



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 5, 2026 – 05:47 PM UTC

PDB ID : 3T07 / pdb_00003t07
Title : Crystal structure of S. aureus Pyruvate Kinase in complex with a naturally occurring bis-indole alkaloid
Authors : Worrall, L.J.; Vuckovic, M.; Strynadka, N.C.J.
Deposited on : 2011-07-19
Resolution : 3.30 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

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

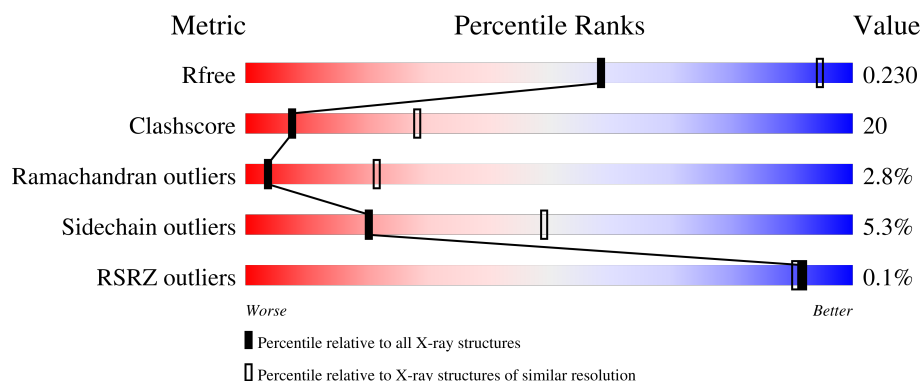
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.30 Å.

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



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	180053	1169 (3.32-3.28)
Clashscore	190562	1209 (3.32-3.28)
Ramachandran outliers	187476	1188 (3.32-3.28)
Sidechain outliers	187428	1187 (3.32-3.28)
RSRZ outliers	180081	1169 (3.32-3.28)

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

Mol	Chain	Length	Quality of chain
1	A	606	
1	B	606	
1	C	606	
1	D	606	

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
2	PO4	A	586	-	-	X	-
2	PO4	D	587	-	-	X	-
3	09C	B	586	X	-	-	-
3	09C	D	586	X	-	-	-

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 17702 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 Pyruvate kinase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	583	Total	C	N	O	S	0	0	0
			4407	2745	764	880	18			
1	B	583	Total	C	N	O	S	0	0	0
			4407	2745	764	880	18			
1	C	583	Total	C	N	O	S	0	0	0
			4407	2745	764	880	18			
1	D	583	Total	C	N	O	S	0	0	0
			4407	2745	764	880	18			

There are 84 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-20	MET	-	expression tag	UNP Q6GG09
A	-19	GLY	-	expression tag	UNP Q6GG09
A	-18	SER	-	expression tag	UNP Q6GG09
A	-17	SER	-	expression tag	UNP Q6GG09
A	-16	HIS	-	expression tag	UNP Q6GG09
A	-15	HIS	-	expression tag	UNP Q6GG09
A	-14	HIS	-	expression tag	UNP Q6GG09
A	-13	HIS	-	expression tag	UNP Q6GG09
A	-12	HIS	-	expression tag	UNP Q6GG09
A	-11	HIS	-	expression tag	UNP Q6GG09
A	-10	SER	-	expression tag	UNP Q6GG09
A	-9	SER	-	expression tag	UNP Q6GG09
A	-8	GLY	-	expression tag	UNP Q6GG09
A	-7	LEU	-	expression tag	UNP Q6GG09
A	-6	VAL	-	expression tag	UNP Q6GG09
A	-5	PRO	-	expression tag	UNP Q6GG09
A	-4	ARG	-	expression tag	UNP Q6GG09
A	-3	GLY	-	expression tag	UNP Q6GG09
A	-2	SER	-	expression tag	UNP Q6GG09
A	-1	HIS	-	expression tag	UNP Q6GG09
A	0	MET	-	expression tag	UNP Q6GG09

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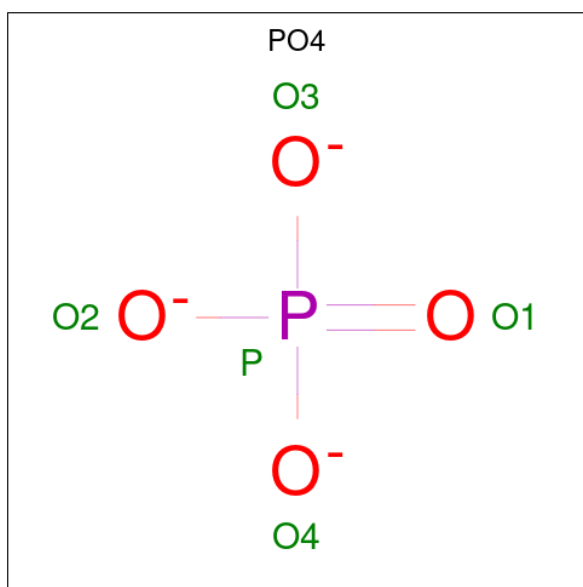
Chain	Residue	Modelled	Actual	Comment	Reference
B	-20	MET	-	expression tag	UNP Q6GG09
B	-19	GLY	-	expression tag	UNP Q6GG09
B	-18	SER	-	expression tag	UNP Q6GG09
B	-17	SER	-	expression tag	UNP Q6GG09
B	-16	HIS	-	expression tag	UNP Q6GG09
B	-15	HIS	-	expression tag	UNP Q6GG09
B	-14	HIS	-	expression tag	UNP Q6GG09
B	-13	HIS	-	expression tag	UNP Q6GG09
B	-12	HIS	-	expression tag	UNP Q6GG09
B	-11	HIS	-	expression tag	UNP Q6GG09
B	-10	SER	-	expression tag	UNP Q6GG09
B	-9	SER	-	expression tag	UNP Q6GG09
B	-8	GLY	-	expression tag	UNP Q6GG09
B	-7	LEU	-	expression tag	UNP Q6GG09
B	-6	VAL	-	expression tag	UNP Q6GG09
B	-5	PRO	-	expression tag	UNP Q6GG09
B	-4	ARG	-	expression tag	UNP Q6GG09
B	-3	GLY	-	expression tag	UNP Q6GG09
B	-2	SER	-	expression tag	UNP Q6GG09
B	-1	HIS	-	expression tag	UNP Q6GG09
B	0	MET	-	expression tag	UNP Q6GG09
C	-20	MET	-	expression tag	UNP Q6GG09
C	-19	GLY	-	expression tag	UNP Q6GG09
C	-18	SER	-	expression tag	UNP Q6GG09
C	-17	SER	-	expression tag	UNP Q6GG09
C	-16	HIS	-	expression tag	UNP Q6GG09
C	-15	HIS	-	expression tag	UNP Q6GG09
C	-14	HIS	-	expression tag	UNP Q6GG09
C	-13	HIS	-	expression tag	UNP Q6GG09
C	-12	HIS	-	expression tag	UNP Q6GG09
C	-11	HIS	-	expression tag	UNP Q6GG09
C	-10	SER	-	expression tag	UNP Q6GG09
C	-9	SER	-	expression tag	UNP Q6GG09
C	-8	GLY	-	expression tag	UNP Q6GG09
C	-7	LEU	-	expression tag	UNP Q6GG09
C	-6	VAL	-	expression tag	UNP Q6GG09
C	-5	PRO	-	expression tag	UNP Q6GG09
C	-4	ARG	-	expression tag	UNP Q6GG09
C	-3	GLY	-	expression tag	UNP Q6GG09
C	-2	SER	-	expression tag	UNP Q6GG09
C	-1	HIS	-	expression tag	UNP Q6GG09
C	0	MET	-	expression tag	UNP Q6GG09

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Chain	Residue	Modelled	Actual	Comment	Reference
D	-20	MET	-	expression tag	UNP Q6GG09
D	-19	GLY	-	expression tag	UNP Q6GG09
D	-18	SER	-	expression tag	UNP Q6GG09
D	-17	SER	-	expression tag	UNP Q6GG09
D	-16	HIS	-	expression tag	UNP Q6GG09
D	-15	HIS	-	expression tag	UNP Q6GG09
D	-14	HIS	-	expression tag	UNP Q6GG09
D	-13	HIS	-	expression tag	UNP Q6GG09
D	-12	HIS	-	expression tag	UNP Q6GG09
D	-11	HIS	-	expression tag	UNP Q6GG09
D	-10	SER	-	expression tag	UNP Q6GG09
D	-9	SER	-	expression tag	UNP Q6GG09
D	-8	GLY	-	expression tag	UNP Q6GG09
D	-7	LEU	-	expression tag	UNP Q6GG09
D	-6	VAL	-	expression tag	UNP Q6GG09
D	-5	PRO	-	expression tag	UNP Q6GG09
D	-4	ARG	-	expression tag	UNP Q6GG09
D	-3	GLY	-	expression tag	UNP Q6GG09
D	-2	SER	-	expression tag	UNP Q6GG09
D	-1	HIS	-	expression tag	UNP Q6GG09
D	0	MET	-	expression tag	UNP Q6GG09

- Molecule 2 is PHOSPHATE ION (CCD ID: PO4) (formula: O₄P).



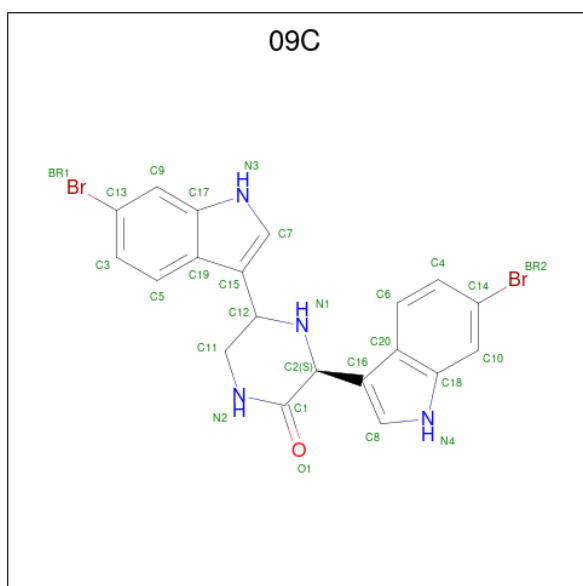
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	A	1	Total	O	P	0	0
			5	4	1		

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Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
2	B	1	Total	O	P	0	0
			5	4	1		
2	C	1	Total	O	P	0	0
			5	4	1		
2	D	1	Total	O	P	0	0
			5	4	1		

- Molecule 3 is (3S,5R)-3,5-bis(6-bromo-1H-indol-3-yl)piperazin-2-one (CCD ID: 09C) (formula: C₂₀H₁₆Br₂N₄O).

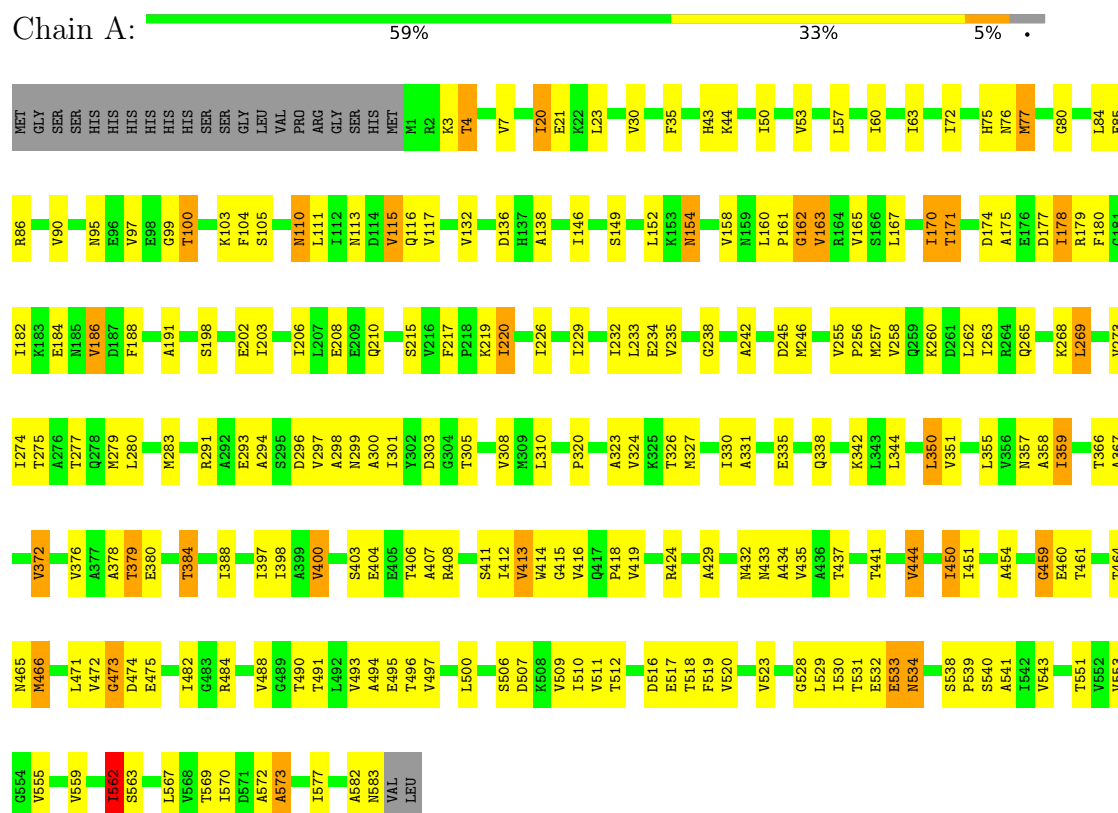


Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	B	1	Total	Br	C	N	O	0	0
			27	2	20	4	1		
3	D	1	Total	Br	C	N	O	0	0
			27	2	20	4	1		

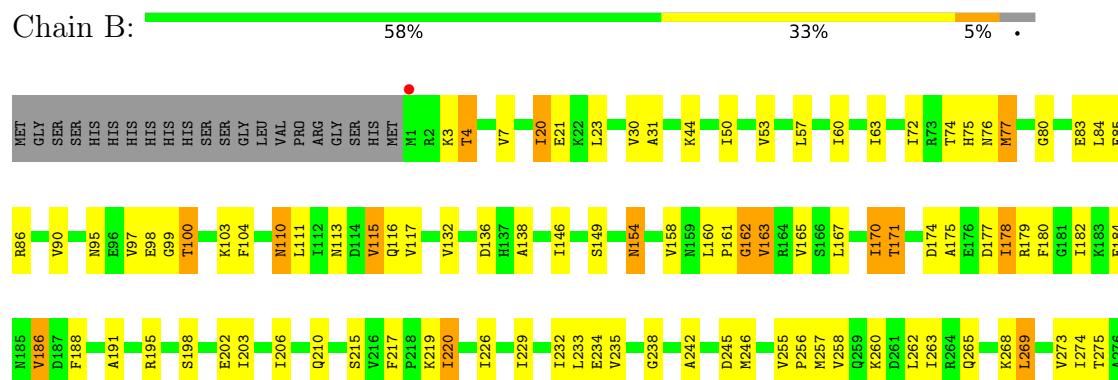
3 Residue-property plots

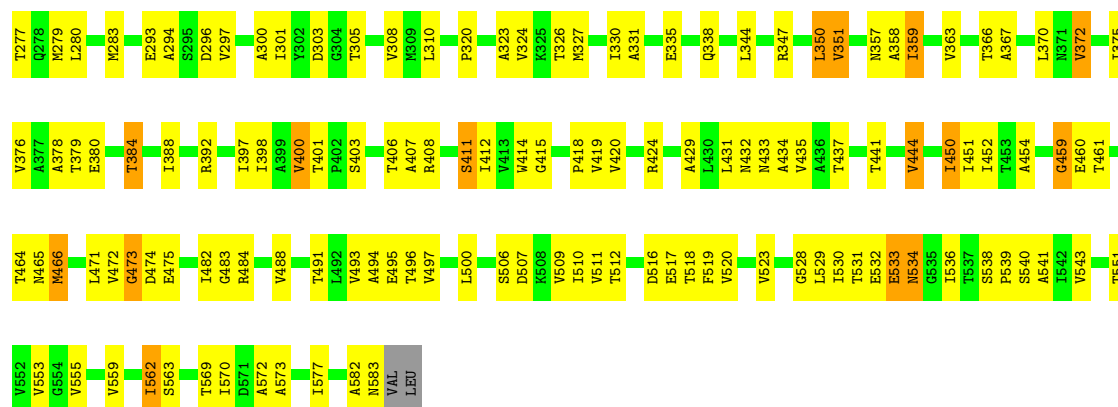
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density.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

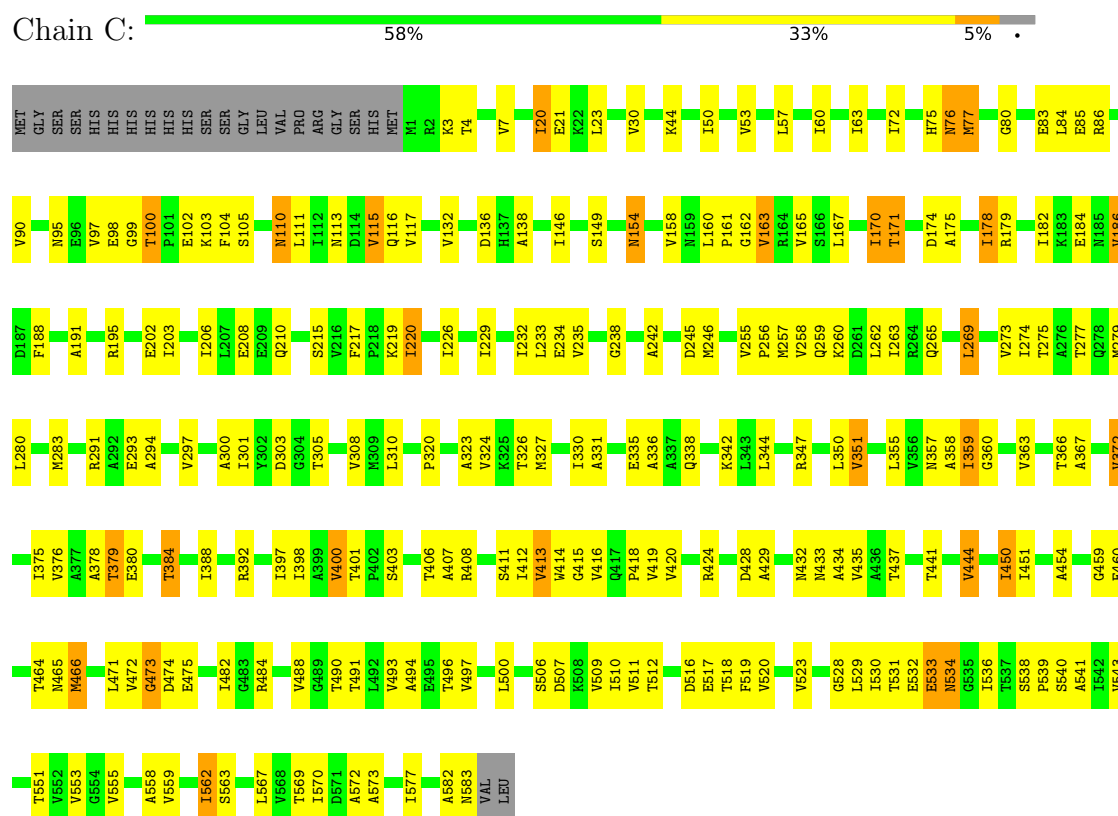


• Molecule 1: Pyruvate kinase

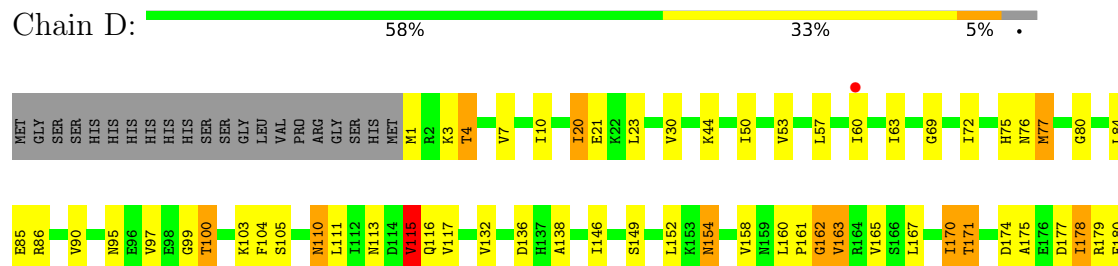




• Molecule 1: Pyruvate kinase



• Molecule 1: Pyruvate kinase





4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	83.96Å 111.91Å 112.03Å 86.05° 72.14° 80.88°	Depositor
Resolution (Å)	60.00 – 3.30 60.00 – 3.30	Depositor EDS
% Data completeness (in resolution range)	93.4 (60.00-3.30) 93.4 (60.00-3.30)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.85 (at 3.33Å)	Xtriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.198 , 0.226 0.202 , 0.230	Depositor DCC
R_{free} test set	2729 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å ²)	121.2	Xtriage
Anisotropy	0.131	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.32 , 102.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.47$, $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.96	EDS
Total number of atoms	17702	wwPDB-VP
Average B, all atoms (Å ²)	146.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.26% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: PO4, 09C

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	0.75	3/4452 (0.1%)	0.92	4/6022 (0.1%)
1	B	0.80	2/4452 (0.0%)	0.94	3/6022 (0.0%)
1	C	0.81	1/4452 (0.0%)	0.95	4/6022 (0.1%)
1	D	0.76	1/4452 (0.0%)	0.93	3/6022 (0.0%)
All	All	0.78	7/17808 (0.0%)	0.93	14/24088 (0.1%)

All (7) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	255	VAL	CA-CB	6.04	1.57	1.54
1	A	4	THR	CA-CB	5.42	1.60	1.53
1	C	255	VAL	CA-CB	5.38	1.57	1.54
1	B	4	THR	CA-CB	5.29	1.60	1.53
1	B	255	VAL	CA-CB	5.23	1.57	1.54
1	A	562	ILE	CA-CB	5.14	1.60	1.54
1	D	4	THR	CA-CB	5.08	1.60	1.53

All (14) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	533	GLU	N-CA-C	-6.72	99.52	109.81
1	C	342	LYS	N-CA-C	-5.86	104.80	111.07
1	B	533	GLU	N-CA-C	-5.79	100.70	109.85
1	C	338	GLN	N-CA-C	5.71	118.52	108.75
1	A	533	GLU	N-CA-C	-5.65	100.92	109.85
1	D	533	GLU	N-CA-C	-5.57	101.06	109.85
1	C	573	ALA	N-CA-C	-5.54	103.18	110.43
1	D	250	ILE	N-CA-C	5.50	113.70	109.19
1	B	338	GLN	N-CA-C	5.20	117.90	109.06
1	A	573	ALA	N-CA-C	-5.20	103.62	110.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	338	GLN	N-CA-C	5.17	117.59	108.75
1	B	573	ALA	N-CA-C	-5.15	103.69	110.43
1	A	342	LYS	N-CA-C	-5.12	105.59	111.07
1	D	448	ASP	N-CA-C	5.05	117.96	110.48

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4407	0	4533	179	0
1	B	4407	0	4533	178	0
1	C	4407	0	4533	187	0
1	D	4407	0	4533	183	0
2	A	5	0	0	4	0
2	B	5	0	0	1	0
2	C	5	0	0	1	0
2	D	5	0	0	2	0
3	B	27	0	15	3	0
3	D	27	0	15	2	0
All	All	17702	0	18162	721	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 20.

All (721) 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)
3:D:586:09C:HAI	3:D:586:09C:C7	1.77	1.14
3:D:586:09C:HAH	3:D:586:09C:C8	1.77	1.14
3:B:586:09C:HAI	3:B:586:09C:C7	1.86	1.05
1:A:531:THR:HG21	1:A:540:SER:HB3	1.38	1.04
1:D:531:THR:HG21	1:D:540:SER:HB3	1.39	1.03
3:B:586:09C:HAH	3:B:586:09C:C8	1.88	1.03

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:84:LEU:HD23	1:B:90:VAL:HG21	1.40	1.03
1:B:531:THR:HG21	1:B:540:SER:HB3	1.42	1.00
1:D:279:MET:HE3	1:D:308:VAL:HG13	1.44	0.98
1:C:84:LEU:HD23	1:C:90:VAL:HG21	1.47	0.97
1:A:84:LEU:HD23	1:A:90:VAL:HG21	1.47	0.96
1:C:531:THR:HG21	1:C:540:SER:HB3	1.44	0.96
1:A:279:MET:HE3	1:A:308:VAL:HG13	1.47	0.95
1:D:84:LEU:HD23	1:D:90:VAL:HG21	1.45	0.95
1:C:279:MET:HE3	1:C:308:VAL:HG13	1.53	0.91
1:C:366:THR:HG22	1:C:451:ILE:HD11	1.54	0.90
1:B:279:MET:HE3	1:B:308:VAL:HG13	1.53	0.89
1:B:226:ILE:HD11	1:B:246:MET:HE3	1.59	0.85
1:B:482:ILE:HD12	1:B:553:VAL:HG13	1.59	0.85
1:A:379:THR:HG22	2:A:586:PO4:O4	1.75	0.84
1:C:482:ILE:HD12	1:C:553:VAL:HG13	1.59	0.84
1:D:226:ILE:HD11	1:D:246:MET:HE3	1.60	0.84
1:D:384:THR:OG1	1:D:464:THR:HB	1.77	0.83
1:B:283:MET:SD	1:B:326:THR:HG21	2.19	0.83
1:D:482:ILE:HD12	1:D:553:VAL:HG13	1.60	0.82
1:A:482:ILE:HD12	1:A:553:VAL:HG13	1.61	0.82
1:C:21:GLU:HG3	1:C:57:LEU:HD11	1.61	0.80
1:C:283:MET:SD	1:C:326:THR:HG21	2.21	0.80
1:C:384:THR:OG1	1:C:464:THR:HB	1.82	0.79
1:C:432:ASN:O	1:C:435:VAL:HG12	1.81	0.79
1:D:283:MET:SD	1:D:326:THR:HG21	2.22	0.79
1:A:384:THR:OG1	1:A:464:THR:HB	1.81	0.79
1:B:510:ILE:HD11	1:B:523:VAL:HG22	1.63	0.79
3:B:586:09C:HAI	3:B:586:09C:HAH	0.92	0.79
1:C:226:ILE:HD11	1:C:246:MET:HE3	1.63	0.79
1:A:283:MET:SD	1:A:326:THR:HG21	2.23	0.79
1:D:366:THR:HG22	1:D:451:ILE:HD11	1.65	0.78
1:B:379:THR:HG22	2:B:587:PO4:O4	1.83	0.78
1:D:432:ASN:O	1:D:435:VAL:HG12	1.84	0.78
1:A:21:GLU:HG3	1:A:57:LEU:HD11	1.67	0.77
1:C:529:LEU:HD11	1:C:531:THR:HG22	1.67	0.77
1:C:510:ILE:HD11	1:C:523:VAL:HG22	1.67	0.77
1:A:226:ILE:HD11	1:A:246:MET:HE3	1.65	0.77
1:A:366:THR:HG22	1:A:451:ILE:HD11	1.67	0.76
1:B:384:THR:OG1	1:B:464:THR:HB	1.86	0.76
1:D:582:ALA:O	1:D:583:ASN:ND2	2.18	0.76
1:A:432:ASN:O	1:A:435:VAL:HG12	1.85	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:21:GLU:HG3	1:D:57:LEU:HD11	1.67	0.76
1:A:510:ILE:HD11	1:A:523:VAL:HG22	1.67	0.76
1:D:529:LEU:HD11	1:D:531:THR:HG22	1.68	0.76
1:B:529:LEU:HD11	1:B:531:THR:HG22	1.68	0.76
1:B:21:GLU:HG3	1:B:57:LEU:HD11	1.66	0.75
1:C:582:ALA:O	1:C:583:ASN:ND2	2.19	0.75
1:D:510:ILE:HD11	1:D:523:VAL:HG22	1.67	0.75
1:A:569:THR:HG21	1:A:582:ALA:HB3	1.69	0.75
1:B:529:LEU:HB3	1:B:551:THR:HG22	1.68	0.74
1:A:582:ALA:O	1:A:583:ASN:ND2	2.20	0.74
1:B:432:ASN:O	1:B:435:VAL:HG12	1.88	0.73
1:B:582:ALA:O	1:B:583:ASN:ND2	2.22	0.73
1:C:378:ALA:HB3	1:C:454:ALA:HB2	1.71	0.73
1:C:529:LEU:HB3	1:C:551:THR:HG22	1.70	0.72
1:B:488:VAL:HG12	1:B:569:THR:OG1	1.89	0.72
1:D:569:THR:HG21	1:D:582:ALA:HB3	1.69	0.72
1:B:569:THR:HG21	1:B:582:ALA:HB3	1.71	0.72
1:A:529:LEU:HD11	1:A:531:THR:HG22	1.70	0.71
1:A:4:THR:HG21	1:A:301:ILE:HD13	1.73	0.71
1:B:366:THR:HG22	1:B:451:ILE:HD11	1.73	0.71
1:D:517:GLU:O	1:D:520:VAL:HG22	1.91	0.71
1:C:488:VAL:HG12	1:C:569:THR:OG1	1.90	0.70
1:D:100:THR:HG23	1:D:103:LYS:O	1.90	0.70
1:D:4:THR:HG21	1:D:301:ILE:HD13	1.74	0.70
1:C:4:THR:HG21	1:C:301:ILE:HD13	1.73	0.70
1:B:482:ILE:CD1	1:B:553:VAL:HG13	2.22	0.69
1:B:533:GLU:O	1:B:534:ASN:OD1	2.10	0.69
1:D:482:ILE:CD1	1:D:553:VAL:HG13	2.21	0.69
1:D:529:LEU:HB3	1:D:551:THR:HG22	1.73	0.69
1:C:533:GLU:O	1:C:534:ASN:OD1	2.11	0.69
1:A:539:PRO:O	1:A:543:VAL:HG13	1.93	0.69
1:B:378:ALA:HB3	1:B:454:ALA:HB2	1.75	0.69
1:A:533:GLU:O	1:A:534:ASN:OD1	2.09	0.69
1:C:72:ILE:HG22	1:C:158:VAL:HB	1.75	0.69
1:A:482:ILE:CD1	1:A:553:VAL:HG13	2.22	0.68
1:C:482:ILE:CD1	1:C:553:VAL:HG13	2.23	0.68
1:D:539:PRO:O	1:D:543:VAL:HG13	1.92	0.68
1:B:4:THR:HG21	1:B:301:ILE:HD13	1.75	0.68
1:D:379:THR:HG22	2:D:587:PO4:O2	1.92	0.68
1:D:494:ALA:HB2	1:D:500:LEU:HD23	1.75	0.68
1:C:494:ALA:HB2	1:C:500:LEU:HD23	1.76	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:497:VAL:HG11	1:C:518:THR:OG1	1.93	0.68
1:A:529:LEU:HB3	1:A:551:THR:HG22	1.73	0.68
1:B:494:ALA:HB2	1:B:500:LEU:HD23	1.76	0.68
1:C:539:PRO:O	1:C:543:VAL:HG13	1.93	0.68
1:B:165:VAL:CG1	1:B:167:LEU:HD23	2.24	0.68
1:B:72:ILE:HG22	1:B:158:VAL:HB	1.76	0.67
1:D:533:GLU:O	1:D:534:ASN:OD1	2.13	0.67
1:B:497:VAL:HG11	1:B:518:THR:OG1	1.95	0.67
1:C:569:THR:HG21	1:C:582:ALA:HB3	1.77	0.67
1:D:23:LEU:HG	1:D:324:VAL:HG21	1.75	0.67
1:A:494:ALA:HB2	1:A:500:LEU:HD23	1.77	0.67
1:D:378:ALA:HB3	1:D:454:ALA:HB2	1.76	0.67
1:D:497:VAL:HG11	1:D:518:THR:OG1	1.94	0.67
1:A:165:VAL:CG1	1:A:167:LEU:HD23	2.25	0.67
1:A:517:GLU:O	1:A:520:VAL:HG22	1.95	0.67
1:C:494:ALA:HB3	1:C:512:THR:HG22	1.76	0.67
1:A:100:THR:HG23	1:A:103:LYS:O	1.95	0.67
1:A:23:LEU:HG	1:A:324:VAL:HG21	1.77	0.66
1:B:60:ILE:HD12	1:B:418:PRO:HG2	1.77	0.66
1:A:291:ARG:HH12	1:D:296:ASP:CG	2.04	0.66
1:D:72:ILE:HG22	1:D:158:VAL:HB	1.76	0.66
1:C:165:VAL:CG1	1:C:167:LEU:HD23	2.26	0.65
1:B:539:PRO:O	1:B:543:VAL:HG13	1.95	0.65
1:A:497:VAL:HG11	1:A:518:THR:OG1	1.96	0.65
1:C:23:LEU:HG	1:C:324:VAL:HG21	1.78	0.65
1:D:494:ALA:HB3	1:D:512:THR:HG22	1.78	0.65
1:A:533:GLU:O	1:A:534:ASN:CG	2.39	0.65
1:A:263:ILE:HG23	1:A:273:VAL:HG11	1.79	0.65
1:C:100:THR:HG23	1:C:103:LYS:O	1.97	0.65
1:D:488:VAL:HG12	1:D:569:THR:OG1	1.97	0.64
1:C:175:ALA:O	1:C:179:ARG:HG3	1.97	0.64
1:B:23:LEU:HG	1:B:324:VAL:HG21	1.79	0.64
1:B:494:ALA:HB3	1:B:512:THR:HG22	1.80	0.64
1:D:376:VAL:HG11	1:D:434:ALA:HB1	1.79	0.64
1:B:175:ALA:O	1:B:179:ARG:HG3	1.98	0.64
1:B:246:MET:HE1	1:B:258:VAL:HG12	1.80	0.64
1:B:533:GLU:O	1:B:534:ASN:CG	2.41	0.64
1:D:174:ASP:O	1:D:178:ILE:HG23	1.98	0.64
1:A:72:ILE:HG22	1:A:158:VAL:HB	1.79	0.64
1:A:376:VAL:HG11	1:A:434:ALA:HB1	1.80	0.64
1:A:60:ILE:HD12	1:A:418:PRO:HG2	1.78	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:403:SER:OG	1:A:406:THR:HG23	1.98	0.64
1:A:494:ALA:HB3	1:A:512:THR:HG22	1.80	0.64
1:D:165:VAL:CG1	1:D:167:LEU:HD23	2.27	0.63
1:C:7:VAL:HG22	1:C:30:VAL:HB	1.80	0.63
1:D:533:GLU:O	1:D:534:ASN:CG	2.41	0.63
1:B:310:LEU:HD21	1:B:327:MET:CE	2.28	0.63
1:C:471:LEU:HD23	1:C:472:VAL:N	2.12	0.63
1:C:174:ASP:O	1:C:178:ILE:HG23	1.97	0.63
1:A:175:ALA:O	1:A:179:ARG:HG3	1.99	0.62
1:B:482:ILE:HD13	1:B:541:ALA:CB	2.29	0.62
1:A:471:LEU:HD23	1:A:472:VAL:N	2.13	0.62
1:A:50:ILE:HG21	1:A:63:ILE:HD11	1.82	0.62
1:A:220:ILE:CG2	1:A:226:ILE:HD13	2.30	0.62
1:D:530:ILE:HG23	1:D:555:VAL:HG21	1.81	0.62
1:A:160:LEU:HB3	1:A:163:VAL:HG11	1.81	0.62
1:C:246:MET:HE1	1:C:258:VAL:HG12	1.82	0.62
1:A:274:ILE:HD11	1:A:412:ILE:HD11	1.82	0.62
1:C:60:ILE:HD12	1:C:418:PRO:HG2	1.81	0.62
1:C:80:GLY:HA2	1:C:154:ASN:HD21	1.65	0.62
1:D:175:ALA:O	1:D:179:ARG:HG3	2.00	0.62
1:B:471:LEU:HD23	1:B:472:VAL:N	2.15	0.62
1:C:310:LEU:HD21	1:C:327:MET:CE	2.29	0.62
1:A:310:LEU:HD21	1:A:327:MET:CE	2.30	0.61
1:A:488:VAL:HG12	1:A:569:THR:OG1	1.99	0.61
1:D:7:VAL:HG22	1:D:30:VAL:HB	1.81	0.61
1:D:50:ILE:HG21	1:D:63:ILE:HD11	1.80	0.61
1:C:50:ILE:HG21	1:C:63:ILE:HD11	1.82	0.61
1:D:72:ILE:CG2	1:D:158:VAL:HB	2.30	0.61
1:B:246:MET:CE	1:B:258:VAL:HG11	2.30	0.61
1:D:344:LEU:HD12	1:D:344:LEU:O	2.00	0.61
1:D:471:LEU:HD23	1:D:472:VAL:N	2.14	0.61
1:B:160:LEU:HB3	1:B:163:VAL:HG11	1.82	0.61
1:C:533:GLU:O	1:C:534:ASN:CG	2.43	0.61
1:A:80:GLY:HA2	1:A:154:ASN:HD21	1.65	0.61
1:B:72:ILE:CG2	1:B:158:VAL:HB	2.31	0.61
1:C:493:VAL:CG1	1:C:559:VAL:HG13	2.30	0.61
1:D:274:ILE:HD11	1:D:412:ILE:HD11	1.83	0.61
1:B:100:THR:HG23	1:B:103:LYS:O	2.00	0.60
1:D:160:LEU:HB3	1:D:163:VAL:HG11	1.83	0.60
1:A:482:ILE:HD13	1:A:541:ALA:CB	2.31	0.60
1:B:246:MET:HE1	1:B:258:VAL:CG1	2.32	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:174:ASP:O	1:B:178:ILE:HG23	2.01	0.60
1:B:398:ILE:HD13	1:B:441:THR:HG21	1.83	0.60
1:D:60:ILE:HD12	1:D:418:PRO:HG2	1.82	0.60
1:C:359:ILE:HD12	1:C:465:ASN:C	2.27	0.60
1:A:493:VAL:CG1	1:A:559:VAL:HG13	2.31	0.60
1:B:217:PHE:CE1	1:B:238:GLY:HA3	2.37	0.60
1:C:72:ILE:CG2	1:C:158:VAL:HB	2.31	0.60
1:C:366:THR:HG22	1:C:451:ILE:CD1	2.29	0.60
1:B:3:LYS:HB2	1:B:335:GLU:OE2	2.01	0.60
1:A:530:ILE:HG23	1:A:555:VAL:HG21	1.84	0.60
1:D:263:ILE:HG23	1:D:273:VAL:HG11	1.83	0.60
1:B:517:GLU:O	1:B:520:VAL:HG22	2.02	0.59
1:D:220:ILE:CG2	1:D:226:ILE:HD13	2.31	0.59
1:C:274:ILE:HD11	1:C:412:ILE:HD11	1.84	0.59
1:C:482:ILE:HD13	1:C:541:ALA:CB	2.33	0.59
1:A:174:ASP:O	1:A:178:ILE:HG23	2.01	0.59
1:C:246:MET:CE	1:C:258:VAL:HG11	2.33	0.59
1:B:80:GLY:HA2	1:B:154:ASN:HD21	1.67	0.59
1:B:84:LEU:CD2	1:B:90:VAL:HG21	2.27	0.59
1:C:160:LEU:HB3	1:C:163:VAL:HG11	1.85	0.59
1:C:482:ILE:CD1	1:C:553:VAL:CG1	2.81	0.59
1:D:493:VAL:CG1	1:D:559:VAL:HG13	2.32	0.59
1:A:72:ILE:CG2	1:A:158:VAL:HB	2.33	0.59
1:C:3:LYS:HB2	1:C:335:GLU:OE2	2.03	0.59
1:B:493:VAL:CG1	1:B:559:VAL:HG13	2.33	0.58
1:B:220:ILE:CG2	1:B:226:ILE:HD13	2.34	0.58
1:A:7:VAL:HG22	1:A:30:VAL:HB	1.84	0.58
1:C:344:LEU:HD12	1:C:344:LEU:O	2.02	0.58
1:C:3:LYS:HA	1:C:415:GLY:HA2	1.86	0.58
1:C:220:ILE:HD11	1:C:232:ILE:HD13	1.85	0.58
1:A:246:MET:HE1	1:A:258:VAL:HG12	1.86	0.58
1:C:217:PHE:CE1	1:C:238:GLY:HA3	2.38	0.58
1:C:376:VAL:HG11	1:C:434:ALA:HB1	1.84	0.58
1:B:246:MET:CE	1:B:258:VAL:CG1	2.82	0.58
1:B:484:ARG:C	1:B:572:ALA:HB3	2.29	0.58
1:C:509:VAL:HG12	1:C:528:GLY:HA3	1.86	0.58
1:D:310:LEU:HD21	1:D:327:MET:CE	2.33	0.58
1:D:359:ILE:HD12	1:D:465:ASN:C	2.29	0.58
1:A:3:LYS:HB2	1:A:335:GLU:OE2	2.03	0.58
1:D:80:GLY:HA2	1:D:154:ASN:HD21	1.68	0.57
1:D:246:MET:HE1	1:D:258:VAL:CG1	2.34	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:380:GLU:O	1:D:406:THR:HG21	2.04	0.57
1:C:77:MET:HE1	1:C:104:PHE:CD2	2.39	0.57
1:C:582:ALA:C	1:C:583:ASN:HD22	2.12	0.57
1:A:398:ILE:HD13	1:A:441:THR:HG21	1.86	0.57
1:D:246:MET:CE	1:D:258:VAL:HG11	2.34	0.57
1:D:482:ILE:CD1	1:D:553:VAL:CG1	2.83	0.57
1:D:3:LYS:HA	1:D:415:GLY:HA2	1.86	0.57
1:A:217:PHE:CE1	1:A:238:GLY:HA3	2.39	0.57
1:A:246:MET:CE	1:A:258:VAL:HG11	2.34	0.57
1:D:582:ALA:C	1:D:583:ASN:HD22	2.13	0.57
1:A:388:ILE:HG22	1:A:397:ILE:HD13	1.87	0.57
1:C:220:ILE:CG2	1:C:226:ILE:HD13	2.34	0.57
1:A:378:ALA:HB3	1:A:454:ALA:HB2	1.87	0.57
1:A:516:ASP:O	1:A:520:VAL:HG13	2.04	0.57
1:C:263:ILE:HG23	1:C:273:VAL:HG11	1.86	0.57
1:D:162:GLY:HA2	1:D:163:VAL:O	2.05	0.57
1:D:482:ILE:HD13	1:D:541:ALA:CB	2.35	0.57
1:A:509:VAL:HG12	1:A:528:GLY:HA3	1.87	0.56
1:C:246:MET:HE1	1:C:258:VAL:CG1	2.34	0.56
1:A:482:ILE:CD1	1:A:553:VAL:CG1	2.84	0.56
1:A:359:ILE:HD12	1:A:466:MET:N	2.20	0.56
1:D:60:ILE:HG23	1:D:408:ARG:HG2	1.88	0.56
1:B:380:GLU:O	1:B:406:THR:HG21	2.04	0.56
1:C:171:THR:HB	1:C:174:ASP:H	1.70	0.56
1:C:517:GLU:O	1:C:520:VAL:HG22	2.06	0.56
1:B:50:ILE:HG21	1:B:63:ILE:HD11	1.88	0.56
1:B:367:ALA:HA	1:B:372:VAL:HG13	1.88	0.56
1:C:246:MET:CE	1:C:258:VAL:CG1	2.83	0.56
1:C:530:ILE:HG23	1:C:555:VAL:HG21	1.88	0.56
1:A:511:VAL:HG21	1:A:562:ILE:HD11	1.88	0.56
1:A:359:ILE:HD12	1:A:465:ASN:C	2.31	0.55
1:B:482:ILE:CD1	1:B:553:VAL:CG1	2.83	0.55
1:D:3:LYS:HB2	1:D:335:GLU:OE2	2.06	0.55
1:D:403:SER:OG	1:D:406:THR:HG23	2.06	0.55
1:D:246:MET:HE1	1:D:258:VAL:HG12	1.89	0.55
1:D:516:ASP:O	1:D:520:VAL:HG13	2.07	0.55
1:A:117:VAL:HA	1:A:132:VAL:HG12	1.88	0.55
1:A:246:MET:HE1	1:A:258:VAL:CG1	2.35	0.55
1:B:191:ALA:HB2	1:B:203:ILE:CD1	2.36	0.55
1:C:162:GLY:HA2	1:C:163:VAL:O	2.07	0.55
1:A:380:GLU:O	1:A:406:THR:HG21	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:530:ILE:HG23	1:B:555:VAL:HG21	1.88	0.55
1:C:60:ILE:HG23	1:C:408:ARG:HG2	1.88	0.55
1:C:398:ILE:HD13	1:C:441:THR:HG21	1.88	0.55
1:D:400:VAL:CG2	1:D:437:THR:HG21	2.37	0.55
1:A:20:ILE:HG22	1:A:53:VAL:HG11	1.89	0.55
1:B:359:ILE:HD12	1:B:465:ASN:C	2.31	0.55
1:B:509:VAL:HG12	1:B:528:GLY:HA3	1.89	0.55
1:C:380:GLU:O	1:C:406:THR:HG21	2.06	0.55
1:D:191:ALA:HB2	1:D:203:ILE:CD1	2.37	0.55
1:D:509:VAL:HG12	1:D:528:GLY:HA3	1.88	0.55
1:C:229:ILE:HG12	1:C:262:LEU:HD23	1.89	0.54
1:A:60:ILE:HD13	1:A:407:ALA:HB1	1.88	0.54
1:A:582:ALA:C	1:A:583:ASN:HD22	2.15	0.54
1:C:117:VAL:HA	1:C:132:VAL:HG12	1.88	0.54
1:A:63:ILE:CG2	1:A:186:VAL:HG23	2.37	0.54
1:A:162:GLY:HA2	1:A:163:VAL:O	2.07	0.54
1:A:219:LYS:O	1:A:220:ILE:C	2.51	0.54
1:C:400:VAL:O	1:C:400:VAL:HG12	2.06	0.54
1:D:219:LYS:O	1:D:220:ILE:C	2.50	0.54
1:A:44:LYS:HE2	1:A:184:GLU:OE2	2.08	0.54
1:A:301:ILE:HA	1:A:305:THR:HG22	1.89	0.54
1:B:7:VAL:HG22	1:B:30:VAL:HB	1.89	0.54
1:C:4:THR:HG21	1:C:301:ILE:CD1	2.37	0.54
1:A:220:ILE:HG21	1:A:226:ILE:HD13	1.89	0.54
1:C:99:GLY:C	1:C:100:THR:HG22	2.33	0.54
1:D:530:ILE:CG2	1:D:555:VAL:HG21	2.38	0.54
1:B:162:GLY:HA2	1:B:163:VAL:O	2.08	0.54
1:A:171:THR:HB	1:A:174:ASP:H	1.73	0.54
1:B:274:ILE:HD11	1:B:412:ILE:HD11	1.90	0.54
1:D:60:ILE:HD13	1:D:407:ALA:HB1	1.89	0.54
1:C:388:ILE:HG22	1:C:397:ILE:HD13	1.89	0.53
1:D:367:ALA:HA	1:D:372:VAL:HG13	1.90	0.53
1:B:77:MET:HE1	1:B:104:PHE:CD2	2.43	0.53
1:B:582:ALA:C	1:B:583:ASN:HD22	2.16	0.53
1:D:44:LYS:HE2	1:D:184:GLU:OE2	2.09	0.53
1:B:403:SER:OG	1:B:406:THR:HG23	2.07	0.53
1:B:44:LYS:HE2	1:B:184:GLU:OE2	2.09	0.53
1:D:117:VAL:HA	1:D:132:VAL:HG12	1.90	0.53
1:B:3:LYS:HA	1:B:415:GLY:HA2	1.89	0.53
1:C:111:LEU:HD23	1:C:111:LEU:C	2.34	0.53
1:D:511:VAL:HG21	1:D:562:ILE:HD11	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:60:ILE:HG23	1:A:408:ARG:HG2	1.91	0.53
1:A:235:VAL:HG12	1:A:235:VAL:O	2.09	0.53
1:C:359:ILE:HD12	1:C:466:MET:N	2.24	0.53
1:A:77:MET:HE1	1:A:104:PHE:CD2	2.43	0.53
1:B:4:THR:HG21	1:B:301:ILE:CD1	2.37	0.53
1:B:359:ILE:HD12	1:B:466:MET:N	2.23	0.53
1:C:484:ARG:C	1:C:572:ALA:HB3	2.34	0.53
1:A:512:THR:HG21	1:A:519:PHE:CE2	2.44	0.53
1:C:111:LEU:HD23	1:C:115:VAL:HG13	1.91	0.53
1:D:359:ILE:HD12	1:D:466:MET:N	2.24	0.53
1:C:301:ILE:HA	1:C:305:THR:HG22	1.90	0.53
1:D:111:LEU:HD23	1:D:115:VAL:HG13	1.89	0.53
1:A:4:THR:HG21	1:A:301:ILE:CD1	2.37	0.53
1:A:242:ALA:HB1	1:A:277:THR:HG21	1.90	0.53
1:A:246:MET:CE	1:A:258:VAL:CG1	2.87	0.53
1:B:344:LEU:HD12	1:B:344:LEU:O	2.09	0.53
1:C:367:ALA:HA	1:C:372:VAL:HG13	1.91	0.53
1:D:398:ILE:HD13	1:D:441:THR:HG21	1.90	0.53
1:B:376:VAL:HG11	1:B:434:ALA:HB1	1.91	0.52
1:A:182:ILE:HG21	1:A:210:GLN:HG2	1.90	0.52
1:A:257:MET:HE2	1:D:334:ALA:HB2	1.91	0.52
1:B:60:ILE:HG23	1:B:408:ARG:HG2	1.90	0.52
1:C:115:VAL:HG23	1:C:116:GLN:N	2.25	0.52
1:C:191:ALA:HB2	1:C:203:ILE:CD1	2.40	0.52
1:D:301:ILE:HA	1:D:305:THR:HG22	1.90	0.52
1:A:461:THR:HG21	2:A:586:PO4:O3	2.09	0.52
1:D:484:ARG:C	1:D:572:ALA:HB3	2.34	0.52
1:D:532:GLU:O	1:D:555:VAL:N	2.43	0.52
1:C:4:THR:CG2	1:C:331:ALA:HB1	2.40	0.52
1:C:379:THR:CG2	1:C:384:THR:HB	2.40	0.52
1:B:63:ILE:CG2	1:B:186:VAL:HG23	2.39	0.52
1:D:242:ALA:HB1	1:D:277:THR:HG21	1.91	0.52
1:D:512:THR:HG21	1:D:519:PHE:CE2	2.45	0.52
1:A:220:ILE:HD11	1:A:232:ILE:HD13	1.91	0.52
1:C:44:LYS:HE2	1:C:184:GLU:OE2	2.09	0.52
1:D:220:ILE:HD11	1:D:232:ILE:HD13	1.90	0.52
1:C:509:VAL:HG12	1:C:528:GLY:CA	2.39	0.52
1:D:171:THR:HB	1:D:174:ASP:H	1.75	0.52
1:D:494:ALA:CB	1:D:500:LEU:HD23	2.40	0.52
1:B:220:ILE:HG21	1:B:226:ILE:HD13	1.91	0.51
1:D:77:MET:HE1	1:D:104:PHE:CD2	2.45	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:219:LYS:O	1:B:220:ILE:C	2.53	0.51
1:A:344:LEU:O	1:A:344:LEU:HD12	2.10	0.51
1:A:532:GLU:O	1:A:555:VAL:N	2.44	0.51
1:B:4:THR:CG2	1:B:331:ALA:HB1	2.40	0.51
1:B:115:VAL:HG23	1:B:116:GLN:N	2.26	0.51
1:C:208:GLU:OE2	1:D:536:ILE:HG23	2.11	0.51
1:C:512:THR:HG21	1:C:519:PHE:CE2	2.46	0.51
1:A:60:ILE:CD1	1:A:407:ALA:HB1	2.41	0.51
1:A:63:ILE:HG22	1:A:186:VAL:CG2	2.40	0.51
1:A:484:ARG:C	1:A:572:ALA:HB3	2.36	0.51
1:B:263:ILE:HG23	1:B:273:VAL:HG11	1.92	0.51
1:B:229:ILE:HG12	1:B:262:LEU:HD23	1.92	0.51
1:B:419:VAL:HG21	1:B:437:THR:CG2	2.41	0.51
1:D:4:THR:HG21	1:D:301:ILE:CD1	2.40	0.51
1:D:444:VAL:HG21	1:D:450:ILE:HD11	1.91	0.51
1:C:110:ASN:O	1:C:110:ASN:ND2	2.44	0.51
1:C:265:GLN:O	1:C:269:LEU:HD12	2.10	0.51
1:C:494:ALA:CB	1:C:500:LEU:HD23	2.40	0.51
1:D:21:GLU:OE2	1:D:57:LEU:HD21	2.11	0.51
1:B:444:VAL:HG21	1:B:450:ILE:HD11	1.93	0.51
1:B:265:GLN:O	1:B:269:LEU:HD12	2.11	0.51
1:A:191:ALA:HB2	1:A:203:ILE:CD1	2.41	0.50
1:B:60:ILE:HD13	1:B:407:ALA:HB1	1.93	0.50
1:D:217:PHE:CE1	1:D:238:GLY:HA3	2.46	0.50
1:D:388:ILE:HG22	1:D:397:ILE:HD13	1.93	0.50
1:A:3:LYS:HA	1:A:415:GLY:HA2	1.92	0.50
1:A:165:VAL:HG12	1:A:167:LEU:HD23	1.93	0.50
1:B:110:ASN:O	1:B:110:ASN:ND2	2.43	0.50
1:C:95:ASN:O	1:C:97:VAL:HG13	2.10	0.50
1:C:219:LYS:O	1:C:220:ILE:C	2.55	0.50
1:C:497:VAL:HG11	1:C:518:THR:CB	2.42	0.50
1:B:171:THR:HB	1:B:174:ASP:H	1.75	0.50
1:B:400:VAL:CG2	1:B:437:THR:HG21	2.41	0.50
1:B:63:ILE:HG22	1:B:186:VAL:CG2	2.41	0.50
1:D:491:THR:HG21	1:D:562:ILE:HD13	1.93	0.50
1:A:217:PHE:CZ	1:A:238:GLY:HA3	2.47	0.50
1:A:388:ILE:HG22	1:A:397:ILE:CD1	2.42	0.50
1:B:242:ALA:HB1	1:B:277:THR:HG21	1.91	0.50
1:B:424:ARG:HB3	1:B:429:ALA:HB3	1.93	0.50
1:C:403:SER:OG	1:C:406:THR:HG23	2.11	0.50
1:B:182:ILE:HG21	1:B:210:GLN:HG2	1.93	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:473:GLY:HA3	1:C:474:ASP:HB2	1.94	0.50
1:C:562:ILE:C	1:C:562:ILE:HD12	2.36	0.50
1:B:20:ILE:HG22	1:B:53:VAL:HG11	1.93	0.50
1:B:178:ILE:HD11	1:B:206:ILE:HG21	1.92	0.50
1:B:494:ALA:CB	1:B:500:LEU:HD23	2.42	0.50
1:B:497:VAL:HG11	1:B:518:THR:CB	2.42	0.50
1:D:111:LEU:HD21	1:D:115:VAL:HG11	1.93	0.50
1:D:246:MET:CE	1:D:258:VAL:CG1	2.89	0.50
1:A:494:ALA:CB	1:A:500:LEU:HD23	2.42	0.49
1:B:532:GLU:O	1:B:555:VAL:N	2.45	0.49
1:C:401:THR:O	1:C:420:VAL:HG13	2.12	0.49
1:C:533:GLU:O	1:C:534:ASN:CB	2.60	0.49
1:B:256:PRO:HB2	1:B:257:MET:HE3	1.95	0.49
1:B:301:ILE:HA	1:B:305:THR:HG22	1.94	0.49
1:D:182:ILE:HG21	1:D:210:GLN:HG2	1.94	0.49
1:A:111:LEU:HD23	1:A:115:VAL:HG13	1.93	0.49
1:B:533:GLU:O	1:B:534:ASN:CB	2.60	0.49
1:C:60:ILE:HD13	1:C:407:ALA:HB1	1.95	0.49
1:C:220:ILE:HG21	1:C:226:ILE:HD13	1.94	0.49
1:C:242:ALA:HB1	1:C:277:THR:HG21	1.94	0.49
1:A:296:ASP:CG	1:D:291:ARG:HH12	2.20	0.49
1:B:376:VAL:O	1:B:376:VAL:HG13	2.12	0.49
1:B:111:LEU:HD23	1:B:115:VAL:HG13	1.94	0.49
1:B:419:VAL:HG21	1:B:437:THR:HG21	1.94	0.49
1:B:562:ILE:HD12	1:B:562:ILE:C	2.38	0.49
1:C:532:GLU:O	1:C:555:VAL:N	2.46	0.49
1:C:21:GLU:OE2	1:C:57:LEU:HD21	2.13	0.49
1:C:178:ILE:HD11	1:C:206:ILE:HG21	1.94	0.48
1:C:491:THR:HG21	1:C:562:ILE:HD13	1.94	0.48
1:D:110:ASN:O	1:D:110:ASN:ND2	2.46	0.48
1:A:110:ASN:ND2	1:A:110:ASN:O	2.46	0.48
1:B:400:VAL:O	1:B:400:VAL:HG12	2.12	0.48
1:C:217:PHE:CZ	1:C:238:GLY:HA3	2.48	0.48
1:D:220:ILE:HG21	1:D:226:ILE:HD13	1.94	0.48
1:A:509:VAL:HG12	1:A:528:GLY:CA	2.42	0.48
1:C:20:ILE:HG22	1:C:53:VAL:HG11	1.95	0.48
1:B:165:VAL:HG12	1:B:167:LEU:HD23	1.96	0.48
1:B:512:THR:HG21	1:B:519:PHE:CE2	2.48	0.48
1:C:424:ARG:HB3	1:C:429:ALA:HB3	1.96	0.48
1:C:433:ASN:O	1:C:434:ALA:C	2.56	0.48
1:B:516:ASP:O	1:B:520:VAL:HG13	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:63:ILE:CG2	1:D:186:VAL:HG23	2.44	0.48
1:D:235:VAL:HG12	1:D:235:VAL:O	2.13	0.48
1:A:367:ALA:HA	1:A:372:VAL:HG13	1.94	0.48
1:B:99:GLY:C	1:B:100:THR:HG22	2.38	0.48
1:B:401:THR:O	1:B:420:VAL:HG13	2.14	0.48
1:D:265:GLN:O	1:D:269:LEU:HD12	2.13	0.48
1:B:473:GLY:HA3	1:B:474:ASP:HB2	1.96	0.48
1:A:111:LEU:HD23	1:A:111:LEU:C	2.39	0.48
1:B:117:VAL:HA	1:B:132:VAL:HG12	1.95	0.48
1:B:217:PHE:CZ	1:B:238:GLY:HA3	2.48	0.48
1:B:530:ILE:CG2	1:B:555:VAL:HG21	2.44	0.48
1:C:60:ILE:CD1	1:C:407:ALA:HB1	2.43	0.48
1:C:63:ILE:CG2	1:C:186:VAL:HG23	2.43	0.48
1:C:235:VAL:O	1:C:235:VAL:HG12	2.14	0.48
1:C:419:VAL:HG21	1:C:437:THR:HG21	1.95	0.48
1:D:562:ILE:HD12	1:D:563:SER:O	2.14	0.48
1:B:379:THR:CG2	1:B:384:THR:HB	2.43	0.48
1:D:229:ILE:HG12	1:D:262:LEU:HD23	1.95	0.48
1:B:220:ILE:HD11	1:B:232:ILE:HD13	1.96	0.48
1:B:233:LEU:O	1:B:234:GLU:C	2.57	0.48
1:C:511:VAL:HG21	1:C:562:ILE:HD11	1.96	0.48
1:D:256:PRO:HB2	1:D:257:MET:HE3	1.96	0.48
1:A:419:VAL:HG21	1:A:437:THR:CG2	2.45	0.47
1:D:178:ILE:HD11	1:D:206:ILE:HG21	1.96	0.47
1:D:188:PHE:CD1	1:D:215:SER:HB2	2.49	0.47
1:D:419:VAL:HG21	1:D:437:THR:CG2	2.44	0.47
1:D:497:VAL:HG11	1:D:518:THR:CB	2.43	0.47
1:D:509:VAL:HG12	1:D:528:GLY:CA	2.43	0.47
1:B:437:THR:O	1:B:441:THR:HG23	2.14	0.47
1:A:491:THR:HG21	1:A:562:ILE:HD13	1.96	0.47
1:B:165:VAL:HG11	1:B:167:LEU:HD23	1.95	0.47
1:B:188:PHE:CD1	1:B:215:SER:HB2	2.49	0.47
1:B:294:ALA:HA	1:B:330:ILE:HD13	1.96	0.47
1:B:347:ARG:O	1:B:351:VAL:HG13	2.14	0.47
1:C:256:PRO:HB2	1:C:257:MET:HE3	1.96	0.47
1:C:379:THR:HG23	1:C:384:THR:HB	1.95	0.47
1:D:4:THR:CG2	1:D:331:ALA:HB1	2.44	0.47
1:A:256:PRO:HB2	1:A:257:MET:HE3	1.97	0.47
1:B:357:ASN:O	1:B:358:ALA:C	2.57	0.47
1:C:165:VAL:HG12	1:C:167:LEU:HD23	1.94	0.47
1:C:182:ILE:HG21	1:C:210:GLN:HG2	1.95	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:99:GLY:C	1:D:100:THR:HG22	2.40	0.47
1:A:178:ILE:HD11	1:A:206:ILE:HG21	1.95	0.47
1:A:473:GLY:HA3	1:A:474:ASP:HB2	1.97	0.47
1:A:497:VAL:HG11	1:A:518:THR:CB	2.44	0.47
1:D:533:GLU:O	1:D:534:ASN:CB	2.63	0.47
1:A:177:ASP:O	1:A:180:PHE:HB3	2.15	0.47
1:A:471:LEU:HD23	1:A:472:VAL:H	1.80	0.47
1:C:516:ASP:O	1:C:520:VAL:HG13	2.15	0.47
1:B:275:THR:HG22	1:B:279:MET:HE2	1.97	0.47
1:C:529:LEU:HD11	1:C:531:THR:CG2	2.43	0.47
1:A:229:ILE:HG12	1:A:262:LEU:HD23	1.97	0.47
1:C:111:LEU:HD21	1:C:115:VAL:HG11	1.97	0.47
1:D:20:ILE:HG22	1:D:53:VAL:HG11	1.96	0.47
1:D:294:ALA:HA	1:D:330:ILE:HD13	1.97	0.47
1:D:357:ASN:O	1:D:358:ALA:C	2.58	0.47
1:D:530:ILE:HD12	1:D:530:ILE:N	2.30	0.46
1:B:60:ILE:CD1	1:B:407:ALA:HB1	2.45	0.46
1:B:509:VAL:HG12	1:B:528:GLY:CA	2.45	0.46
1:B:538:SER:HB2	1:B:539:PRO:HD2	1.96	0.46
1:C:188:PHE:CD1	1:C:215:SER:HB2	2.50	0.46
1:A:111:LEU:HD21	1:A:115:VAL:HG11	1.96	0.46
1:A:294:ALA:HA	1:A:330:ILE:HD13	1.97	0.46
1:D:95:ASN:O	1:D:97:VAL:HG13	2.15	0.46
1:D:366:THR:HG22	1:D:451:ILE:CD1	2.42	0.46
1:A:533:GLU:O	1:A:534:ASN:CB	2.62	0.46
1:B:260:LYS:HG2	1:B:303:ASP:CG	2.41	0.46
1:D:400:VAL:O	1:D:400:VAL:HG12	2.15	0.46
1:A:85:GLU:O	1:A:146:ILE:CG2	2.63	0.46
1:A:233:LEU:O	1:A:234:GLU:C	2.59	0.46
1:C:63:ILE:HG22	1:C:186:VAL:CG2	2.45	0.46
1:C:379:THR:HG22	2:C:586:PO4:O3	2.15	0.46
1:C:388:ILE:HG22	1:C:397:ILE:CD1	2.45	0.46
1:D:60:ILE:CD1	1:D:407:ALA:HB1	2.44	0.46
1:A:379:THR:CG2	1:A:384:THR:HB	2.45	0.46
1:A:419:VAL:HG21	1:A:437:THR:HG21	1.97	0.46
1:C:363:VAL:CG1	1:C:375:ILE:HD13	2.46	0.46
1:D:473:GLY:HA3	1:D:474:ASP:HB2	1.97	0.46
1:A:297:VAL:O	1:A:300:ALA:HB3	2.16	0.46
1:B:297:VAL:O	1:B:300:ALA:HB3	2.16	0.46
1:B:424:ARG:HB3	1:B:429:ALA:CB	2.46	0.46
1:C:538:SER:HB2	1:C:539:PRO:HD2	1.98	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:111:LEU:HD23	1:D:111:LEU:C	2.40	0.46
1:C:110:ASN:ND2	1:C:113:ASN:HB2	2.31	0.46
1:C:419:VAL:HG21	1:C:437:THR:CG2	2.46	0.46
1:C:444:VAL:HG21	1:C:450:ILE:HD11	1.98	0.46
1:C:424:ARG:HB3	1:C:429:ALA:CB	2.46	0.46
1:C:530:ILE:CG2	1:C:555:VAL:HG21	2.46	0.46
1:A:4:THR:CG2	1:A:331:ALA:HB1	2.46	0.45
1:B:310:LEU:HG	1:B:327:MET:HE3	1.98	0.45
1:C:376:VAL:O	1:C:376:VAL:HG13	2.16	0.45
1:C:437:THR:O	1:C:441:THR:HG23	2.15	0.45
1:A:299:ASN:CG	1:D:299:ASN:CG	2.84	0.45
1:A:437:THR:O	1:A:441:THR:HG23	2.16	0.45
1:B:31:ALA:HB3	1:B:63:ILE:HD13	1.99	0.45
1:B:424:ARG:HD2	1:B:429:ALA:HB1	1.98	0.45
1:C:233:LEU:O	1:C:234:GLU:C	2.60	0.45
1:C:424:ARG:HD2	1:C:429:ALA:HB1	1.98	0.45
1:D:388:ILE:HG22	1:D:397:ILE:CD1	2.46	0.45
1:B:21:GLU:OE2	1:B:57:LEU:HD21	2.17	0.45
1:A:355:LEU:HD23	1:B:370:LEU:HD13	1.99	0.45
1:B:433:ASN:O	1:B:434:ALA:C	2.57	0.45
1:C:260:LYS:HG2	1:C:303:ASP:CG	2.42	0.45
1:D:459:GLY:C	1:D:461:THR:H	2.25	0.45
1:A:84:LEU:CD2	1:A:90:VAL:HG21	2.34	0.45
1:A:538:SER:HB2	1:A:539:PRO:HD2	1.98	0.45
1:B:95:ASN:O	1:B:97:VAL:HG13	2.17	0.45
1:B:471:LEU:HD23	1:B:472:VAL:H	1.81	0.45
1:C:562:ILE:HD12	1:C:563:SER:O	2.17	0.45
1:A:110:ASN:ND2	1:A:113:ASN:HB2	2.32	0.45
1:B:110:ASN:ND2	1:B:113:ASN:HB2	2.31	0.45
1:B:296:ASP:CG	1:C:291:ARG:HH12	2.25	0.45
1:B:408:ARG:O	1:B:411:SER:OG	2.27	0.45
1:D:424:ARG:HB3	1:D:429:ALA:HB3	1.98	0.45
1:D:435:VAL:O	1:D:439:VAL:HG23	2.17	0.45
1:D:538:SER:HB2	1:D:539:PRO:HD2	1.98	0.45
1:B:85:GLU:O	1:B:146:ILE:CG2	2.65	0.45
1:B:178:ILE:HD11	1:B:206:ILE:HD12	1.99	0.45
1:B:235:VAL:HG12	1:B:235:VAL:O	2.17	0.45
1:C:305:THR:O	1:C:305:THR:HG23	2.17	0.45
1:A:21:GLU:OE2	1:A:57:LEU:HD21	2.17	0.44
1:A:77:MET:HE2	1:A:152:LEU:HD23	1.99	0.44
1:B:111:LEU:HD23	1:B:111:LEU:C	2.41	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:85:GLU:O	1:C:146:ILE:CG2	2.65	0.44
1:D:77:MET:HE2	1:D:152:LEU:HD23	1.99	0.44
1:A:265:GLN:O	1:A:269:LEU:HD12	2.18	0.44
1:A:444:VAL:HG21	1:A:450:ILE:HD11	1.99	0.44
1:A:530:ILE:CG2	1:A:555:VAL:HG21	2.46	0.44
1:D:562:ILE:HD12	1:D:562:ILE:C	2.43	0.44
1:A:400:VAL:CG2	1:A:437:THR:HG21	2.47	0.44
1:A:459:GLY:C	1:A:461:THR:H	2.25	0.44
1:A:99:GLY:C	1:A:100:THR:HG22	2.42	0.44
1:A:170:ILE:HD11	1:A:202:GLU:HB3	1.99	0.44
1:D:111:LEU:HD23	1:D:115:VAL:CG1	2.47	0.44
1:D:433:ASN:O	1:D:434:ALA:C	2.58	0.44
1:B:178:ILE:HD11	1:B:206:ILE:CD1	2.48	0.44
1:B:280:LEU:HD23	1:B:293:GLU:HB3	1.99	0.44
1:D:419:VAL:HG21	1:D:437:THR:HG21	1.98	0.44
1:B:63:ILE:CG2	1:B:186:VAL:CG2	2.96	0.44
1:B:111:LEU:HD21	1:B:115:VAL:HG11	2.00	0.44
1:D:85:GLU:O	1:D:146:ILE:CG2	2.65	0.44
1:A:208:GLU:OE2	1:B:536:ILE:HG23	2.18	0.44
1:B:491:THR:HG22	1:B:509:VAL:HG23	2.00	0.44
1:D:10:ILE:HG13	1:D:50:ILE:HD11	2.00	0.44
1:D:86:ARG:HG3	1:D:149:SER:H	1.83	0.44
1:D:110:ASN:ND2	1:D:113:ASN:HB2	2.33	0.44
1:D:165:VAL:HG12	1:D:167:LEU:HD23	1.97	0.44
1:A:424:ARG:HB3	1:A:429:ALA:HB3	2.00	0.44
1:C:111:LEU:HD23	1:C:115:VAL:CG1	2.48	0.44
1:C:178:ILE:HD11	1:C:206:ILE:CD1	2.48	0.44
1:D:280:LEU:HD23	1:D:293:GLU:HB3	2.00	0.44
1:D:379:THR:CG2	1:D:384:THR:HB	2.47	0.44
1:A:188:PHE:CD1	1:A:215:SER:HB2	2.52	0.43
1:A:357:ASN:O	1:A:358:ALA:C	2.60	0.43
1:B:84:LEU:HD23	1:B:90:VAL:CG2	2.28	0.43
1:B:529:LEU:HB3	1:B:551:THR:CG2	2.45	0.43
1:C:75:HIS:O	1:C:76:ASN:O	2.36	0.43
1:D:310:LEU:HD21	1:D:327:MET:HE2	2.00	0.43
1:A:433:ASN:O	1:A:434:ALA:C	2.61	0.43
1:C:111:LEU:HD23	1:C:111:LEU:O	2.18	0.43
1:B:97:VAL:HG23	1:B:98:GLU:O	2.17	0.43
1:B:482:ILE:HD13	1:B:541:ALA:HA	1.99	0.43
1:B:562:ILE:HD12	1:B:563:SER:O	2.18	0.43
1:D:461:THR:CG2	2:D:587:PO4:O3	2.66	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:482:ILE:HD13	1:A:541:ALA:HA	2.00	0.43
1:B:459:GLY:C	1:B:461:THR:H	2.27	0.43
1:C:178:ILE:HD11	1:C:206:ILE:HD12	2.00	0.43
1:C:471:LEU:HD23	1:C:472:VAL:H	1.82	0.43
1:C:355:LEU:HD23	1:D:370:LEU:HD13	2.00	0.43
1:A:562:ILE:HD12	1:A:563:SER:O	2.18	0.43
1:B:74:THR:HG22	1:B:75:HIS:O	2.19	0.43
1:B:491:THR:HG21	1:B:562:ILE:HD13	2.00	0.43
1:B:511:VAL:HG21	1:B:562:ILE:HD11	2.01	0.43
1:C:428:ASP:OD2	1:D:428:ASP:OD2	2.36	0.43
1:A:562:ILE:HD12	1:A:562:ILE:C	2.44	0.43
1:C:482:ILE:HD13	1:C:541:ALA:HA	1.99	0.43
1:D:297:VAL:O	1:D:300:ALA:HB3	2.19	0.43
1:D:555:VAL:HB	1:D:558:ALA:HB2	2.00	0.43
1:B:401:THR:CG2	1:B:407:ALA:HB2	2.49	0.43
1:C:170:ILE:HD11	1:C:202:GLU:HB3	2.00	0.43
1:C:310:LEU:HG	1:C:327:MET:HE3	2.01	0.43
1:A:86:ARG:HG3	1:A:149:SER:H	1.83	0.43
1:D:177:ASP:O	1:D:180:PHE:HB3	2.18	0.43
1:D:482:ILE:HD13	1:D:541:ALA:HA	2.01	0.43
1:D:582:ALA:O	1:D:583:ASN:CB	2.66	0.43
1:A:495:GLU:OE2	1:A:559:VAL:HG11	2.19	0.42
1:B:495:GLU:OE2	1:B:559:VAL:HG11	2.19	0.42
1:C:220:ILE:CD1	1:C:232:ILE:HD13	2.48	0.42
1:C:570:ILE:HG22	1:C:577:ILE:HG23	1.99	0.42
1:D:471:LEU:HD23	1:D:472:VAL:H	1.82	0.42
1:D:226:ILE:CD1	1:D:246:MET:HE3	2.40	0.42
1:D:323:ALA:HA	1:D:326:THR:HG22	2.01	0.42
1:A:570:ILE:HG22	1:A:577:ILE:HG23	2.01	0.42
1:B:363:VAL:CG1	1:B:375:ILE:HD13	2.49	0.42
1:C:294:ALA:HA	1:C:330:ILE:HD13	2.02	0.42
1:D:347:ARG:O	1:D:351:VAL:HG13	2.19	0.42
1:A:305:THR:HG23	1:A:305:THR:O	2.19	0.42
1:C:86:ARG:HG3	1:C:149:SER:H	1.85	0.42
1:D:298:ALA:O	1:D:301:ILE:N	2.52	0.42
1:A:490:THR:HA	1:A:567:LEU:HA	2.01	0.42
1:A:530:ILE:N	1:A:530:ILE:HD12	2.34	0.42
1:A:355:LEU:HD13	1:A:355:LEU:O	2.19	0.42
1:C:536:ILE:HG23	1:D:208:GLU:OE2	2.19	0.42
1:B:4:THR:HG22	1:B:331:ALA:HB1	2.01	0.42
1:B:83:GLU:C	1:B:84:LEU:HD12	2.45	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:226:ILE:CD1	1:C:246:MET:HE3	2.43	0.42
1:C:582:ALA:O	1:C:583:ASN:CB	2.67	0.42
1:D:404:GLU:O	1:D:407:ALA:HB3	2.19	0.42
1:A:63:ILE:CG2	1:A:186:VAL:CG2	2.98	0.42
1:B:226:ILE:CD1	1:B:246:MET:HE3	2.40	0.42
1:B:268:LYS:HA	1:B:350:LEU:HD13	2.01	0.42
1:C:297:VAL:O	1:C:300:ALA:HB3	2.20	0.42
1:D:63:ILE:HG22	1:D:186:VAL:CG2	2.50	0.42
1:D:178:ILE:CD1	1:D:203:ILE:HG23	2.50	0.42
1:D:355:LEU:C	1:D:355:LEU:HD13	2.45	0.42
1:A:3:LYS:HD2	1:A:414:TRP:CH2	2.54	0.42
1:A:260:LYS:HG2	1:A:303:ASP:CG	2.44	0.42
1:B:392:ARG:HD3	1:B:414:TRP:CE3	2.55	0.42
1:C:178:ILE:CD1	1:C:203:ILE:HG23	2.49	0.42
1:D:115:VAL:HG23	1:D:116:GLN:N	2.34	0.42
1:A:3:LYS:HD2	1:A:414:TRP:CZ2	2.55	0.41
1:A:35:PHE:CE1	1:A:43:HIS:CD2	3.08	0.41
1:A:461:THR:HG21	2:A:586:PO4:P	2.60	0.41
1:B:431:LEU:HD23	1:B:452:ILE:HG21	2.00	0.41
1:D:170:ILE:HD11	1:D:202:GLU:HB3	2.01	0.41
1:D:413:VAL:HG23	1:D:416:VAL:CG2	2.50	0.41
1:D:424:ARG:HB3	1:D:429:ALA:CB	2.50	0.41
1:A:355:LEU:HD13	1:A:355:LEU:C	2.45	0.41
1:A:376:VAL:O	1:A:376:VAL:HG13	2.19	0.41
1:B:388:ILE:HG22	1:B:397:ILE:HD13	2.01	0.41
1:D:305:THR:O	1:D:305:THR:HG23	2.20	0.41
1:D:347:ARG:NH1	1:D:392:ARG:HG3	2.36	0.41
1:A:404:GLU:O	1:A:407:ALA:HB3	2.20	0.41
1:D:392:ARG:HD3	1:D:414:TRP:CE3	2.56	0.41
1:A:403:SER:CB	1:A:406:THR:HG23	2.51	0.41
1:C:97:VAL:HG23	1:C:98:GLU:O	2.20	0.41
1:C:357:ASN:O	1:C:358:ALA:C	2.63	0.41
1:D:257:MET:HE3	1:D:257:MET:N	2.36	0.41
1:D:403:SER:CB	1:D:406:THR:HG23	2.51	0.41
1:A:178:ILE:CD1	1:A:203:ILE:HG23	2.50	0.41
1:A:268:LYS:HA	1:A:350:LEU:HD13	2.02	0.41
1:A:298:ALA:O	1:A:301:ILE:N	2.53	0.41
1:D:1:MET:N	1:D:443:ARG:HH12	2.19	0.41
1:D:69:GLY:HA2	1:D:174:ASP:OD2	2.19	0.41
1:B:170:ILE:HD11	1:B:202:GLU:HB3	2.02	0.41
1:B:177:ASP:O	1:B:180:PHE:HB3	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:75:HIS:HB2	1:C:105:SER:OG	2.21	0.41
1:C:401:THR:CG2	1:C:407:ALA:HB2	2.51	0.41
1:C:530:ILE:N	1:C:530:ILE:HD12	2.36	0.41
1:D:72:ILE:HD12	1:D:160:LEU:HD13	2.03	0.41
1:D:75:HIS:HB2	1:D:105:SER:OG	2.21	0.41
1:D:490:THR:HA	1:D:567:LEU:HA	2.03	0.41
1:B:86:ARG:HG3	1:B:149:SER:H	1.86	0.41
1:C:344:LEU:HD12	1:C:344:LEU:C	2.44	0.41
1:D:84:LEU:HD23	1:D:90:VAL:CG2	2.33	0.41
1:A:280:LEU:HD23	1:A:293:GLU:HB3	2.02	0.41
1:A:310:LEU:HD21	1:A:327:MET:HE2	2.01	0.41
1:A:413:VAL:CG2	1:A:416:VAL:CG2	2.98	0.41
1:B:323:ALA:HA	1:B:326:THR:HG22	2.03	0.41
1:B:529:LEU:HD11	1:B:531:THR:CG2	2.42	0.41
1:C:4:THR:HG22	1:C:331:ALA:HB1	2.03	0.41
1:C:83:GLU:C	1:C:84:LEU:HD12	2.46	0.41
1:C:280:LEU:HD23	1:C:293:GLU:HB3	2.03	0.41
1:C:355:LEU:C	1:C:355:LEU:HD13	2.46	0.41
1:D:3:LYS:HD2	1:D:414:TRP:CH2	2.56	0.41
1:D:111:LEU:CD2	1:D:115:VAL:HG11	2.50	0.41
1:A:115:VAL:HG23	1:A:116:GLN:N	2.35	0.41
1:A:275:THR:HG22	1:A:279:MET:HE2	2.02	0.41
1:A:461:THR:CG2	2:A:586:PO4:O2	2.69	0.41
1:B:483:GLY:C	1:B:572:ALA:HB1	2.46	0.41
1:B:530:ILE:HD12	1:B:530:ILE:N	2.36	0.41
1:C:323:ALA:HA	1:C:326:THR:HG22	2.03	0.41
1:D:266:CYS:HB3	1:D:271:LYS:O	2.21	0.41
1:D:392:ARG:HA	1:D:414:TRP:CZ3	2.56	0.41
1:D:570:ILE:HG22	1:D:577:ILE:HG23	2.02	0.41
1:A:110:ASN:HD21	1:A:113:ASN:HB2	1.87	0.40
1:C:3:LYS:HD2	1:C:414:TRP:CH2	2.57	0.40
1:C:100:THR:C	1:C:102:GLU:N	2.79	0.40
1:D:520:VAL:HG12	1:D:543:VAL:HG11	2.03	0.40
1:A:75:HIS:HB2	1:A:105:SER:OG	2.21	0.40
1:A:323:ALA:HA	1:A:326:THR:HG22	2.02	0.40
1:A:582:ALA:O	1:A:583:ASN:CB	2.68	0.40
1:C:355:LEU:HD13	1:C:355:LEU:O	2.21	0.40
1:C:413:VAL:CG2	1:C:416:VAL:CG2	2.99	0.40
1:D:217:PHE:CZ	1:D:238:GLY:HA3	2.56	0.40
1:D:495:GLU:OE2	1:D:559:VAL:HG11	2.21	0.40
1:A:379:THR:HG23	1:A:384:THR:HB	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:424:ARG:HB3	1:A:429:ALA:CB	2.51	0.40
1:B:570:ILE:HG22	1:B:577:ILE:HG23	2.04	0.40
1:C:259:GLN:NE2	1:C:275:THR:HG21	2.36	0.40
1:C:280:LEU:HD12	1:C:327:MET:HE2	2.03	0.40
1:C:392:ARG:HD3	1:C:414:TRP:CE3	2.57	0.40
1:C:490:THR:HA	1:C:567:LEU:HA	2.03	0.40
1:C:529:LEU:HD12	1:C:530:ILE:N	2.36	0.40
1:C:555:VAL:HB	1:C:558:ALA:HB2	2.04	0.40
1:A:72:ILE:HD12	1:A:160:LEU:HD13	2.04	0.40
1:B:310:LEU:CD2	1:B:327:MET:HE3	2.52	0.40
1:C:335:GLU:O	1:C:336:ALA:C	2.63	0.40
1:C:347:ARG:NH1	1:C:392:ARG:HG3	2.36	0.40
1:C:360:GLY:HA2	1:C:388:ILE:HD13	2.04	0.40
1:A:95:ASN:O	1:A:97:VAL:HG13	2.21	0.40
1:A:484:ARG:HG3	1:A:573:ALA:HB2	2.03	0.40
1:B:482:ILE:HD13	1:B:541:ALA:CA	2.52	0.40
1:C:347:ARG:O	1:C:351:VAL:HG13	2.22	0.40
1:C:471:LEU:HD22	1:C:473:GLY:O	2.21	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	581/606 (96%)	512 (88%)	53 (9%)	16 (3%)	4	21
1	B	581/606 (96%)	514 (88%)	51 (9%)	16 (3%)	4	21
1	C	581/606 (96%)	511 (88%)	55 (10%)	15 (3%)	4	23
1	D	581/606 (96%)	512 (88%)	52 (9%)	17 (3%)	3	21
All	All	2324/2424 (96%)	2049 (88%)	211 (9%)	64 (3%)	4	21

All (64) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	154	ASN
1	A	220	ILE
1	B	154	ASN
1	B	220	ILE
1	C	154	ASN
1	C	220	ILE
1	D	154	ASN
1	D	220	ILE
1	A	534	ASN
1	B	534	ASN
1	C	76	ASN
1	C	506	SER
1	C	534	ASN
1	D	534	ASN
1	A	475	GLU
1	A	506	SER
1	B	475	GLU
1	B	506	SER
1	C	475	GLU
1	D	475	GLU
1	D	506	SER
1	A	76	ASN
1	A	138	ALA
1	A	320	PRO
1	A	411	SER
1	A	460	GLU
1	B	76	ASN
1	B	320	PRO
1	B	411	SER
1	B	507	ASP
1	C	411	SER
1	C	507	ASP
1	D	76	ASN
1	D	138	ALA
1	D	161	PRO
1	A	161	PRO
1	A	163	VAL
1	A	507	ASP
1	B	138	ALA
1	B	161	PRO
1	B	163	VAL
1	B	460	GLU
1	C	138	ALA

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Mol	Chain	Res	Type
1	C	161	PRO
1	C	163	VAL
1	C	320	PRO
1	C	460	GLU
1	D	163	VAL
1	D	320	PRO
1	D	411	SER
1	D	460	GLU
1	D	507	ASP
1	D	162	GLY
1	A	459	GLY
1	B	473	GLY
1	D	473	GLY
1	B	459	GLY
1	D	459	GLY
1	B	162	GLY
1	C	459	GLY
1	C	473	GLY
1	D	115	VAL
1	A	162	GLY
1	A	473	GLY

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	490/510 (96%)	464 (95%)	26 (5%)	20	49
1	B	490/510 (96%)	465 (95%)	25 (5%)	21	50
1	C	490/510 (96%)	464 (95%)	26 (5%)	20	49
1	D	490/510 (96%)	464 (95%)	26 (5%)	20	49
All	All	1960/2040 (96%)	1857 (95%)	103 (5%)	20	49

All (103) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	20	ILE
1	A	77	MET
1	A	100	THR
1	A	110	ASN
1	A	115	VAL
1	A	136	ASP
1	A	170	ILE
1	A	171	THR
1	A	178	ILE
1	A	186	VAL
1	A	198	SER
1	A	245	ASP
1	A	269	LEU
1	A	350	LEU
1	A	351	VAL
1	A	359	ILE
1	A	372	VAL
1	A	379	THR
1	A	384	THR
1	A	400	VAL
1	A	413	VAL
1	A	444	VAL
1	A	450	ILE
1	A	466	MET
1	A	496	THR
1	A	562	ILE
1	B	20	ILE
1	B	77	MET
1	B	100	THR
1	B	110	ASN
1	B	115	VAL
1	B	136	ASP
1	B	170	ILE
1	B	171	THR
1	B	178	ILE
1	B	186	VAL
1	B	195	ARG
1	B	198	SER
1	B	245	ASP
1	B	269	LEU
1	B	350	LEU
1	B	351	VAL
1	B	359	ILE

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Mol	Chain	Res	Type
1	B	372	VAL
1	B	384	THR
1	B	400	VAL
1	B	444	VAL
1	B	450	ILE
1	B	466	MET
1	B	496	THR
1	B	562	ILE
1	C	20	ILE
1	C	77	MET
1	C	100	THR
1	C	110	ASN
1	C	115	VAL
1	C	136	ASP
1	C	170	ILE
1	C	171	THR
1	C	178	ILE
1	C	186	VAL
1	C	195	ARG
1	C	245	ASP
1	C	269	LEU
1	C	350	LEU
1	C	351	VAL
1	C	359	ILE
1	C	372	VAL
1	C	379	THR
1	C	384	THR
1	C	400	VAL
1	C	413	VAL
1	C	444	VAL
1	C	450	ILE
1	C	466	MET
1	C	496	THR
1	C	562	ILE
1	D	20	ILE
1	D	77	MET
1	D	100	THR
1	D	110	ASN
1	D	115	VAL
1	D	136	ASP
1	D	170	ILE
1	D	171	THR

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Mol	Chain	Res	Type
1	D	178	ILE
1	D	186	VAL
1	D	198	SER
1	D	235	VAL
1	D	245	ASP
1	D	269	LEU
1	D	350	LEU
1	D	351	VAL
1	D	359	ILE
1	D	372	VAL
1	D	379	THR
1	D	384	THR
1	D	400	VAL
1	D	444	VAL
1	D	450	ILE
1	D	466	MET
1	D	496	THR
1	D	562	ILE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	40	HIS
1	A	43	HIS
1	A	259	GLN
1	A	409	GLN
1	A	433	ASN
1	A	480	GLN
1	A	513	ASN
1	A	583	ASN
1	B	43	HIS
1	B	110	ASN
1	B	154	ASN
1	B	409	GLN
1	B	513	ASN
1	B	534	ASN
1	C	43	HIS
1	C	110	ASN
1	C	154	ASN
1	C	259	GLN
1	C	409	GLN
1	C	433	ASN

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Mol	Chain	Res	Type
1	C	513	ASN
1	C	534	ASN
1	C	583	ASN
1	D	43	HIS
1	D	110	ASN
1	D	154	ASN
1	D	259	GLN
1	D	278	GLN
1	D	409	GLN
1	D	433	ASN
1	D	480	GLN
1	D	513	ASN
1	D	534	ASN
1	D	583	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](#)

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	PO4	A	586	-	4,4,4	0.75	0	6,6,6	0.88	0
3	09C	B	586	-	26,31,31	3.40	10 (38%)	37,46,46	3.54	19 (51%)
3	09C	D	586	-	26,31,31	3.46	8 (30%)	37,46,46	3.53	18 (48%)
2	PO4	C	586	-	4,4,4	0.89	0	6,6,6	0.67	0
2	PO4	D	587	-	4,4,4	0.83	0	6,6,6	0.63	0
2	PO4	B	587	-	4,4,4	1.02	0	6,6,6	0.68	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	09C	B	586	-	1/1/3/5	3/8/21/21	0/5/5/5
3	09C	D	586	-	1/1/3/5	2/8/21/21	0/5/5/5

All (18) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	D	586	09C	C12-N1	-12.76	1.32	1.47
3	B	586	09C	C12-N1	-12.49	1.32	1.47
3	B	586	09C	C1-N2	6.42	1.44	1.33
3	D	586	09C	C1-N2	6.31	1.44	1.33
3	D	586	09C	C11-N2	5.33	1.51	1.46
3	B	586	09C	C11-N2	5.24	1.51	1.46
3	D	586	09C	C17-N3	-3.91	1.31	1.37
3	B	586	09C	C17-N3	-3.77	1.31	1.37
3	D	586	09C	C18-N4	-3.54	1.32	1.37
3	D	586	09C	C7-N3	-3.34	1.31	1.37
3	B	586	09C	C18-N4	-3.18	1.32	1.37
3	B	586	09C	C8-N4	-3.01	1.32	1.37
3	D	586	09C	C7-C15	-2.98	1.33	1.36
3	B	586	09C	C7-N3	-2.86	1.32	1.37
3	D	586	09C	C8-N4	-2.66	1.32	1.37
3	B	586	09C	C19-C15	-2.27	1.40	1.44
3	B	586	09C	C8-C16	-2.22	1.34	1.36
3	B	586	09C	C9-C17	-2.10	1.36	1.39

All (37) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	B	586	09C	C16-C2-N1	-11.25	97.37	110.71
3	D	586	09C	C16-C2-N1	-10.76	97.95	110.71
3	B	586	09C	C2-C16-C8	-6.92	117.79	127.31
3	D	586	09C	C20-C16-C2	6.90	135.34	126.15
3	B	586	09C	C20-C16-C2	6.73	135.10	126.15
3	D	586	09C	C2-C16-C8	-6.44	118.46	127.31
3	D	586	09C	BR1-C13-C3	6.31	127.89	119.30
3	D	586	09C	C19-C15-C12	5.86	138.77	127.23
3	B	586	09C	BR1-C13-C9	-5.58	111.34	119.23
3	B	586	09C	BR2-C14-C4	5.38	126.62	119.30
3	B	586	09C	BR1-C13-C3	4.90	125.97	119.30
3	D	586	09C	BR2-C14-C4	4.60	125.56	119.30
3	D	586	09C	BR1-C13-C9	-4.29	113.17	119.23
3	B	586	09C	C19-C17-N3	4.21	111.03	107.52
3	B	586	09C	C19-C15-C12	4.14	135.38	127.23
3	D	586	09C	BR2-C14-C10	-3.77	113.90	119.23
3	D	586	09C	C17-C19-C15	-3.77	103.47	106.98
3	B	586	09C	C17-C19-C15	-3.60	103.63	106.98
3	D	586	09C	C9-C17-N3	-3.55	126.14	131.62
3	B	586	09C	C9-C17-N3	-3.54	126.16	131.62
3	B	586	09C	C18-C20-C16	-3.44	103.78	106.98
3	D	586	09C	C19-C17-N3	3.32	110.29	107.52
3	D	586	09C	C20-C18-N4	3.32	110.28	107.52
3	D	586	09C	C5-C19-C15	3.31	139.31	133.68
3	B	586	09C	BR2-C14-C10	-3.29	114.58	119.23
3	B	586	09C	C17-N3-C7	-3.26	106.17	109.08
3	B	586	09C	C15-C7-N3	3.24	112.94	110.31
3	D	586	09C	C18-C20-C16	-3.12	104.08	106.98
3	D	586	09C	C10-C18-N4	-3.10	126.83	131.62
3	B	586	09C	C20-C18-N4	2.85	109.89	107.52
3	D	586	09C	C16-C8-N4	2.65	112.46	110.31
3	B	586	09C	C6-C20-C16	2.64	138.17	133.68
3	B	586	09C	C1-C2-N1	-2.54	104.20	111.03
3	B	586	09C	C10-C18-N4	-2.43	127.88	131.62
3	D	586	09C	C15-C7-N3	2.37	112.23	110.31
3	B	586	09C	C3-C5-C19	-2.36	116.97	120.86
3	D	586	09C	C18-N4-C8	-2.29	107.03	109.08

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
3	B	586	09C	C12
3	D	586	09C	C12

All (5) torsion outliers are listed below:

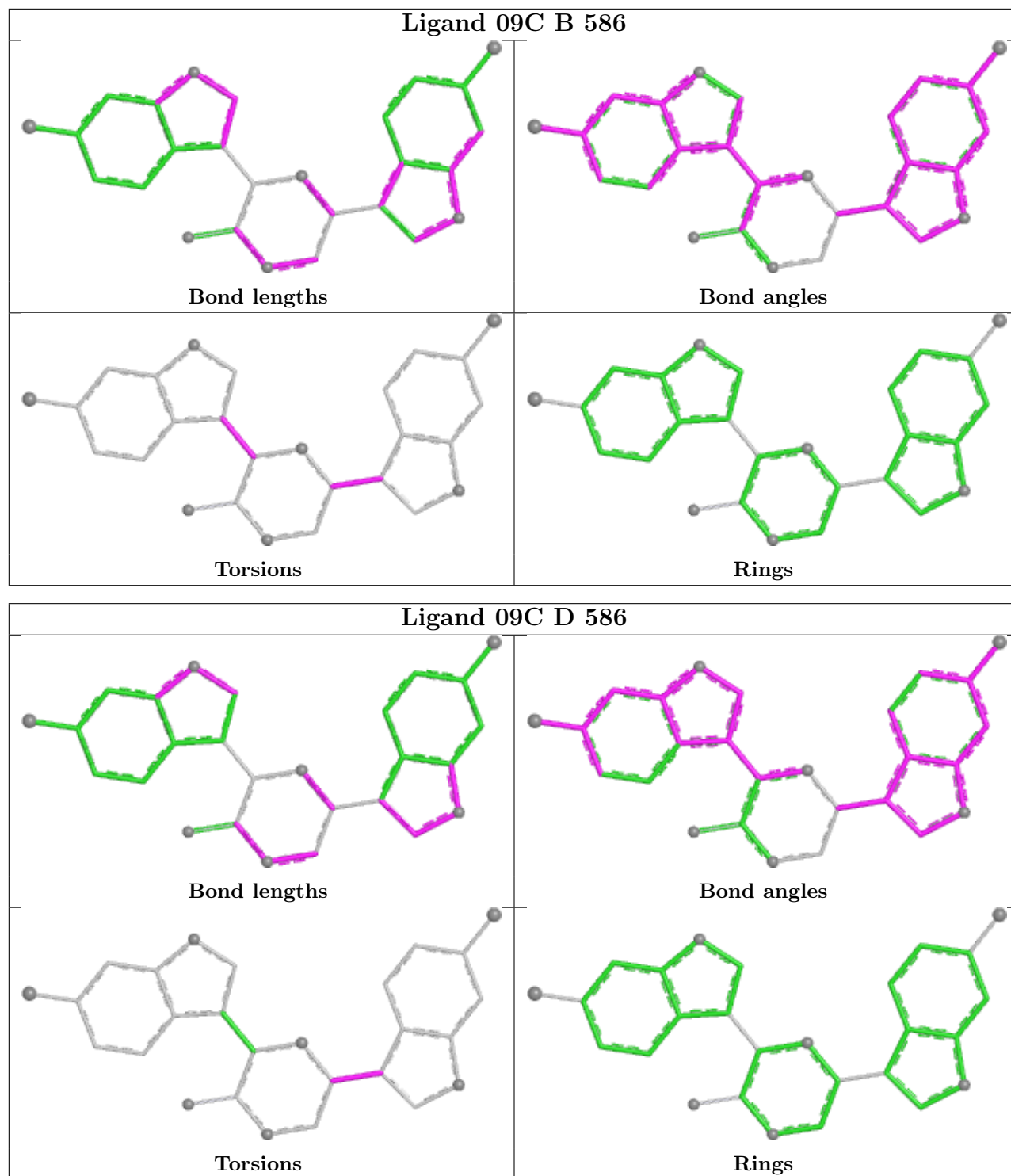
Mol	Chain	Res	Type	Atoms
3	B	586	09C	C11-C12-C15-C7
3	B	586	09C	C11-C12-C15-C19
3	D	586	09C	C11-C12-C15-C7
3	D	586	09C	C11-C12-C15-C19
3	B	586	09C	C8-C16-C2-C1

There are no ring outliers.

6 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	586	PO4	4	0
3	B	586	09C	3	0
3	D	586	09C	2	0
2	C	586	PO4	1	0
2	D	587	PO4	2	0
2	B	587	PO4	1	0

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data [i](#)

6.1 Protein, DNA and RNA chains [i](#)

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	583/606 (96%)	-0.67	0 100 100	90, 151, 212, 258	0
1	B	583/606 (96%)	-0.71	1 (0%) 91 86	80, 135, 177, 220	0
1	C	583/606 (96%)	-0.68	0 100 100	85, 133, 175, 234	0
1	D	583/606 (96%)	-0.61	1 (0%) 91 86	92, 154, 210, 236	0
All	All	2332/2424 (96%)	-0.67	2 (0%) 92 90	80, 143, 202, 258	0

All (2) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	1	MET	2.5
1	D	60	ILE	2.2

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](#)

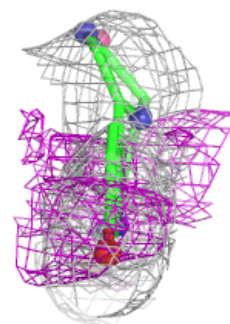
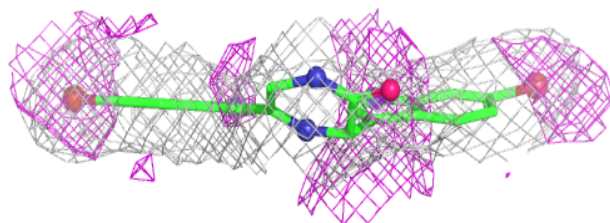
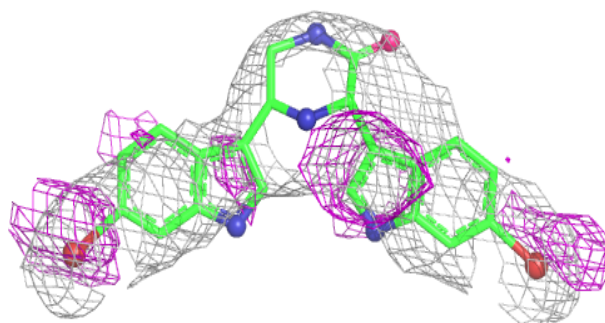
In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled ‘Q< 0.9’ lists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

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
2	PO4	D	587	5/5	0.92	0.08	149,154,164,170	0
3	09C	D	586	27/27	0.92	0.09	123,160,180,182	0
2	PO4	A	586	5/5	0.94	0.06	118,135,167,168	0
3	09C	B	586	27/27	0.94	0.08	125,145,174,182	0
2	PO4	B	587	5/5	0.94	0.06	143,161,175,179	0
2	PO4	C	586	5/5	0.95	0.04	143,150,162,169	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.

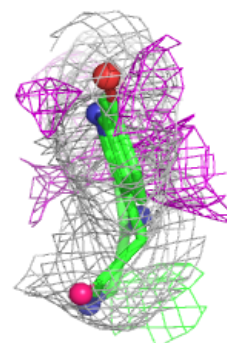
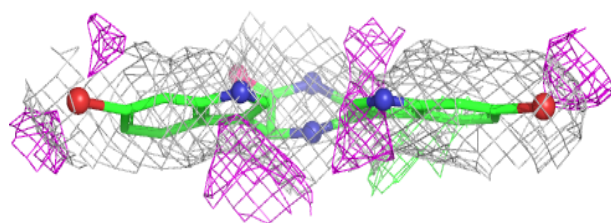
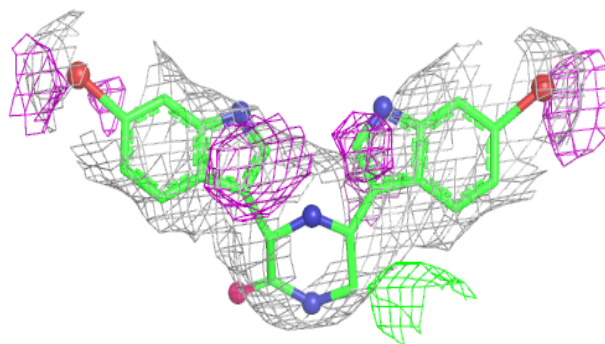
Electron density around 09C D 586:

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 09C B 586:

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



6.5 Other polymers [i](#)

There are no such residues in this entry.