (94%)	0.12	13 (4%)	35	45	17, 28, 54, 64	2 (0%)
All	All	1751/1902 (92%)	-0.06	37 (2%)	63	72	14, 23, 42, 64	4 (0%)

All (37) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	79	VAL	4.6
1	F	46	ASP	4.6
1	F	137	ASP	4.2
1	F	23	GLU	3.8
1	D	23	GLU	3.6
1	D	137	ASP	3.6
1	E	25	GLY	3.5
1	F	24	THR	3.4
1	E	49	GLU	3.3
1	F	48	SER	3.3
1	F	138	ASP	3.3
1	E	117	GLN	3.1
1	F	117	GLN	3.1
1	D	81	GLY	3.1
1	E	137	ASP	2.9
1	C	80	ASN	2.9
1	D	24	THR	2.9
1	F	49	GLU	2.8
1	F	306	TYR	2.8

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Mol	Chain	Res	Type	RSRZ
1	E	80	ASN	2.8
1	F	139	GLY	2.6
1	D	118	GLY	2.5
1	D	115	ASN	2.5
1	D	117	GLN	2.4
1	E	46	ASP	2.4
1	F	20	ASP	2.4
1	E	120	HIS	2.4
1	E	122	PHE	2.3
1	E	116	LEU	2.3
1	A	25	GLY	2.3
1	F	291	GLU	2.2
1	E	115	ASN	2.1
1	C	81	GLY	2.1
1	B	291	GLU	2.1
1	D	138	ASP	2.1
1	B	49	GLU	2.0
1	D	49	GLU	2.0

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

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

6.3 Carbohydrates ⓘ

There are no monosaccharides 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
2	ZDP	A	500	14/14	0.97	0.16	12,15,16,17	0
2	ZDP	C	500	14/14	0.97	0.10	14,16,18,19	0
2	ZDP	E	500	14/14	0.97	0.11	18,19,21,21	0
2	ZDP	F	500	14/14	0.97	0.09	20,21,24,24	0
2	ZDP	B	500	14/14	0.98	0.12	14,14,17,17	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å²)	Q<0.9
2	ZDP	D	500	14/14	0.98	0.09	16,18,19,19	0

6.5　Other polymers ⓘ

There are no such residues in this entry.