



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 13, 2026 – 01:32 AM UTC

PDB ID : 3IX2 / pdb_00003ix2
Title : CRYSTAL STRUCTURE OF PURINE NUCLEOSIDE PHOSPHORYLASE
FROM MYCOBACTERIUM TUBERCULOSIS IN COMPLEX WITH ACY-
CLOVIR
Authors : de Azevedo Jr., W.F.; Basso, L.A.; Santos, D.S.
Deposited on : 2009-09-03
Resolution : 2.10 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
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4 : 9.0.010 (Gargrove)
Density-Fitness : 1.0.12
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.49

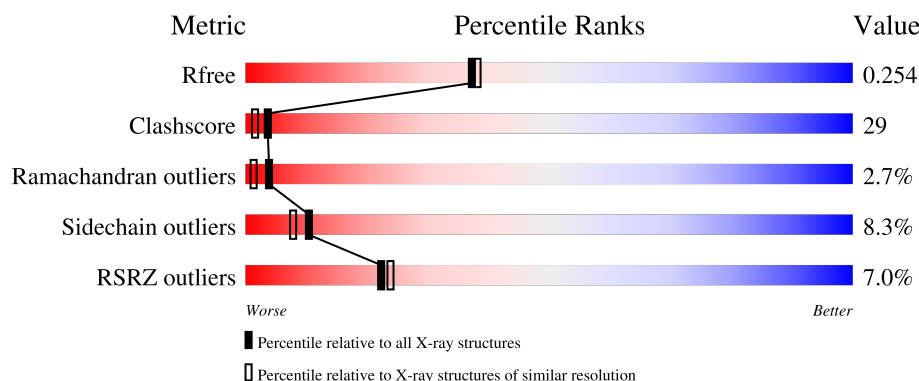
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.10 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	6658 (2.10-2.10)
Clashscore	190562	7164 (2.10-2.10)
Ramachandran outliers	187476	7099 (2.10-2.10)
Sidechain outliers	187428	7100 (2.10-2.10)
RSRZ outliers	180081	6662 (2.10-2.10)

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	268	
1	B	268	
1	C	268	

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	B	301	-	-	X	-
2	PO4	C	301	-	-	X	-
3	AC2	A	302	-	-	X	-
3	AC2	B	302	-	-	X	-
3	AC2	C	302	-	-	X	-

2 Entry composition [i](#)

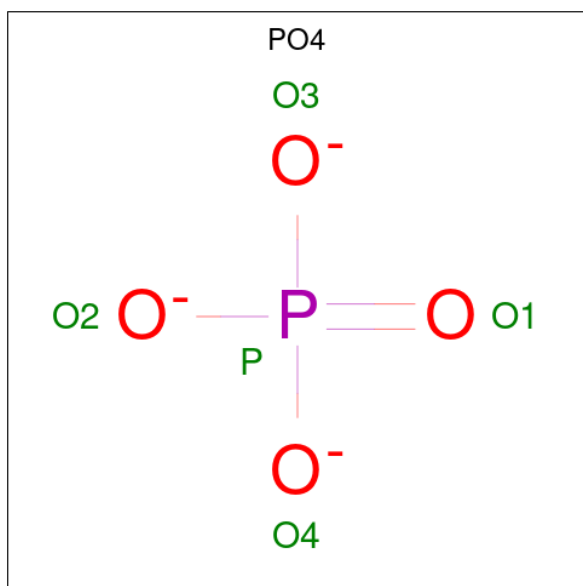
There are 4 unique types of molecules in this entry. The entry contains 6139 atoms, of which 0 are hydrogens and 0 are deuteriums.

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 Purine nucleoside phosphorylase.

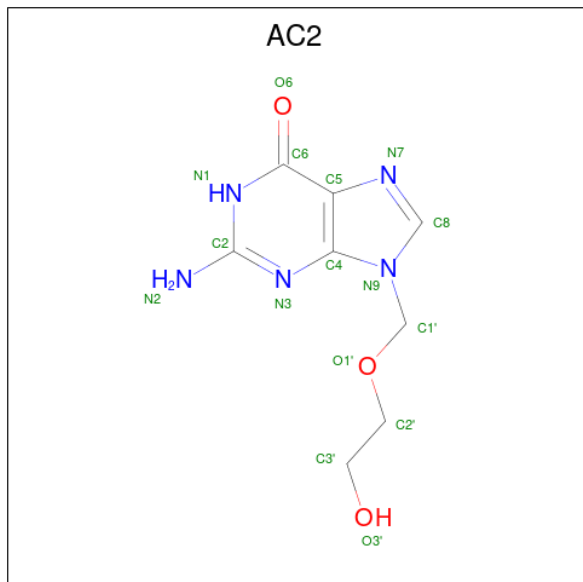
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	262	Total	C	N	O	S	0	0	0
			1896	1191	345	356	4			
1	B	262	Total	C	N	O	S	0	0	0
			1896	1191	345	356	4			
1	C	262	Total	C	N	O	S	0	0	0
			1896	1191	345	356	4			

- 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		
2	B	1	Total	O	P	0	0
			5	4	1		
2	C	1	Total	O	P	0	0
			5	4	1		

- Molecule 3 is 9-HYDROXYETHOXYMETHYLGUANINE (CCD ID: AC2) (formula: $C_8H_{11}N_5O_3$).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	N	O	0	0
			16	8	5	3		
3	B	1	Total	C	N	O	0	0
			16	8	5	3		
3	C	1	Total	C	N	O	0	0
			16	8	5	3		

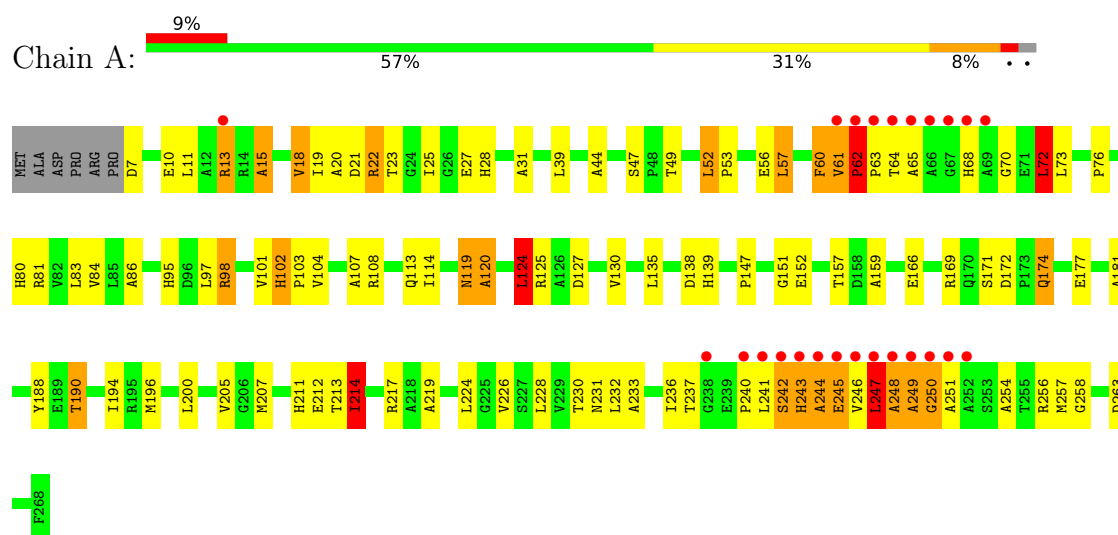
- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	117	Total	O	0	0
			117	117		
4	B	125	Total	O	0	0
			125	125		
4	C	146	Total	O	0	0
			146	146		

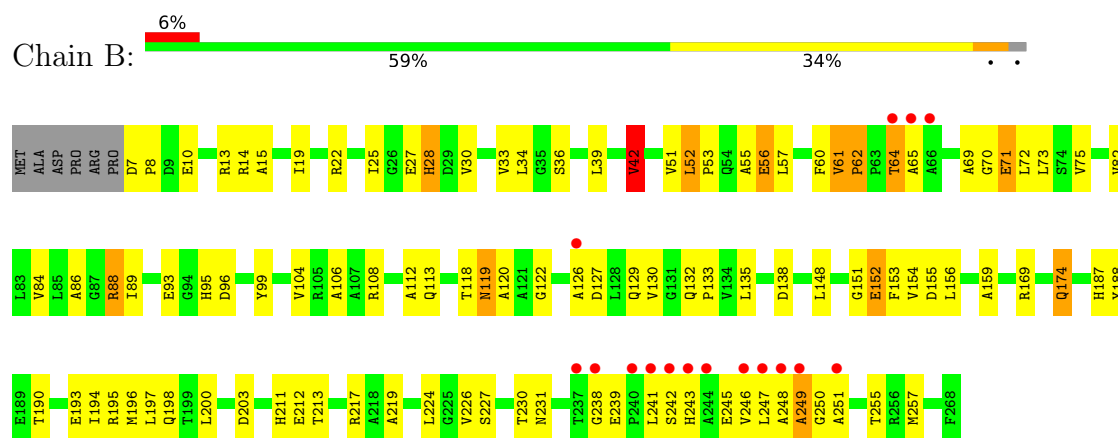
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red dot above a residue indicates a poor fit to the electron density ($RSRZ > 2$). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

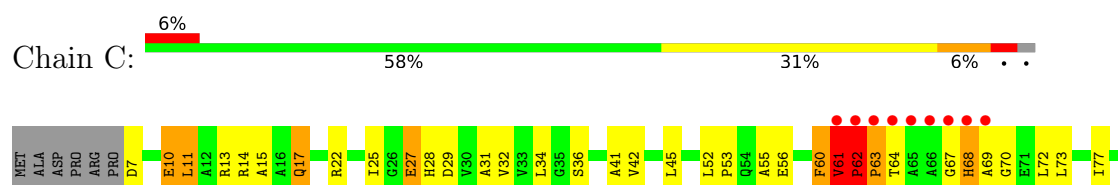
• Molecule 1: Purine nucleoside phosphorylase

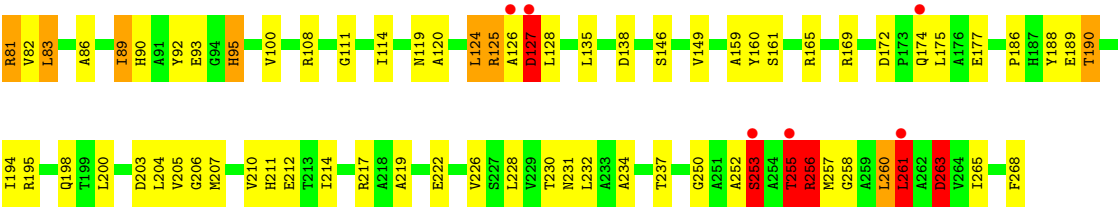


• Molecule 1: Purine nucleoside phosphorylase



• Molecule 1: Purine nucleoside phosphorylase





4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, α , β , γ	105.18Å 135.76Å 41.43Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	33.94 – 2.10 33.94 – 2.10	Depositor EDS
% Data completeness (in resolution range)	93.9 (33.94-2.10) 93.9 (33.94-2.10)	Depositor EDS
R_{merge}	0.08	Depositor
R_{sym}	0.08	Depositor
$\langle I/\sigma(I) \rangle$ ¹	4.57 (at 2.10Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, R_{free}	0.183 , 0.262 (Not available) , 0.254	Depositor DCC
R_{free} test set	1679 reflections (4.72%)	wwPDB-VP
Wilson B-factor (Å ²)	20.6	Xtriage
Anisotropy	0.060	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.38 , 44.8	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	0.94	EDS
Total number of atoms	6139	wwPDB-VP
Average B, all atoms (Å ²)	23.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.82% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality ⓘ

5.1 Standard geometry ⓘ

Bond lengths and bond angles in the following residue types are not validated in this section: PO4, AC2

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	1.34	9/1932 (0.5%)	1.46	18/2642 (0.7%)
1	B	1.24	2/1932 (0.1%)	1.30	15/2642 (0.6%)
1	C	1.34	5/1932 (0.3%)	2.03	20/2642 (0.8%)
All	All	1.31	16/5796 (0.3%)	1.63	53/7926 (0.7%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	3
1	C	4	5
All	All	4	8

All (16) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	61	VAL	CA-CB	9.71	1.61	1.54
1	A	61	VAL	N-CA	7.93	1.53	1.46
1	B	62	PRO	CA-C	7.93	1.56	1.51
1	A	214	ILE	C-O	7.62	1.33	1.24
1	C	255	THR	C-O	6.94	1.32	1.24
1	A	61	VAL	CA-C	6.78	1.57	1.52
1	C	260	LEU	C-N	-6.40	1.24	1.33
1	C	62	PRO	CA-C	5.92	1.57	1.52
1	B	213	THR	C-N	-5.85	1.26	1.33
1	A	114	ILE	C-O	-5.41	1.18	1.24
1	A	102	HIS	C-O	-5.34	1.19	1.24
1	C	252	ALA	CA-CB	-5.34	1.44	1.53
1	A	120	ALA	CA-CB	5.09	1.61	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	32	VAL	CA-C	-5.09	1.46	1.52
1	A	181	ALA	CA-CB	-5.04	1.46	1.53
1	A	124	LEU	CG-CD2	-5.01	1.36	1.52

All (53) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	263	ASP	O-C-N	-71.72	40.39	122.15
1	A	61	VAL	CA-C-N	14.70	135.52	120.38
1	A	61	VAL	C-N-CA	14.70	135.52	120.38
1	B	42	VAL	CB-CA-C	-12.33	95.89	112.04
1	A	61	VAL	N-CA-C	12.33	122.28	107.61
1	C	61	VAL	CA-C-N	12.03	132.77	120.38
1	C	61	VAL	C-N-CA	12.03	132.77	120.38
1	C	255	THR	O-C-N	-10.71	108.35	122.59
1	A	60	PHE	CA-C-N	-9.78	114.83	123.33
1	A	60	PHE	C-N-CA	-9.78	114.83	123.33
1	A	245	GLU	N-CA-C	-9.50	101.11	112.89
1	A	214	ILE	O-C-N	-9.41	110.81	122.57
1	C	62	PRO	N-CA-C	8.73	121.35	110.70
1	C	255	THR	CA-C-O	-8.72	108.04	120.51
1	A	62	PRO	N-CA-C	8.67	121.28	110.70
1	C	255	THR	CA-C-N	8.22	137.23	121.54
1	C	255	THR	C-N-CA	8.22	137.23	121.54
1	C	62	PRO	CA-C-N	7.62	129.37	119.84
1	C	62	PRO	C-N-CA	7.62	129.37	119.84
1	B	203	ASP	N-CA-C	-7.47	104.69	113.88
1	A	15	ALA	O-C-N	-7.45	114.40	122.07
1	C	255	THR	N-CA-CB	7.25	122.74	110.49
1	B	42	VAL	N-CA-CB	6.83	119.01	110.47
1	B	75	VAL	CB-CA-C	-6.80	98.98	111.36
1	C	253	SER	O-C-N	6.49	128.76	122.07
1	B	28	HIS	N-CA-C	-6.40	96.67	107.99
1	A	190	THR	N-CA-C	-5.92	101.67	110.20
1	A	249	ALA	N-CA-C	-5.90	105.18	113.20
1	B	113	GLN	N-CA-C	-5.89	106.43	113.97
1	B	69	ALA	CA-C-N	-5.82	115.09	122.19
1	B	69	ALA	C-N-CA	-5.82	115.09	122.19
1	C	95	HIS	CA-C-N	5.55	130.21	121.56
1	C	95	HIS	C-N-CA	5.55	130.21	121.56
1	A	72	LEU	N-CA-C	-5.53	99.41	108.76
1	C	261	LEU	CB-CG-CD2	-5.52	94.13	110.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	27	GLU	N-CA-C	5.49	118.04	108.76
1	B	251	ALA	N-CA-C	-5.46	105.49	111.82
1	A	157	THR	N-CA-C	-5.41	102.27	110.28
1	B	169	ARG	N-CA-C	5.40	118.08	111.82
1	A	151	GLY	N-CA-C	5.38	125.93	113.18
1	B	219	ALA	N-CA-C	-5.37	106.73	113.28
1	B	122	GLY	N-CA-C	-5.35	103.24	111.64
1	B	106	ALA	N-CA-C	-5.27	105.53	111.28
1	C	258	GLY	N-CA-C	-5.27	106.11	112.49
1	B	238	GLY	N-CA-C	-5.25	108.03	115.43
1	C	17	GLN	N-CA-C	-5.20	105.50	111.07
1	C	15	ALA	N-CA-C	-5.12	105.14	111.33
1	A	62	PRO	CA-C-N	5.11	126.23	119.84
1	A	62	PRO	C-N-CA	5.11	126.23	119.84
1	C	190	THR	CA-C-N	-5.10	113.67	119.28
1	C	190	THR	C-N-CA	-5.10	113.67	119.28
1	A	49	THR	N-CA-C	-5.07	105.85	112.23
1	A	18	VAL	CB-CA-C	-5.02	105.30	112.22

All (4) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	C	43	ALA	CA
1	C	255	THR	CA,CB
1	C	261	LEU	CA

All (8) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	15	ALA	Mainchain
1	A	214	ILE	Mainchain
1	A	244	ALA	Peptide
1	C	127	ASP	Peptide
1	C	255	THR	Peptide,Mainchain
1	C	256	ARG	Mainchain
1	C	263	ASP	Mainchain

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	1896	0	1915	138	0
1	B	1896	0	1915	87	0
1	C	1896	0	1914	116	0
2	A	5	0	0	0	0
2	B	5	0	0	4	0
2	C	5	0	0	2	0
3	A	16	0	11	7	0
3	B	16	0	11	6	0
3	C	16	0	11	17	0
4	A	117	0	0	27	0
4	B	125	0	0	16	0
4	C	146	0	0	21	0
All	All	6139	0	5777	336	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 29.

All (336) 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:A:21:ASP:HB3	4:A:493:HOH:O	1.38	1.23
1:C:212:GLU:HG2	4:C:401:HOH:O	1.42	1.19
1:A:13:ARG:HH21	1:A:13:ARG:HG3	1.03	1.13
1:A:257:MET:HG3	4:A:459:HOH:O	1.50	1.12
1:C:127:ASP:N	1:C:127:ASP:OD2	1.80	1.09
1:C:61:VAL:HG21	1:C:69:ALA:HB2	1.34	1.08
1:C:53:PRO:HG2	1:C:56:GLU:HG3	1.07	1.07
1:A:172:ASP:HB2	4:A:418:HOH:O	1.56	1.04
1:C:172:ASP:OD2	1:C:174:GLN:HG2	1.55	1.03
1:C:53:PRO:HG2	1:C:56:GLU:CG	1.87	1.03
1:A:172:ASP:OD1	1:A:174:GLN:HB2	1.61	1.01
1:C:120:ALA:HB3	3:C:302:AC2:H1'2	1.40	1.00
3:B:302:AC2:H3'2	4:B:402:HOH:O	1.65	0.96
1:B:8:PRO:HG2	4:B:481:HOH:O	1.65	0.94
1:B:64:THR:HB	4:B:499:HOH:O	1.68	0.92
1:A:22:ARG:HG3	1:A:22:ARG:HH11	1.35	0.91
1:C:228:LEU:HD11	1:C:253:SER:HB2	1.51	0.90
1:C:159:ALA:HA	1:C:217:ARG:HD2	1.54	0.90
1:A:13:ARG:HH21	1:A:13:ARG:CG	1.84	0.90

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:228:LEU:HD21	1:A:250:GLY:HA3	1.50	0.90
1:B:53:PRO:HD2	1:B:56:GLU:HG3	1.54	0.89
1:A:13:ARG:HG3	1:A:13:ARG:NH2	1.73	0.88
1:B:95:HIS:HD2	4:B:499:HOH:O	1.56	0.88
1:C:25:ILE:HG21	1:C:81:ARG:HG2	1.55	0.88
1:A:248:ALA:HB1	1:A:251:ALA:CB	2.03	0.87
1:C:11:LEU:HD12	1:C:11:LEU:O	1.71	0.87
1:C:125:ARG:HD3	1:C:127:ASP:OD1	1.74	0.87
1:B:119:ASN:HA	2:B:301:PO4:O1	1.76	0.85
1:C:63:PRO:HB2	4:C:481:HOH:O	1.74	0.85
1:B:53:PRO:O	1:B:56:GLU:HB2	1.78	0.83
1:A:22:ARG:HG3	1:A:22:ARG:NH1	1.90	0.83
1:A:248:ALA:HB2	4:A:426:HOH:O	1.77	0.82
1:B:13:ARG:HD2	4:B:483:HOH:O	1.82	0.80
1:A:248:ALA:HB1	1:A:251:ALA:HB3	1.62	0.80
1:C:27:GLU:HG3	4:C:527:HOH:O	1.81	0.80
1:A:152:GLU:HB2	4:A:451:HOH:O	1.82	0.79
1:B:243:HIS:HA	4:B:510:HOH:O	1.82	0.79
1:A:242:SER:HB2	1:A:245:GLU:H	1.47	0.79
1:B:119:ASN:C	1:B:119:ASN:HD22	1.91	0.79
1:A:125:ARG:HD2	1:A:127:ASP:OD2	1.83	0.79
1:B:188:TYR:OH	1:B:246:VAL:HG11	1.83	0.78
1:C:77:ILE:HD12	1:C:82:VAL:HG21	1.65	0.78
1:C:62:PRO:HB3	4:C:536:HOH:O	1.83	0.78
1:A:72:LEU:HD13	1:A:83:LEU:CD2	2.14	0.77
1:A:228:LEU:CD2	1:A:250:GLY:HA3	2.14	0.77
1:C:256:ARG:NH2	1:C:257:MET:CE	2.48	0.75
1:C:120:ALA:CB	3:C:302:AC2:H1'2	2.17	0.75
1:B:241:LEU:HA	4:B:478:HOH:O	1.86	0.75
1:A:230:THR:HB	1:A:246:VAL:HA	1.67	0.75
1:A:211:HIS:HE1	4:A:501:HOH:O	1.67	0.74
1:A:248:ALA:C	1:A:250:GLY:H	1.95	0.74
1:C:36:SER:HB2	2:C:301:PO4:P	2.28	0.74
1:B:257:MET:HG3	4:B:503:HOH:O	1.88	0.74
1:C:230:THR:OG1	3:C:302:AC2:H8	1.88	0.73
1:C:257:MET:O	1:C:261:LEU:HG	1.87	0.73
1:A:159:ALA:HA	1:A:217:ARG:HD2	1.70	0.73
1:A:230:THR:OG1	3:A:302:AC2:H8	1.89	0.73
1:B:7:ASP:HB2	1:B:8:PRO:HD2	1.70	0.73
1:A:172:ASP:OD1	1:A:174:GLN:CB	2.37	0.73
1:C:256:ARG:NH2	1:C:257:MET:HE3	2.03	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:C:302:AC2:N3	3:C:302:AC2:H2'1	2.04	0.72
1:C:256:ARG:HH21	1:C:257:MET:HE1	1.54	0.72
1:B:64:THR:HG22	1:B:65:ALA:H	1.53	0.72
1:C:169:ARG:NH1	1:C:175:LEU:O	2.23	0.71
1:C:61:VAL:CG2	1:C:69:ALA:HB2	2.15	0.71
1:C:230:THR:OG1	3:C:302:AC2:C8	2.38	0.71
1:A:231:ASN:OD1	1:A:246:VAL:HG22	1.91	0.71
1:A:217:ARG:HD3	4:A:446:HOH:O	1.89	0.71
1:C:53:PRO:CG	1:C:56:GLU:HG3	2.04	0.70
1:A:196:MET:HG3	1:B:200:LEU:HD22	1.71	0.70
1:A:233:ALA:O	1:A:236:ILE:HG12	1.91	0.70
1:B:196:MET:HG3	1:C:200:LEU:HD22	1.73	0.70
1:C:231:ASN:OD1	3:C:302:AC2:N7	2.24	0.70
1:C:61:VAL:HG21	1:C:69:ALA:CB	2.16	0.70
1:A:247:LEU:HG	4:A:504:HOH:O	1.91	0.69
1:B:52:LEU:HD11	1:B:57:LEU:HD11	1.75	0.69
1:C:13:ARG:O	1:C:17:GLN:HG3	1.93	0.68
1:A:22:ARG:HH11	1:A:22:ARG:CG	2.07	0.68
1:A:194:ILE:HD12	1:A:233:ALA:HB1	1.75	0.68
1:B:36:SER:HB2	2:B:301:PO4:O2	1.94	0.68
1:C:60:PHE:O	1:C:62:PRO:HD3	1.95	0.67
1:C:189:GLU:OE2	1:C:205:VAL:CG2	2.43	0.67
1:C:120:ALA:HB3	3:C:302:AC2:C1'	2.23	0.67
1:A:61:VAL:CB	1:A:62:PRO:HD2	2.25	0.67
1:B:64:THR:HG22	1:B:65:ALA:N	2.10	0.67
1:C:195:ARG:HA	1:C:198:GLN:HE21	1.60	0.66
1:A:242:SER:O	1:A:246:VAL:CG2	2.45	0.65
1:B:119:ASN:CA	2:B:301:PO4:O1	2.45	0.65
1:C:27:GLU:HG2	4:C:436:HOH:O	1.96	0.65
1:A:232:LEU:HD12	1:A:237:THR:HG23	1.80	0.64
1:B:152:GLU:HB2	4:B:428:HOH:O	1.98	0.63
1:A:19:ILE:HG12	1:A:72:LEU:HD21	1.80	0.63
1:B:159:ALA:HA	1:B:217:ARG:HD2	1.81	0.63
1:A:52:LEU:HD12	1:A:57:LEU:HD21	1.81	0.62
1:A:98:ARG:HD3	4:A:450:HOH:O	2.00	0.61
1:C:174:GLN:HG3	4:C:483:HOH:O	1.99	0.61
1:A:242:SER:OG	1:A:245:GLU:HB3	2.00	0.61
1:C:228:LEU:HD21	1:C:250:GLY:HA3	1.83	0.61
1:A:241:LEU:HD11	4:A:457:HOH:O	2.00	0.60
1:A:95:HIS:HD2	4:A:509:HOH:O	1.83	0.60
1:A:200:LEU:HD21	1:B:200:LEU:HD21	1.82	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:172:ASP:OD2	1:C:174:GLN:CG	2.42	0.60
1:C:69:ALA:HB3	4:C:413:HOH:O	2.02	0.59
1:C:69:ALA:HA	4:C:530:HOH:O	2.02	0.59
1:C:127:ASP:HB2	4:C:492:HOH:O	2.00	0.59
1:C:135:LEU:O	1:C:177:GLU:HA	2.02	0.59
1:A:124:LEU:HD22	1:A:233:ALA:HB2	1.85	0.59
1:B:72:LEU:C	1:B:72:LEU:HD23	2.28	0.59
1:C:25:ILE:CG2	1:C:81:ARG:HG2	2.32	0.58
1:A:61:VAL:HB	1:A:62:PRO:HD2	1.85	0.58
1:A:119:ASN:C	1:A:119:ASN:HD22	2.11	0.58
1:A:242:SER:O	1:A:246:VAL:HG23	2.04	0.58
1:C:60:PHE:O	1:C:62:PRO:CD	2.52	0.58
1:A:248:ALA:CB	1:A:251:ALA:CB	2.81	0.58
1:C:90:HIS:ND1	1:C:93:GLU:OE2	2.27	0.57
1:B:152:GLU:CB	4:B:428:HOH:O	2.52	0.57
1:A:65:ALA:HB3	4:A:505:HOH:O	2.04	0.57
1:A:7:ASP:HB3	1:A:10:GLU:HB2	1.87	0.57
1:B:51:VAL:CG1	1:B:71:GLU:HG3	2.34	0.57
1:A:244:ALA:HA	1:A:247:LEU:H	1.68	0.57
1:C:69:ALA:HA	4:C:461:HOH:O	2.04	0.57
1:C:207:MET:HG3	3:C:302:AC2:HN22	1.70	0.57
1:A:169:ARG:NH2	1:A:177:GLU:OE2	2.31	0.56
1:C:228:LEU:CD1	1:C:253:SER:HB2	2.30	0.56
1:A:194:ILE:CD1	1:A:233:ALA:HB1	2.35	0.56
1:B:10:GLU:O	1:B:14:ARG:HG3	2.04	0.56
1:A:108:ARG:HH12	1:A:113:GLN:HB3	1.70	0.56
1:B:104:VAL:HG21	1:B:212:GLU:HB3	1.87	0.56
1:C:67:GLY:O	1:C:68:HIS:HB2	2.06	0.55
1:C:260:LEU:HD23	1:C:261:LEU:N	2.21	0.55
3:C:302:AC2:N3	3:C:302:AC2:C2'	2.69	0.55
1:A:72:LEU:HD13	1:A:83:LEU:HD22	1.88	0.55
1:B:39:LEU:O	1:B:42:VAL:HG23	2.07	0.55
1:C:127:ASP:CB	4:C:492:HOH:O	2.55	0.55
1:C:228:LEU:HD11	1:C:253:SER:CB	2.30	0.55
1:A:248:ALA:CB	1:A:251:ALA:HB3	2.33	0.55
1:A:243:HIS:HB2	1:B:153:PHE:HB2	1.89	0.55
1:A:22:ARG:NH2	1:A:56:GLU:OE1	2.40	0.55
1:B:119:ASN:C	1:B:119:ASN:ND2	2.57	0.55
1:C:160:TYR:O	1:C:165:ARG:NH1	2.36	0.55
1:B:36:SER:CB	2:B:301:PO4:O2	2.55	0.54
1:C:120:ALA:O	3:C:302:AC2:C3'	2.54	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:189:GLU:OE1	1:C:194:ILE:HD11	2.08	0.54
1:A:247:LEU:O	1:A:248:ALA:HB2	2.06	0.54
1:B:39:LEU:O	1:B:42:VAL:CG2	2.56	0.54
1:A:19:ILE:O	1:A:23:THR:HG23	2.06	0.54
1:B:89:ILE:HD11	1:B:99:TYR:C	2.32	0.54
1:B:230:THR:OG1	3:B:302:AC2:H8	2.07	0.54
1:C:11:LEU:HD12	1:C:11:LEU:C	2.32	0.54
1:A:243:HIS:HB3	4:A:507:HOH:O	2.08	0.54
1:B:55:ALA:HA	1:B:61:VAL:CG2	2.37	0.54
1:C:61:VAL:CG2	4:C:538:HOH:O	2.56	0.54
1:A:135:LEU:HD22	1:A:224:LEU:HD11	1.90	0.54
1:B:120:ALA:HB3	3:B:302:AC2:H1'1	1.90	0.54
1:B:152:GLU:HG3	1:B:154:VAL:HG23	1.90	0.54
1:C:260:LEU:HD23	1:C:260:LEU:C	2.33	0.54
1:A:31:ALA:HB2	1:A:107:ALA:HB1	1.90	0.53
1:A:248:ALA:HB1	1:A:251:ALA:HB2	1.86	0.53
1:C:10:GLU:OE2	1:C:14:ARG:NH1	2.40	0.53
1:A:73:LEU:HB2	1:A:84:VAL:HB	1.90	0.53
1:B:57:LEU:CD1	1:B:72:LEU:HD13	2.39	0.53
1:B:7:ASP:CB	1:B:8:PRO:HD2	2.38	0.53
1:C:55:ALA:HB2	4:C:413:HOH:O	2.07	0.53
1:C:159:ALA:HA	1:C:217:ARG:CD	2.34	0.53
1:C:234:ALA:HA	4:C:457:HOH:O	2.08	0.53
1:A:28:HIS:CD2	1:A:81:ARG:HG3	2.44	0.53
1:C:120:ALA:O	3:C:302:AC2:H3'2	2.09	0.53
1:A:257:MET:CG	4:A:459:HOH:O	2.29	0.52
1:B:148:LEU:HD13	1:B:152:GLU:HG2	1.90	0.52
1:C:256:ARG:NH2	1:C:257:MET:HE1	2.15	0.52
1:A:254:ALA:HB2	4:A:471:HOH:O	2.09	0.52
1:A:124:LEU:HD22	1:A:233:ALA:CB	2.39	0.52
1:C:89:ILE:HD11	1:C:100:VAL:HA	1.92	0.52
1:C:189:GLU:OE2	1:C:205:VAL:CG1	2.58	0.52
1:C:114:ILE:HG21	1:C:268:PHE:CE2	2.44	0.52
1:A:19:ILE:HD13	1:A:83:LEU:HD11	1.91	0.52
1:B:133:PRO:HA	1:B:227:SER:O	2.10	0.52
1:A:228:LEU:HD21	1:A:250:GLY:CA	2.32	0.52
1:A:248:ALA:C	1:A:250:GLY:N	2.63	0.51
1:A:248:ALA:HB1	1:A:251:ALA:H	1.75	0.51
1:B:159:ALA:HA	1:B:217:ARG:CD	2.39	0.51
1:C:29:ASP:HA	1:C:111:GLY:O	2.10	0.51
1:A:244:ALA:HA	1:A:247:LEU:N	2.26	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:108:ARG:NH1	1:A:113:GLN:HB3	2.25	0.51
1:B:33:VAL:HG11	1:B:88:ARG:HH21	1.76	0.51
1:C:89:ILE:HD13	4:C:443:HOH:O	2.09	0.51
1:C:125:ARG:NH2	1:C:203:ASP:CG	2.69	0.51
1:A:13:ARG:NH2	4:A:409:HOH:O	2.43	0.51
1:B:33:VAL:HG11	1:B:88:ARG:NH2	2.25	0.51
1:C:61:VAL:HG22	4:C:538:HOH:O	2.10	0.51
1:A:241:LEU:H	1:B:155:ASP:CG	2.18	0.51
1:C:256:ARG:HH21	1:C:257:MET:CE	2.15	0.51
1:A:211:HIS:CE1	4:A:501:HOH:O	2.53	0.51
1:C:159:ALA:CA	1:C:217:ARG:HD2	2.35	0.51
1:C:263:ASP:O	1:C:265:ILE:N	2.33	0.51
3:A:302:AC2:H3'1	1:B:153:PHE:CE1	2.46	0.50
1:A:70:GLY:HA3	1:A:86:ALA:O	2.11	0.50
1:C:128:LEU:O	1:C:232:LEU:HD21	2.12	0.50
1:A:171:SER:OG	1:A:263:ASP:HB3	2.12	0.50
1:B:247:LEU:HD21	4:B:513:HOH:O	2.12	0.50
1:C:189:GLU:OE2	1:C:205:VAL:HG22	2.11	0.50
1:C:108:ARG:HG2	1:C:219:ALA:HB1	1.94	0.50
1:C:206:GLY:HA3	3:C:302:AC2:O3'	2.12	0.50
1:A:256:ARG:HD3	1:A:257:MET:HE2	1.94	0.49
1:C:72:LEU:C	1:C:72:LEU:HD23	2.38	0.49
1:A:27:GLU:HG3	4:A:489:HOH:O	2.12	0.49
1:B:22:ARG:NH1	1:B:52:LEU:HB3	2.27	0.49
1:B:135:LEU:HD22	1:B:224:LEU:HD11	1.94	0.49
1:C:70:GLY:HA3	1:C:86:ALA:O	2.13	0.49
1:A:27:GLU:HB2	4:A:489:HOH:O	2.13	0.49
1:A:13:ARG:HH21	1:A:13:ARG:HA	1.76	0.48
1:A:130:VAL:HG22	1:A:231:ASN:HA	1.94	0.48
1:A:214:ILE:HG22	1:A:214:ILE:O	2.13	0.48
1:A:230:THR:CB	1:A:246:VAL:HA	2.42	0.48
1:C:211:HIS:HE1	4:C:524:HOH:O	1.96	0.48
1:C:62:PRO:CB	1:C:95:HIS:CD2	2.96	0.48
1:A:72:LEU:CD1	1:A:83:LEU:CD2	2.89	0.48
1:B:246:VAL:HB	4:B:510:HOH:O	2.13	0.48
1:B:174:GLN:HA	1:B:174:GLN:NE2	2.29	0.47
1:C:257:MET:SD	1:C:260:LEU:HD13	2.54	0.47
1:B:64:THR:CG2	1:B:65:ALA:N	2.77	0.47
1:B:129:GLN:O	1:B:132:GLN:HB3	2.15	0.47
1:A:147:PRO:HG3	1:A:211:HIS:O	2.14	0.47
1:A:245:GLU:O	1:A:249:ALA:HB2	2.15	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:230:THR:HG1	3:A:302:AC2:H8	1.80	0.47
1:A:243:HIS:O	1:A:247:LEU:HB2	2.15	0.47
1:B:95:HIS:CD2	4:B:499:HOH:O	2.43	0.47
1:A:7:ASP:N	4:A:414:HOH:O	2.48	0.47
1:A:44:ALA:HB3	1:A:258:GLY:HA3	1.97	0.47
1:A:231:ASN:OD1	1:A:246:VAL:CG2	2.62	0.47
1:B:57:LEU:HD11	1:B:72:LEU:HD13	1.96	0.47
1:C:28:HIS:HA	1:C:81:ARG:HB3	1.97	0.47
1:A:72:LEU:HA	1:A:84:VAL:O	2.14	0.47
1:A:256:ARG:HD3	1:A:257:MET:CE	2.45	0.47
1:A:120:ALA:HB3	3:A:302:AC2:H1'1	1.96	0.47
1:A:245:GLU:HG2	1:A:249:ALA:HB2	1.96	0.47
1:A:10:GLU:HG2	4:A:495:HOH:O	2.14	0.47
1:A:247:LEU:HA	4:A:434:HOH:O	2.15	0.47
1:C:34:LEU:HD12	1:C:42:VAL:HG22	1.97	0.47
1:C:189:GLU:OE2	1:C:205:VAL:HG21	2.15	0.46
1:B:96:ASP:HB3	1:B:99:TYR:CD1	2.51	0.46
1:C:188:TYR:HE2	3:C:302:AC2:C5	2.27	0.46
1:C:210:VAL:O	1:C:214:ILE:HG13	2.16	0.46
1:B:195:ARG:HA	1:B:198:GLN:HE21	1.80	0.46
1:A:27:GLU:CG	4:A:489:HOH:O	2.64	0.46
1:A:124:LEU:CD2	1:A:233:ALA:HB2	2.46	0.46
1:A:241:LEU:N	1:B:155:ASP:OD1	2.48	0.46
1:A:135:LEU:O	1:A:177:GLU:HA	2.16	0.45
1:B:130:VAL:HG22	1:B:231:ASN:HA	1.98	0.45
1:C:7:ASP:N	4:C:412:HOH:O	2.48	0.45
1:A:119:ASN:C	1:A:119:ASN:ND2	2.74	0.45
3:B:302:AC2:H3'1	4:B:403:HOH:O	2.15	0.45
1:B:245:GLU:O	1:B:249:ALA:HB2	2.17	0.45
1:C:36:SER:HB2	2:C:301:PO4:O1	2.15	0.45
1:A:11:LEU:CD2	1:A:98:ARG:NH2	2.80	0.45
1:B:93:GLU:HB3	1:B:95:HIS:CE1	2.52	0.45
1:C:161:SER:HB2	1:C:222:GLU:HG2	1.99	0.45
1:A:73:LEU:HD12	1:A:73:LEU:N	2.32	0.45
1:B:15:ALA:O	1:B:19:ILE:HG13	2.17	0.45
1:A:246:VAL:O	1:A:248:ALA:N	2.49	0.45
1:A:169:ARG:HH12	1:A:177:GLU:HB3	1.82	0.44
1:A:188:TYR:O	1:B:156:LEU:HD12	2.16	0.44
1:B:22:ARG:HH12	1:B:52:LEU:HB3	1.82	0.44
1:B:211:HIS:HE1	4:B:505:HOH:O	1.99	0.44
1:B:242:SER:O	1:B:246:VAL:HG23	2.16	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:97:LEU:O	1:A:101:VAL:HG22	2.18	0.44
1:A:207:MET:SD	3:A:302:AC2:H2'2	2.58	0.44
1:B:57:LEU:HB2	1:B:60:PHE:CD1	2.52	0.44
1:C:256:ARG:CZ	1:C:257:MET:HE3	2.46	0.44
1:C:61:VAL:HG21	4:C:530:HOH:O	2.18	0.44
1:B:73:LEU:HB2	1:B:84:VAL:HB	2.00	0.44
1:C:125:ARG:HD3	1:C:127:ASP:CG	2.40	0.44
3:B:302:AC2:C3'	4:B:402:HOH:O	2.43	0.44
1:C:31:ALA:HA	1:C:83:LEU:O	2.17	0.44
1:C:207:MET:H	3:C:302:AC2:C3'	2.31	0.44
1:C:260:LEU:O	1:C:261:LEU:C	2.61	0.44
1:A:172:ASP:N	4:A:418:HOH:O	2.50	0.44
1:C:55:ALA:CB	4:C:413:HOH:O	2.65	0.44
1:A:53:PRO:HG2	1:A:56:GLU:CD	2.43	0.44
1:C:25:ILE:HD13	1:C:25:ILE:HA	1.73	0.44
1:A:166:GLU:HG2	4:A:440:HOH:O	2.16	0.43
1:A:190:THR:HB	1:B:138:ASP:OD1	2.17	0.43
1:C:212:GLU:CG	4:C:401:HOH:O	2.24	0.43
1:A:83:LEU:HD23	1:A:83:LEU:HA	1.84	0.43
1:A:124:LEU:HD21	1:A:205:VAL:HG12	1.99	0.43
1:A:138:ASP:OD1	1:C:190:THR:HB	2.19	0.43
1:A:242:SER:O	1:A:246:VAL:HB	2.18	0.43
1:B:120:ALA:O	3:B:302:AC2:H1'1	2.19	0.43
1:B:190:THR:HB	1:C:138:ASP:OD1	2.18	0.43
1:B:118:THR:HA	1:B:226:VAL:O	2.19	0.43
1:C:52:LEU:HD12	1:C:52:LEU:C	2.44	0.43
3:C:302:AC2:H2'1	3:C:302:AC2:C4	2.47	0.43
1:A:245:GLU:O	1:A:249:ALA:CB	2.67	0.42
1:C:34:LEU:HD13	1:C:41:ALA:HB3	2.00	0.42
1:A:213:THR:O	1:A:214:ILE:C	2.62	0.42
1:B:34:LEU:HD23	1:B:34:LEU:HA	1.88	0.42
1:C:28:HIS:O	1:C:111:GLY:C	2.62	0.42
1:C:45:LEU:HD23	1:C:45:LEU:HA	1.88	0.42
1:A:76:PRO:HA	1:A:80:HIS:O	2.18	0.42
1:A:246:VAL:C	1:A:248:ALA:N	2.76	0.42
1:A:246:VAL:HG12	4:A:434:HOH:O	2.17	0.42
1:B:70:GLY:HA3	1:B:86:ALA:O	2.19	0.42
1:A:248:ALA:CB	1:A:251:ALA:HB2	2.47	0.42
1:C:62:PRO:HB3	1:C:95:HIS:CD2	2.54	0.42
1:A:124:LEU:N	1:A:124:LEU:HD23	2.35	0.42
1:B:248:ALA:O	1:B:250:GLY:N	2.52	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:61:VAL:HA	1:B:62:PRO:HD2	1.82	0.41
1:B:193:GLU:O	1:B:197:LEU:HG	2.19	0.41
1:C:73:LEU:HD12	1:C:73:LEU:N	2.35	0.41
1:A:31:ALA:HA	1:A:83:LEU:O	2.19	0.41
1:A:172:ASP:CB	4:A:418:HOH:O	2.36	0.41
1:B:174:GLN:HA	1:B:174:GLN:HE21	1.84	0.41
1:B:187:HIS:CE1	1:C:146:SER:HB2	2.56	0.41
1:C:188:TYR:CE2	3:C:302:AC2:C5	3.03	0.41
1:C:257:MET:HE1	1:C:260:LEU:HD13	2.02	0.41
1:B:152:GLU:HG3	1:B:154:VAL:CG2	2.50	0.41
3:A:302:AC2:H3'2	1:B:153:PHE:CD1	2.56	0.41
1:B:25:ILE:HB	1:B:28:HIS:CE1	2.55	0.41
1:C:207:MET:HE3	3:C:302:AC2:C2	2.51	0.41
1:A:72:LEU:CD1	1:A:83:LEU:HD21	2.51	0.41
1:A:81:ARG:HA	1:A:81:ARG:HD3	1.69	0.41
1:A:102:HIS:O	1:A:103:PRO:C	2.64	0.41
1:A:120:ALA:O	3:A:302:AC2:H1'2	2.21	0.41
1:C:92:TYR:CG	1:C:186:PRO:HB3	2.55	0.41
1:A:102:HIS:HB3	1:A:103:PRO:HD3	2.02	0.41
1:A:18:VAL:HG11	1:A:57:LEU:HD22	2.04	0.40
1:C:124:LEU:HD22	1:C:204:LEU:C	2.46	0.40
1:B:108:ARG:HD2	1:B:112:ALA:O	2.21	0.40
1:A:20:ALA:HA	1:A:25:ILE:O	2.22	0.40
1:B:96:ASP:HB3	1:B:99:TYR:HD1	1.87	0.40
1:A:104:VAL:HG21	1:A:212:GLU:HB3	2.04	0.40
1:A:108:ARG:HG2	1:A:219:ALA:HB1	2.02	0.40
1:A:242:SER:CB	1:A:245:GLU:HB3	2.51	0.40
1:B:30:VAL:HB	1:B:82:VAL:HG22	2.04	0.40
1:B:194:ILE:HD13	1:B:194:ILE:HA	1.86	0.40
1:C:125:ARG:NE	1:C:203:ASP:OD1	2.55	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	260/268 (97%)	238 (92%)	14 (5%)	8 (3%)	3	1
1	B	260/268 (97%)	249 (96%)	7 (3%)	4 (2%)	8	4
1	C	260/268 (97%)	241 (93%)	10 (4%)	9 (4%)	3	1
All	All	780/804 (97%)	728 (93%)	31 (4%)	21 (3%)	4	1

All (21) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	60	PHE
1	A	62	PRO
1	A	248	ALA
1	B	64	THR
1	C	62	PRO
1	C	68	HIS
1	C	255	THR
1	C	256	ARG
1	A	63	PRO
1	A	247	LEU
1	B	151	GLY
1	B	249	ALA
1	C	60	PHE
1	C	64	THR
1	C	126	ALA
1	A	64	THR
1	A	240	PRO
1	B	126	ALA
1	C	63	PRO
1	A	250	GLY
1	C	61	VAL

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	188/193 (97%)	171 (91%)	17 (9%)	9	6
1	B	188/193 (97%)	176 (94%)	12 (6%)	16	14
1	C	188/193 (97%)	170 (90%)	18 (10%)	8	5
All	All	564/579 (97%)	517 (92%)	47 (8%)	10	8

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	13	ARG
1	A	22	ARG
1	A	39	LEU
1	A	47	SER
1	A	52	LEU
1	A	57	LEU
1	A	68	HIS
1	A	72	LEU
1	A	98	ARG
1	A	119	ASN
1	A	124	LEU
1	A	139	HIS
1	A	174	GLN
1	A	226	VAL
1	A	242	SER
1	A	243	HIS
1	A	247	LEU
1	B	42	VAL
1	B	52	LEU
1	B	56	GLU
1	B	61	VAL
1	B	71	GLU
1	B	88	ARG
1	B	119	ASN
1	B	127	ASP
1	B	152	GLU
1	B	174	GLN
1	B	239	GLU
1	B	255	THR
1	C	10	GLU
1	C	11	LEU
1	C	22	ARG
1	C	27	GLU
1	C	61	VAL

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Mol	Chain	Res	Type
1	C	81	ARG
1	C	83	LEU
1	C	89	ILE
1	C	119	ASN
1	C	124	LEU
1	C	125	ARG
1	C	127	ASP
1	C	149	VAL
1	C	226	VAL
1	C	237	THR
1	C	253	SER
1	C	255	THR
1	C	261	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (13) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	95	HIS
1	A	113	GLN
1	A	119	ASN
1	A	243	HIS
1	B	95	HIS
1	B	119	ASN
1	B	174	GLN
1	B	198	GLN
1	B	211	HIS
1	C	68	HIS
1	C	119	ASN
1	C	198	GLN
1	C	211	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [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	C	301	-	4,4,4	2.26	2 (50%)	6,6,6	1.36	1 (16%)
2	PO4	A	301	-	4,4,4	1.37	1 (25%)	6,6,6	0.68	0
3	AC2	B	302	-	17,17,17	1.44	1 (5%)	23,23,23	2.63	10 (43%)
3	AC2	C	302	-	17,17,17	1.72	5 (29%)	23,23,23	2.89	9 (39%)
3	AC2	A	302	-	17,17,17	1.27	2 (11%)	23,23,23	2.92	12 (52%)
2	PO4	B	301	-	4,4,4	0.60	0	6,6,6	1.22	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	AC2	B	302	-	-	1/5/5/5	0/2/2/2
3	AC2	C	302	-	-	3/5/5/5	0/2/2/2
3	AC2	A	302	-	-	1/5/5/5	0/2/2/2

All (11) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	B	302	AC2	C4-N9	-4.02	1.31	1.37
2	C	301	PO4	P-O1	3.70	1.59	1.50
3	C	302	AC2	C5-N7	-3.40	1.32	1.39
3	C	302	AC2	C6-N1	-2.74	1.33	1.38
3	C	302	AC2	O1'-C1'	2.51	1.46	1.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	302	AC2	O6-C6	2.32	1.28	1.23
3	A	302	AC2	C4-N9	-2.30	1.34	1.37
3	C	302	AC2	O6-C6	2.26	1.27	1.23
2	A	301	PO4	P-O1	2.14	1.55	1.50
2	C	301	PO4	P-O3	-2.05	1.48	1.54
3	C	302	AC2	C1'-N9	2.02	1.50	1.47

All (32) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	302	AC2	O1'-C1'-N9	-6.68	98.20	111.58
3	C	302	AC2	C5-C4-N3	-6.55	117.96	128.39
3	B	302	AC2	O1'-C1'-N9	-5.79	99.97	111.58
3	B	302	AC2	C5-C4-N3	-4.90	120.58	128.39
3	B	302	AC2	C2-N3-C4	4.88	120.70	112.30
3	C	302	AC2	C5-C4-N9	4.88	111.28	105.94
3	C	302	AC2	C2-N3-C4	4.71	120.41	112.30
3	C	302	AC2	C4-C5-N7	-4.65	103.30	110.67
3	A	302	AC2	N9-C8-N7	-4.63	108.69	113.52
3	B	302	AC2	N9-C8-N7	-4.42	108.92	113.52
3	A	302	AC2	C2-N3-C4	4.33	119.76	112.30
3	C	302	AC2	N9-C8-N7	-4.14	109.20	113.52
3	A	302	AC2	C5-C4-N3	-4.12	121.83	128.39
3	C	302	AC2	C8-N7-C5	3.96	111.31	104.26
3	C	302	AC2	N9-C4-N3	3.61	130.75	125.46
3	A	302	AC2	C1'-N9-C4	-3.58	120.36	126.73
3	B	302	AC2	N9-C4-N3	3.54	130.65	125.46
3	A	302	AC2	N2-C2-N1	3.48	124.10	116.76
3	A	302	AC2	N9-C4-N3	3.34	130.35	125.46
3	A	302	AC2	O6-C6-C5	-3.31	117.79	126.53
3	C	302	AC2	O1'-C1'-N9	3.30	118.19	111.58
3	C	302	AC2	C6-C5-N7	3.01	135.77	130.29
2	C	301	PO4	O2-P-O1	-2.66	101.56	110.95
3	B	302	AC2	C5-C4-N9	2.57	108.75	105.94
3	A	302	AC2	C8-N9-C4	2.48	108.58	105.89
3	A	302	AC2	O6-C6-N1	2.42	124.66	120.11
3	B	302	AC2	C6-C5-N7	2.40	134.65	130.29
3	B	302	AC2	C8-N9-C4	2.39	108.48	105.89
3	B	302	AC2	C4-C5-N7	-2.35	106.94	110.67
3	B	302	AC2	N2-C2-N1	2.33	121.67	116.76
3	A	302	AC2	C4-C5-N7	-2.17	107.23	110.67
3	A	302	AC2	C1'-N9-C8	2.10	130.96	127.39

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
3	C	302	AC2	O1'-C1'-N9-C8
3	C	302	AC2	O1'-C1'-N9-C4
3	A	302	AC2	N9-C1'-O1'-C2'
3	B	302	AC2	C3'-C2'-O1'-C1'
3	C	302	AC2	O1'-C2'-C3'-O3'

There are no ring outliers.

5 monomers are involved in 36 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	301	PO4	2	0
3	B	302	AC2	6	0
3	C	302	AC2	17	0
3	A	302	AC2	7	0
2	B	301	PO4	4	0

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	A	262/268 (97%)	0.17	24 (9%) 14 15	9, 19, 69, 86	0
1	B	262/268 (97%)	0.01	16 (6%) 27 29	10, 19, 58, 70	0
1	C	262/268 (97%)	0.04	15 (5%) 29 31	2, 18, 38, 73	0
All	All	786/804 (97%)	0.07	55 (6%) 22 24	2, 18, 60, 86	0

All (55) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	62	PRO	7.2
1	A	61	VAL	6.8
1	A	65	ALA	6.4
1	C	65	ALA	6.2
1	C	61	VAL	6.1
1	C	69	ALA	5.7
1	C	261	LEU	5.7
1	A	246	VAL	5.6
1	C	64	THR	5.3
1	A	252	ALA	5.3
1	B	66	ALA	5.1
1	A	241	LEU	5.1
1	A	249	ALA	4.9
1	C	253	SER	4.8
1	A	247	LEU	4.8
1	C	255	THR	4.7
1	A	67	GLY	4.7
1	C	126	ALA	4.7
1	A	63	PRO	4.7
1	C	63	PRO	4.3
1	C	66	ALA	4.3
1	A	64	THR	4.2
1	C	68	HIS	4.1

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Mol	Chain	Res	Type	RSRZ
1	B	242	SER	4.0
1	A	243	HIS	3.9
1	C	67	GLY	3.8
1	A	251	ALA	3.8
1	B	65	ALA	3.8
1	A	68	HIS	3.6
1	B	241	LEU	3.5
1	B	247	LEU	3.5
1	C	62	PRO	3.5
1	B	64	THR	3.4
1	B	244	ALA	3.4
1	B	243	HIS	3.3
1	A	240	PRO	3.2
1	A	250	GLY	3.1
1	A	244	ALA	3.1
1	A	69	ALA	3.1
1	A	248	ALA	3.0
1	A	66	ALA	2.9
1	C	127	ASP	2.8
1	A	242	SER	2.8
1	B	248	ALA	2.8
1	B	237	THR	2.7
1	B	246	VAL	2.7
1	B	249	ALA	2.6
1	A	238	GLY	2.6
1	B	126	ALA	2.5
1	B	240	PRO	2.5
1	B	238	GLY	2.3
1	B	251	ALA	2.2
1	A	13	ARG	2.1
1	A	245	GLU	2.1
1	C	174	GLN	2.0

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

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

6.3 Carbohydrates [i](#)

There are no oligosaccharides in this entry.

6.4 Ligands [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(Å ²)	Q<0.9
2	PO4	C	301	5/5	0.52	0.35	26,30,34,36	0
2	PO4	A	301	5/5	0.69	0.21	65,65,67,67	0
3	AC2	C	302	16/16	0.74	0.16	31,35,40,41	0
2	PO4	B	301	5/5	0.84	0.29	41,41,44,48	0
3	AC2	B	302	16/16	0.87	0.10	30,32,47,47	0
3	AC2	A	302	16/16	0.87	0.10	26,28,39,42	0

6.5 Other polymers [i](#)

There are no such residues in this entry.