



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 07:22 AM UTC

PDB ID : 1TDJ / pdb_00001tdj
Title : THREONINE DEAMINASE (BIOSYNTHETIC) FROM E. COLI
Authors : Gallagher, D.T.; Gilliland, G.L.; Xiao, G.; Eisenstein, E.
Deposited on : 1998-03-27
Resolution : 2.80 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

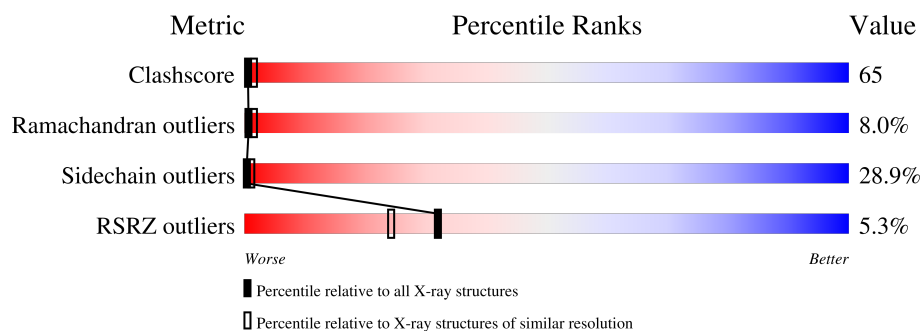
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.80 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))
Clashscore	190562	4276 (2.80-2.80)
Ramachandran outliers	187476	4196 (2.80-2.80)
Sidechain outliers	187428	4198 (2.80-2.80)
RSRZ outliers	180081	3869 (2.80-2.80)

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	514	

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	PLP	A	962	-	X	-	-

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 3848 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 BIOSYNTHETIC THREONINE DEAMINASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	494	Total	C	N	O	S	0	0	0
			3800	2412	669	701	18			

- Molecule 2 is PYRIDOXAL-5'-PHOSPHATE (CCD ID: PLP) (formula: $C_8H_{10}NO_6P$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	P	0	0
			15	8	1	5	1		

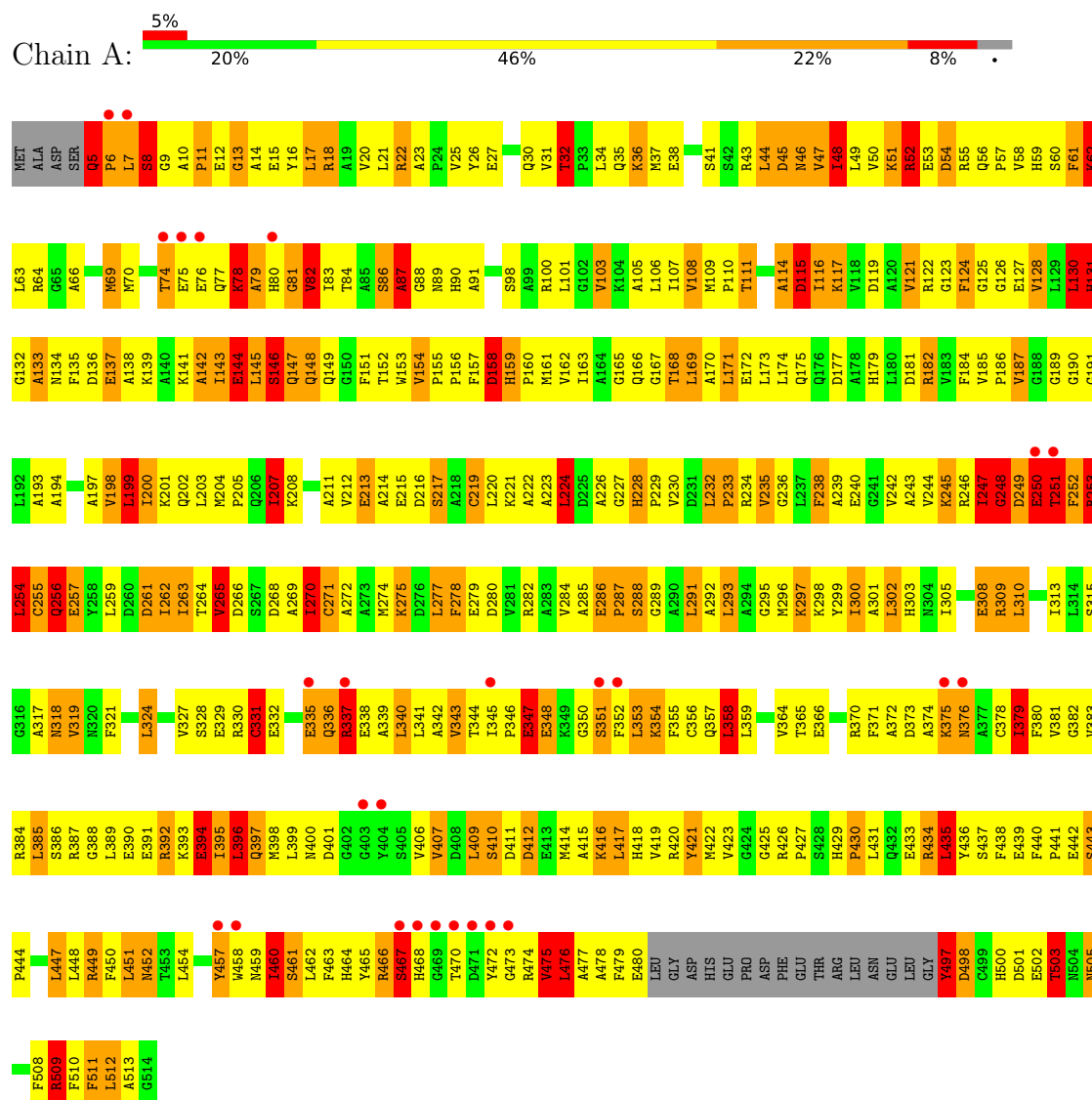
- Molecule 3 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	33	Total	O	0	0
			33	33		

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: BIOSYNTHETIC THREONINE DEAMINASE



4 Data and refinement statistics

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α , β , γ	85.10Å 90.80Å 162.80Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	16.00 – 2.80 16.00 – 2.80	Depositor EDS
% Data completeness (in resolution range)	86.0 (16.00-2.80) 84.9 (16.00-2.80)	Depositor EDS
R_{merge}	0.06	Depositor
R_{sym}	0.09	Depositor
$\langle I/\sigma(I) \rangle$ ¹	0.71 (at 2.69Å)	Xtriage
Refinement program	TNT 5E	Depositor
R, R_{free}	0.200 , 0.340 0.192 , (Not available)	Depositor DCC
R_{free} test set	No test flags present.	wwPDB-VP
Wilson B-factor (Å ²)	36.7	Xtriage
Anisotropy	0.341	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.25 , 105.1	EDS
L-test for twinning ²	$\langle L \rangle = 0.46$, $\langle L^2 \rangle = 0.29$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.92	EDS
Total number of atoms	3848	wwPDB-VP
Average B, all atoms (Å ²)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.50% 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: PLP

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	1.68	35/3875 (0.9%)	2.02	109/5238 (2.1%)

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	2	1

All (35) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	249	ASP	CA-C	-9.02	1.40	1.52
1	A	512	LEU	CA-C	-7.66	1.45	1.52
1	A	278	PHE	C-N	-7.49	1.24	1.33
1	A	435	LEU	CA-C	-6.37	1.44	1.52
1	A	251	THR	N-CA	-6.33	1.38	1.46
1	A	279	GLU	N-CA	-6.29	1.38	1.46
1	A	45	ASP	CG-OD2	6.20	1.37	1.25
1	A	144	GLU	C-O	-6.19	1.16	1.24
1	A	270	ILE	N-CA	-6.07	1.39	1.46
1	A	285	ALA	C-N	-5.92	1.25	1.33
1	A	48	ILE	CA-C	-5.92	1.44	1.52
1	A	18	ARG	NE-CZ	5.82	1.39	1.33
1	A	131	HIS	N-CA	-5.82	1.39	1.46
1	A	248	GLY	C-N	-5.75	1.25	1.33
1	A	414	MET	CA-C	-5.70	1.45	1.52
1	A	57	PRO	C-N	-5.66	1.25	1.33
1	A	121	VAL	CA-CB	-5.66	1.48	1.54
1	A	142	ALA	C-N	-5.64	1.27	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	154	VAL	C-N	-5.63	1.26	1.33
1	A	128	VAL	CA-C	-5.60	1.45	1.52
1	A	509	ARG	CA-C	-5.60	1.45	1.52
1	A	250	GLU	N-CA	-5.58	1.39	1.46
1	A	410	SER	CA-C	-5.56	1.45	1.52
1	A	261	ASP	CA-C	-5.55	1.46	1.52
1	A	251	THR	C-N	-5.54	1.25	1.33
1	A	253	ARG	NE-CZ	5.52	1.39	1.33
1	A	240	GLU	CA-C	-5.51	1.46	1.52
1	A	383	VAL	CA-CB	-5.51	1.47	1.54
1	A	32	THR	C-N	-5.41	1.26	1.33
1	A	411	ASP	CG-OD1	5.33	1.35	1.25
1	A	54	ASP	CG-OD1	-5.21	1.15	1.25
1	A	249	ASP	N-CA	-5.18	1.39	1.46
1	A	130	LEU	C-N	-5.12	1.26	1.33
1	A	373	ASP	CA-C	-5.05	1.46	1.52
1	A	449	ARG	C-N	-5.03	1.27	1.33

All (109) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	79	ALA	N-CA-C	-13.25	99.51	114.62
1	A	372	ALA	CA-C-N	-11.84	107.45	122.84
1	A	372	ALA	C-N-CA	-11.84	107.45	122.84
1	A	460	ILE	N-CA-CB	-10.40	98.53	110.49
1	A	44	LEU	CA-C-N	-10.13	109.22	123.20
1	A	44	LEU	C-N-CA	-10.13	109.22	123.20
1	A	80	HIS	N-CA-C	-10.13	100.24	111.28
1	A	130	LEU	CA-C-N	-9.96	108.53	123.07
1	A	130	LEU	C-N-CA	-9.96	108.53	123.07
1	A	280	ASP	N-CA-CB	9.58	124.15	110.07
1	A	351	SER	N-CA-C	9.29	122.26	108.14
1	A	252	PHE	CA-CB-CG	-8.55	105.25	113.80
1	A	254	LEU	N-CA-CB	8.36	124.61	110.49
1	A	308	GLU	N-CA-C	8.08	120.95	110.53
1	A	251	THR	CB-CA-C	7.98	128.06	110.18
1	A	52	ARG	CD-NE-CZ	-7.78	113.50	124.40
1	A	416	LYS	N-CA-CB	7.74	122.14	110.22
1	A	467	SER	N-CA-C	7.73	127.27	110.80
1	A	313	ILE	N-CA-C	7.58	118.78	108.17
1	A	364	VAL	N-CA-C	7.20	118.96	107.73
1	A	373	ASP	CA-C-N	7.15	134.34	121.89

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	373	ASP	C-N-CA	7.15	134.34	121.89
1	A	255	CYS	N-CA-C	7.12	119.89	111.71
1	A	335	GLU	N-CA-C	7.02	122.27	112.93
1	A	52	ARG	CA-CB-CG	-6.98	100.14	114.10
1	A	466	ARG	CA-C-O	-6.95	113.20	120.70
1	A	249	ASP	O-C-N	6.88	131.73	122.59
1	A	475	VAL	N-CA-C	6.87	119.33	108.89
1	A	91	ALA	N-CA-C	-6.79	104.26	112.54
1	A	505	ASN	CA-C-O	6.74	125.37	119.71
1	A	347	GLU	N-CA-CB	6.67	121.77	110.49
1	A	213	GLU	N-CA-C	6.65	120.35	109.85
1	A	254	LEU	CB-CA-C	6.60	123.55	110.42
1	A	187	VAL	N-CA-C	6.60	118.35	106.61
1	A	358	LEU	N-CA-CB	6.52	119.92	110.47
1	A	460	ILE	CA-CB-CG1	6.45	121.36	110.40
1	A	44	LEU	N-CA-C	-6.41	102.24	110.19
1	A	464	HIS	CA-CB-CG	-6.36	107.44	113.80
1	A	373	ASP	N-CA-CB	6.23	120.65	110.37
1	A	31	VAL	N-CA-C	-6.19	101.59	109.58
1	A	318	ASN	CA-CB-CG	-6.15	106.45	112.60
1	A	146	SER	CB-CA-C	-6.12	98.24	110.42
1	A	25	VAL	N-CA-C	6.10	116.85	110.62
1	A	498	ASP	N-CA-CB	-6.08	101.03	110.57
1	A	385	LEU	N-CA-CB	6.05	119.84	110.46
1	A	51	LYS	N-CA-CB	5.98	119.34	110.49
1	A	473	GLY	N-CA-C	-5.98	99.02	113.18
1	A	467	SER	O-C-N	-5.92	114.72	122.59
1	A	379	ILE	N-CA-C	5.91	116.64	108.12
1	A	62	LYS	CA-C-N	5.87	128.42	120.38
1	A	62	LYS	C-N-CA	5.87	128.42	120.38
1	A	286	GLU	N-CA-C	-5.87	99.21	109.48
1	A	148	GLN	N-CA-CB	5.87	118.48	109.98
1	A	226	ALA	N-CA-C	-5.86	106.30	113.50
1	A	238	PHE	N-CA-C	-5.78	103.82	111.96
1	A	421	TYR	CB-CA-C	-5.76	100.52	109.80
1	A	233	PRO	CB-CA-C	-5.71	103.55	113.20
1	A	337	ARG	NE-CZ-NH2	5.69	124.32	119.20
1	A	331	CYS	N-CA-CB	5.68	118.46	110.12
1	A	271	CYS	N-CA-CB	5.67	119.97	110.32
1	A	503	THR	CA-CB-OG1	-5.67	101.10	109.60
1	A	265	VAL	N-CA-CB	-5.67	101.88	111.23
1	A	407	VAL	CA-CB-CG1	5.65	120.00	110.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	497	TYR	CA-C-N	5.63	130.76	123.00
1	A	497	TYR	C-N-CA	5.63	130.76	123.00
1	A	169	LEU	N-CA-CB	-5.62	101.86	110.01
1	A	452	ASN	CA-CB-CG	5.58	118.18	112.60
1	A	159	HIS	O-C-N	5.55	127.71	121.32
1	A	248	GLY	CA-C-N	-5.54	110.95	121.54
1	A	248	GLY	C-N-CA	-5.54	110.95	121.54
1	A	452	ASN	CB-CA-C	-5.54	101.94	110.81
1	A	412	ASP	N-CA-CB	5.52	119.58	110.42
1	A	224	LEU	CA-C-N	5.50	128.21	120.28
1	A	224	LEU	C-N-CA	5.50	128.21	120.28
1	A	385	LEU	CB-CA-C	5.45	119.88	110.45
1	A	23	ALA	CA-C-N	5.45	126.65	119.84
1	A	23	ALA	C-N-CA	5.45	126.65	119.84
1	A	47	VAL	N-CA-CB	5.41	117.17	111.00
1	A	124	PHE	CA-CB-CG	-5.39	108.41	113.80
1	A	32	THR	CB-CA-C	5.38	116.13	108.76
1	A	466	ARG	CA-C-N	-5.35	111.32	121.54
1	A	466	ARG	C-N-CA	-5.35	111.32	121.54
1	A	335	GLU	CB-CA-C	-5.34	101.69	110.08
1	A	341	LEU	N-CA-C	5.34	118.11	109.40
1	A	251	THR	CA-C-O	5.33	125.90	119.61
1	A	247	ILE	O-C-N	5.32	129.22	122.57
1	A	131	HIS	N-CA-C	5.26	117.22	108.02
1	A	32	THR	CA-C-O	5.25	126.08	120.05
1	A	79	ALA	CA-C-O	5.24	125.14	118.54
1	A	45	ASP	N-CA-C	5.24	115.92	108.54
1	A	87	ALA	N-CA-C	5.22	121.92	110.80
1	A	52	ARG	NE-CZ-NH1	-5.22	116.28	121.50
1	A	511	PHE	CA-C-N	-5.20	113.94	122.79
1	A	511	PHE	C-N-CA	-5.20	113.94	122.79
1	A	61	PHE	CA-CB-CG	-5.18	108.61	113.80
1	A	376	ASN	N-CA-C	5.18	117.83	107.62
1	A	8	SER	N-CA-C	5.16	121.79	110.80
1	A	392	ARG	N-CA-C	-5.15	105.56	111.07
1	A	51	LYS	CA-C-O	5.10	127.30	121.58
1	A	5	GLN	CA-C-N	5.10	126.22	119.84
1	A	5	GLN	C-N-CA	5.10	126.22	119.84
1	A	78	LYS	CA-C-O	5.09	126.40	121.67
1	A	207	ILE	N-CA-CB	5.06	116.04	110.53
1	A	256	GLN	CB-CA-C	-5.06	100.36	110.42
1	A	232	LEU	CA-C-N	5.05	124.50	119.24

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	232	LEU	C-N-CA	5.05	124.50	119.24
1	A	476	LEU	CB-CA-C	-5.05	102.61	110.74
1	A	383	VAL	N-CA-C	5.05	115.24	107.77
1	A	259	LEU	N-CA-CB	-5.02	102.48	110.06

All (2) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	A	251	THR	CA
1	A	254	LEU	CA

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	467	SER	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	3800	0	3787	495	0
2	A	15	0	7	1	0
3	A	33	0	0	2	0
All	All	3848	0	3794	495	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 65.

All (495) 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:7:LEU:HB3	1:A:160:PRO:HB2	1.32	1.12
1:A:335:GLU:O	1:A:336:GLN:HB2	1.41	1.08
1:A:82:VAL:HG23	1:A:151:PHE:HA	1.30	1.06
1:A:332:GLU:HG3	1:A:337:ARG:HD3	1.10	1.06
1:A:214:ALA:HB3	1:A:217:SER:HB2	1.39	1.04

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:332:GLU:CG	1:A:337:ARG:HD3	1.87	1.04
1:A:53:GLU:HG2	1:A:61:PHE:HB3	1.39	1.00
1:A:271:CYS:HB3	1:A:327:VAL:HG13	1.46	0.97
1:A:5:GLN:HG2	1:A:6:PRO:HD3	1.45	0.96
1:A:462:LEU:HB3	1:A:478:ALA:HB3	1.44	0.96
1:A:429:HIS:HB3	1:A:430:PRO:HD2	1.49	0.93
1:A:247:ILE:HD12	1:A:248:GLY:C	1.93	0.93
1:A:274:MET:HE2	1:A:287:PRO:HA	1.46	0.93
1:A:32:THR:HG22	1:A:51:LYS:HE3	1.50	0.91
1:A:157:PHE:HE2	1:A:248:GLY:HA2	1.33	0.91
1:A:101:LEU:HB2	1:A:103:VAL:HG22	1.49	0.91
1:A:64:ARG:NH1	1:A:168:THR:HG22	1.86	0.90
1:A:340:LEU:H	1:A:409:LEU:HB3	1.38	0.89
1:A:435:LEU:H	1:A:503:THR:HG22	1.35	0.89
1:A:392:ARG:HH22	1:A:410:SER:HB2	1.38	0.88
1:A:347:GLU:HG3	1:A:350:GLY:H	1.38	0.88
1:A:358:LEU:HD12	1:A:358:LEU:H	1.39	0.87
1:A:79:ALA:HB1	1:A:103:VAL:CG1	2.04	0.86
1:A:79:ALA:HB1	1:A:103:VAL:HG12	1.55	0.86
1:A:347:GLU:HG3	1:A:348:GLU:H	1.41	0.84
1:A:340:LEU:HB2	1:A:409:LEU:HB3	1.61	0.83
1:A:332:GLU:HG3	1:A:337:ARG:CD	2.03	0.82
1:A:149:GLN:HB2	1:A:151:PHE:CE1	2.16	0.81
1:A:159:HIS:CD2	1:A:160:PRO:HD2	2.16	0.80
1:A:158:ASP:HA	1:A:252:PHE:CE1	2.15	0.80
1:A:32:THR:CG2	1:A:51:LYS:HE3	2.12	0.80
1:A:174:LEU:HD21	1:A:200:ILE:HD13	1.62	0.80
1:A:245:LYS:HG2	1:A:246:ARG:N	1.94	0.80
1:A:174:LEU:HD13	1:A:204:MET:HE2	1.63	0.80
1:A:340:LEU:HB2	1:A:409:LEU:CB	2.11	0.80
1:A:508:PHE:CD1	1:A:512:LEU:HB2	2.18	0.79
1:A:394:GLU:O	1:A:395:ILE:C	2.26	0.79
1:A:462:LEU:HB3	1:A:478:ALA:CB	2.12	0.79
1:A:7:LEU:HD12	1:A:161:MET:SD	2.23	0.79
1:A:187:VAL:HG21	1:A:211:ALA:HB1	1.64	0.79
1:A:159:HIS:HD2	1:A:161:MET:H	1.31	0.78
1:A:337:ARG:HH22	1:A:416:LYS:HD2	1.48	0.78
1:A:392:ARG:NH2	1:A:410:SER:HB2	1.97	0.78
1:A:447:LEU:O	1:A:448:LEU:C	2.23	0.78
1:A:308:GLU:HB2	1:A:310:LEU:HD21	1.66	0.77
1:A:247:ILE:HD12	1:A:248:GLY:N	2.00	0.77

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:101:LEU:HB2	1:A:103:VAL:CG2	2.15	0.77
1:A:7:LEU:HB3	1:A:160:PRO:CB	2.12	0.76
1:A:20:VAL:HG11	1:A:199:LEU:HD21	1.67	0.76
1:A:274:MET:HE1	1:A:287:PRO:HG3	1.66	0.76
1:A:228:HIS:O	1:A:230:VAL:HG23	1.84	0.76
1:A:340:LEU:N	1:A:409:LEU:HB3	2.01	0.76
1:A:70:MET:HE3	1:A:83:ILE:HD13	1.68	0.76
1:A:69:MET:HE2	1:A:154:VAL:HG22	1.68	0.75
1:A:219:CYS:HB2	3:A:601:HOH:O	1.88	0.74
1:A:435:LEU:H	1:A:503:THR:CG2	2.00	0.74
1:A:6:PRO:O	1:A:7:LEU:HG	1.87	0.74
1:A:366:GLU:HA	1:A:465:TYR:O	1.88	0.74
1:A:289:GLY:HA2	1:A:315:SER:OG	1.87	0.73
1:A:409:LEU:HD13	1:A:410:SER:N	2.02	0.73
1:A:460:ILE:HD12	1:A:479:PHE:HE1	1.51	0.73
1:A:438:PHE:HA	1:A:498:ASP:O	1.89	0.72
1:A:194:ALA:O	1:A:198:VAL:HG23	1.89	0.71
1:A:271:CYS:HB3	1:A:327:VAL:CG1	2.20	0.71
1:A:344:THR:HG22	1:A:376:ASN:HB3	1.71	0.71
1:A:165:GLY:O	1:A:168:THR:HB	1.91	0.71
1:A:187:VAL:CG2	1:A:211:ALA:HB1	2.21	0.71
1:A:248:GLY:HA3	1:A:252:PHE:CG	2.26	0.70
1:A:347:GLU:CG	1:A:350:GLY:H	2.05	0.70
1:A:90:HIS:CE1	1:A:156:PRO:HA	2.26	0.70
1:A:17:LEU:HD11	1:A:203:LEU:CD1	2.22	0.70
1:A:157:PHE:CE2	1:A:248:GLY:HA2	2.22	0.69
1:A:375:LYS:HD2	1:A:375:LYS:O	1.92	0.69
1:A:228:HIS:O	1:A:229:PRO:C	2.33	0.69
1:A:229:PRO:HB2	1:A:246:ARG:CZ	2.22	0.69
1:A:7:LEU:CD2	1:A:11:PRO:HG3	2.23	0.69
1:A:46:ASN:HB3	1:A:308:GLU:O	1.93	0.69
1:A:462:LEU:CB	1:A:478:ALA:HB3	2.22	0.69
1:A:247:ILE:HG23	3:A:616:HOH:O	1.91	0.69
1:A:358:LEU:HD12	1:A:358:LEU:N	2.07	0.69
1:A:62:LYS:HD2	1:A:90:HIS:HB2	1.76	0.68
1:A:215:GLU:OE1	1:A:266:ASP:HB3	1.92	0.68
1:A:449:ARG:O	1:A:450:PHE:C	2.36	0.68
1:A:433:GLU:O	1:A:434:ARG:HG2	1.94	0.68
1:A:186:PRO:HD3	1:A:292:ALA:HB2	1.76	0.67
1:A:365:THR:O	1:A:366:GLU:HG2	1.94	0.67
1:A:270:ILE:HG22	1:A:274:MET:HE2	1.76	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:337:ARG:NH2	1:A:416:LYS:HD2	2.10	0.67
1:A:394:GLU:O	1:A:396:LEU:N	2.28	0.67
1:A:472:TYR:HA	1:A:474:ARG:HH12	1.56	0.67
1:A:335:GLU:O	1:A:336:GLN:CB	2.24	0.67
1:A:392:ARG:NE	1:A:409:LEU:HD11	2.10	0.67
1:A:500:HIS:ND1	1:A:502:GLU:OE2	2.28	0.67
1:A:291:LEU:HD12	1:A:291:LEU:O	1.95	0.66
1:A:247:ILE:HD12	1:A:248:GLY:CA	2.24	0.66
1:A:378:CYS:C	1:A:379:ILE:HG12	2.19	0.66
1:A:121:VAL:O	1:A:122:ARG:C	2.38	0.66
1:A:345:ILE:HD12	1:A:379:ILE:HG13	1.77	0.66
1:A:7:LEU:HD22	1:A:11:PRO:HG3	1.76	0.66
1:A:7:LEU:CB	1:A:160:PRO:HB2	2.18	0.66
1:A:141:LYS:NZ	1:A:144:GLU:OE2	2.28	0.66
1:A:135:PHE:O	1:A:138:ALA:N	2.29	0.66
1:A:182:ARG:NH1	1:A:308:GLU:OE2	2.29	0.66
1:A:158:ASP:OD2	1:A:249:ASP:HB2	1.96	0.65
1:A:472:TYR:HA	1:A:474:ARG:NH1	2.11	0.65
1:A:252:PHE:O	1:A:253:ARG:C	2.36	0.65
1:A:286:GLU:HB2	1:A:319:VAL:HG22	1.79	0.65
1:A:143:ILE:O	1:A:146:SER:HB2	1.97	0.65
1:A:395:ILE:HG22	1:A:396:LEU:N	2.12	0.65
1:A:425:GLY:O	1:A:512:LEU:HA	1.95	0.65
1:A:434:ARG:NH2	1:A:501:ASP:OD2	2.30	0.65
1:A:250:GLU:O	1:A:254:LEU:N	2.30	0.64
1:A:396:LEU:HD11	1:A:407:VAL:CG2	2.27	0.64
1:A:219:CYS:HB3	1:A:247:ILE:HG22	1.78	0.64
1:A:262:ILE:HG13	1:A:263:ILE:N	2.11	0.64
1:A:426:ARG:NH2	1:A:511:PHE:HA	2.13	0.64
1:A:174:LEU:HD13	1:A:204:MET:CE	2.27	0.64
1:A:286:GLU:O	1:A:287:PRO:C	2.37	0.64
1:A:11:PRO:HB2	1:A:16:TYR:CE2	2.33	0.64
1:A:321:PHE:O	1:A:324:LEU:HB2	1.97	0.64
1:A:78:LYS:O	1:A:78:LYS:HG2	1.98	0.63
1:A:159:HIS:C	1:A:163:ILE:HD12	2.23	0.63
1:A:270:ILE:HG22	1:A:274:MET:CE	2.29	0.63
1:A:257:GLU:OE1	1:A:257:GLU:HA	1.98	0.63
1:A:433:GLU:C	1:A:434:ARG:HG2	2.23	0.63
1:A:114:ALA:O	1:A:115:ASP:C	2.40	0.63
1:A:440:PHE:H	1:A:474:ARG:HG3	1.64	0.63
1:A:353:LEU:O	1:A:356:CYS:N	2.32	0.63

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:392:ARG:NH1	1:A:409:LEU:HD21	2.14	0.63
1:A:447:LEU:HD22	1:A:451:LEU:HD22	1.80	0.63
1:A:5:GLN:HG2	1:A:6:PRO:CD	2.25	0.62
1:A:64:ARG:HH11	1:A:168:THR:HG22	1.64	0.62
1:A:296:MET:O	1:A:297:LYS:C	2.41	0.62
1:A:340:LEU:H	1:A:409:LEU:CB	2.10	0.62
1:A:435:LEU:N	1:A:503:THR:HG22	2.11	0.62
1:A:199:LEU:O	1:A:200:ILE:C	2.40	0.62
1:A:215:GLU:HB2	1:A:265:VAL:O	1.99	0.62
1:A:81:GLY:C	1:A:82:VAL:HG22	2.25	0.62
1:A:214:ALA:O	1:A:215:GLU:C	2.42	0.61
1:A:346:PRO:HB3	1:A:376:ASN:OD1	2.01	0.61
1:A:293:LEU:HD12	1:A:293:LEU:O	2.01	0.61
1:A:392:ARG:CZ	1:A:409:LEU:HD11	2.30	0.61
1:A:146:SER:O	1:A:147:GLN:C	2.40	0.61
1:A:10:ALA:O	1:A:11:PRO:C	2.44	0.61
1:A:220:LEU:O	1:A:221:LYS:C	2.44	0.60
1:A:387:ARG:NH2	1:A:394:GLU:OE1	2.33	0.60
1:A:461:SER:N	1:A:478:ALA:O	2.30	0.60
1:A:82:VAL:HG21	1:A:151:PHE:CD2	2.36	0.60
1:A:286:GLU:CB	1:A:319:VAL:HG22	2.31	0.60
1:A:332:GLU:CD	1:A:337:ARG:HD3	2.25	0.60
1:A:347:GLU:CG	1:A:348:GLU:H	2.11	0.60
1:A:347:GLU:HG2	1:A:350:GLY:HA3	1.84	0.60
1:A:508:PHE:CE2	1:A:513:ALA:HB2	2.37	0.60
1:A:336:GLN:HE22	1:A:389:LEU:HB2	1.66	0.60
1:A:20:VAL:HG21	1:A:199:LEU:HD22	1.83	0.60
1:A:107:ILE:HD13	1:A:121:VAL:CG1	2.32	0.60
1:A:434:ARG:HA	1:A:503:THR:HG22	1.82	0.60
1:A:442:GLU:OE1	1:A:467:SER:OG	2.19	0.59
1:A:14:ALA:O	1:A:15:GLU:C	2.44	0.59
1:A:418:HIS:O	1:A:421:TYR:HB2	2.03	0.59
1:A:64:ARG:HH12	1:A:169:LEU:HA	1.67	0.59
1:A:340:LEU:CB	1:A:409:LEU:HB3	2.32	0.59
1:A:157:PHE:O	1:A:252:PHE:HZ	1.85	0.59
1:A:301:ALA:O	1:A:302:LEU:C	2.43	0.59
1:A:395:ILE:HG22	1:A:396:LEU:HD22	1.84	0.59
1:A:98:SER:HB3	1:A:105:ALA:HB2	1.84	0.59
1:A:392:ARG:HH22	1:A:410:SER:CB	2.14	0.59
1:A:291:LEU:HD12	1:A:291:LEU:C	2.28	0.59
1:A:133:ALA:HB3	1:A:137:GLU:OE1	2.03	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:197:ALA:O	1:A:198:VAL:C	2.46	0.58
1:A:17:LEU:HD11	1:A:203:LEU:HD11	1.85	0.58
1:A:462:LEU:C	1:A:462:LEU:HD23	2.28	0.58
1:A:17:LEU:O	1:A:20:VAL:HB	2.04	0.58
1:A:338:GLU:OE2	1:A:420:ARG:NH2	2.29	0.58
1:A:52:ARG:HG2	1:A:54:ASP:OD1	2.04	0.58
1:A:339:ALA:HA	1:A:409:LEU:HG	1.86	0.58
1:A:212:VAL:HG22	1:A:263:ILE:HG22	1.85	0.57
1:A:317:ALA:O	1:A:319:VAL:HG23	2.04	0.57
1:A:20:VAL:HG11	1:A:199:LEU:CD2	2.33	0.57
1:A:407:VAL:HG13	1:A:409:LEU:CD1	2.34	0.57
1:A:252:PHE:CD1	1:A:252:PHE:N	2.70	0.57
1:A:246:ARG:C	1:A:247:ILE:O	2.44	0.57
1:A:447:LEU:O	1:A:450:PHE:N	2.37	0.57
1:A:508:PHE:O	1:A:513:ALA:N	2.29	0.57
1:A:184:PHE:CD1	1:A:296:MET:HE2	2.38	0.57
1:A:17:LEU:HD23	1:A:17:LEU:C	2.30	0.57
1:A:53:GLU:OE2	1:A:56:GLN:NE2	2.36	0.57
1:A:86:SER:HA	1:A:108:VAL:O	2.05	0.57
1:A:70:MET:HE3	1:A:83:ILE:CD1	2.34	0.57
1:A:141:LYS:O	1:A:144:GLU:HB3	2.05	0.56
1:A:158:ASP:HA	1:A:252:PHE:CZ	2.39	0.56
1:A:181:ASP:OD2	1:A:308:GLU:HB3	2.05	0.56
1:A:223:ALA:O	1:A:227:GLY:N	2.37	0.56
1:A:7:LEU:O	1:A:9:GLY:N	2.29	0.56
1:A:157:PHE:HD2	1:A:252:PHE:CE2	2.23	0.56
1:A:462:LEU:HD23	1:A:463:PHE:N	2.20	0.56
1:A:116:ILE:HG23	1:A:117:LYS:N	2.20	0.56
1:A:157:PHE:HE2	1:A:248:GLY:CA	2.12	0.56
1:A:162:VAL:O	1:A:166:GLN:HG2	2.05	0.56
1:A:339:ALA:O	1:A:382:GLY:HA2	2.06	0.56
1:A:53:GLU:HG2	1:A:61:PHE:CB	2.25	0.55
1:A:53:GLU:CD	1:A:56:GLN:HE21	2.13	0.55
1:A:286:GLU:O	1:A:289:GLY:N	2.39	0.55
1:A:460:ILE:HD12	1:A:479:PHE:CE1	2.37	0.55
1:A:47:VAL:O	1:A:310:LEU:N	2.28	0.55
1:A:286:GLU:OE1	1:A:318:ASN:N	2.39	0.55
1:A:81:GLY:O	1:A:82:VAL:HG13	2.06	0.55
1:A:179:HIS:O	1:A:309:ARG:HD3	2.06	0.55
1:A:187:VAL:HG21	1:A:211:ALA:CB	2.36	0.55
1:A:247:ILE:O	1:A:248:GLY:O	2.25	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:295:GLY:O	1:A:296:MET:C	2.49	0.55
1:A:509:ARG:HA	1:A:513:ALA:HB3	1.89	0.55
1:A:107:ILE:CG2	1:A:128:VAL:HG12	2.37	0.55
1:A:235:VAL:CG1	1:A:243:ALA:HB1	2.36	0.55
1:A:249:ASP:O	1:A:253:ARG:N	2.39	0.55
1:A:370:ARG:O	1:A:371:PHE:C	2.50	0.55
1:A:442:GLU:HG2	1:A:468:HIS:ND1	2.22	0.55
1:A:12:GLU:O	1:A:13:GLY:C	2.50	0.54
1:A:76:GLU:HB3	1:A:78:LYS:HE2	1.87	0.54
1:A:397:GLN:O	1:A:400:ASN:N	2.37	0.54
1:A:36:LYS:HE3	1:A:38:GLU:OE2	2.06	0.54
1:A:107:ILE:HD13	1:A:121:VAL:HG11	1.88	0.54
1:A:61:PHE:O	1:A:64:ARG:HG3	2.08	0.54
1:A:213:GLU:O	1:A:264:THR:HA	2.07	0.54
1:A:269:ALA:O	1:A:270:ILE:C	2.51	0.54
1:A:74:THR:CG2	1:A:79:ALA:HB2	2.38	0.54
1:A:255:CYS:C	1:A:257:GLU:H	2.15	0.54
1:A:284:VAL:O	1:A:284:VAL:HG12	2.08	0.54
1:A:141:LYS:O	1:A:142:ALA:C	2.51	0.54
1:A:391:GLU:HA	1:A:394:GLU:HG3	1.90	0.54
1:A:296:MET:O	1:A:299:TYR:N	2.41	0.53
1:A:56:GLN:HG3	1:A:60:SER:O	2.08	0.53
1:A:426:ARG:NH2	1:A:510:PHE:O	2.36	0.53
1:A:233:PRO:HG2	1:A:234:ARG:H	1.73	0.53
1:A:342:ALA:HB3	1:A:406:VAL:HB	1.91	0.53
1:A:475:VAL:HG13	1:A:476:LEU:N	2.24	0.52
1:A:11:PRO:HG2	1:A:16:TYR:CZ	2.45	0.52
1:A:374:ALA:O	1:A:375:LYS:C	2.53	0.52
1:A:409:LEU:HD13	1:A:409:LEU:C	2.34	0.52
1:A:15:GLU:O	1:A:18:ARG:HB3	2.08	0.52
1:A:70:MET:CE	1:A:83:ILE:HD13	2.38	0.52
1:A:347:GLU:OE1	1:A:347:GLU:HA	2.09	0.52
1:A:448:LEU:O	1:A:449:ARG:C	2.51	0.52
1:A:392:ARG:O	1:A:396:LEU:HD23	2.10	0.52
1:A:439:GLU:OE1	1:A:472:TYR:O	2.28	0.52
1:A:81:GLY:O	1:A:82:VAL:HG22	2.10	0.52
1:A:274:MET:CE	1:A:287:PRO:HA	2.31	0.52
1:A:107:ILE:HB	1:A:128:VAL:HG12	1.90	0.52
1:A:185:VAL:HG21	1:A:193:ALA:HA	1.92	0.52
1:A:293:LEU:HD12	1:A:293:LEU:C	2.34	0.52
1:A:309:ARG:CG	1:A:309:ARG:HH11	2.23	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:16:TYR:OH	1:A:160:PRO:HB3	2.09	0.51
1:A:245:LYS:HG2	1:A:246:ARG:H	1.72	0.51
1:A:246:ARG:O	1:A:247:ILE:O	2.28	0.51
1:A:472:TYR:CE1	1:A:474:ARG:NH2	2.78	0.51
1:A:111:THR:HG23	1:A:132:GLY:H	1.75	0.51
1:A:274:MET:HE2	1:A:287:PRO:CA	2.29	0.51
1:A:508:PHE:O	1:A:512:LEU:N	2.38	0.51
1:A:157:PHE:O	1:A:159:HIS:N	2.44	0.51
1:A:37:MET:O	1:A:41:SER:HB2	2.10	0.51
1:A:41:SER:HA	1:A:48:ILE:HG13	1.93	0.51
1:A:14:ALA:O	1:A:17:LEU:N	2.44	0.51
1:A:107:ILE:O	1:A:107:ILE:HG22	2.11	0.51
1:A:7:LEU:HD22	1:A:11:PRO:CG	2.40	0.51
1:A:89:ASN:ND2	2:A:962:PLP:O3	2.45	0.50
1:A:396:LEU:HD11	1:A:407:VAL:HG22	1.92	0.50
1:A:51:LYS:O	1:A:53:GLU:N	2.42	0.50
1:A:122:ARG:O	1:A:125:GLY:O	2.29	0.50
1:A:295:GLY:O	1:A:298:LYS:N	2.44	0.50
1:A:352:PHE:N	1:A:352:PHE:CD1	2.79	0.50
1:A:250:GLU:O	1:A:252:PHE:N	2.44	0.50
1:A:302:LEU:HB3	1:A:303:HIS:ND1	2.26	0.50
1:A:340:LEU:CA	1:A:409:LEU:HB3	2.42	0.50
1:A:440:PHE:O	1:A:441:PRO:C	2.55	0.50
1:A:212:VAL:HG12	1:A:291:LEU:HD11	1.93	0.50
1:A:167:GLY:O	1:A:170:ALA:N	2.45	0.49
1:A:16:TYR:O	1:A:17:LEU:C	2.54	0.49
1:A:82:VAL:CG2	1:A:151:PHE:CD2	2.95	0.49
1:A:449:ARG:HB3	1:A:497:TYR:OH	2.13	0.49
1:A:387:ARG:O	1:A:388:GLY:C	2.55	0.49
1:A:44:LEU:HD13	1:A:300:ILE:HD12	1.94	0.49
1:A:82:VAL:HG23	1:A:151:PHE:CA	2.23	0.49
1:A:266:ASP:O	1:A:269:ALA:N	2.45	0.49
1:A:35:GLN:OE1	1:A:52:ARG:NH1	2.46	0.49
1:A:145:LEU:O	1:A:146:SER:O	2.31	0.49
1:A:157:PHE:CZ	1:A:189:GLY:HA3	2.48	0.49
1:A:417:LEU:O	1:A:417:LEU:HG	2.10	0.49
1:A:139:LYS:HG3	1:A:143:ILE:HD12	1.95	0.48
1:A:70:MET:HE2	1:A:101:LEU:HD12	1.95	0.48
1:A:84:THR:HG23	1:A:84:THR:O	2.11	0.48
1:A:429:HIS:O	1:A:430:PRO:C	2.56	0.48
1:A:433:GLU:HA	1:A:479:PHE:O	2.12	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:512:LEU:O	1:A:513:ALA:C	2.52	0.48
1:A:182:ARG:HG3	1:A:310:LEU:CD2	2.44	0.48
1:A:256:GLN:N	1:A:256:GLN:OE1	2.47	0.48
1:A:409:LEU:C	1:A:409:LEU:HD22	2.38	0.48
1:A:131:HIS:O	1:A:138:ALA:HA	2.13	0.48
1:A:437:SER:OG	1:A:502:GLU:HG3	2.13	0.48
1:A:457:TYR:HE1	1:A:458:TRP:CZ2	2.32	0.48
1:A:252:PHE:O	1:A:256:GLN:OE1	2.32	0.48
1:A:157:PHE:CE1	1:A:189:GLY:HA3	2.48	0.48
1:A:451:LEU:N	1:A:451:LEU:CD1	2.77	0.48
1:A:5:GLN:O	1:A:7:LEU:N	2.47	0.47
1:A:199:LEU:HD13	1:A:199:LEU:HA	1.64	0.47
1:A:250:GLU:O	1:A:251:THR:C	2.57	0.47
1:A:331:CYS:O	1:A:332:GLU:C	2.57	0.47
1:A:396:LEU:N	1:A:396:LEU:HD22	2.29	0.47
1:A:508:PHE:CD2	1:A:513:ALA:HB2	2.49	0.47
1:A:63:LEU:HD12	1:A:63:LEU:O	2.14	0.47
1:A:75:GLU:O	1:A:75:GLU:HG2	2.13	0.47
1:A:503:THR:C	1:A:505:ASN:H	2.21	0.47
1:A:191:GLY:N	1:A:252:PHE:HE2	2.12	0.47
1:A:434:ARG:HE	1:A:434:ARG:HB3	1.47	0.47
1:A:7:LEU:HD23	1:A:11:PRO:HG3	1.95	0.47
1:A:232:LEU:HD22	1:A:233:PRO:HD2	1.95	0.47
1:A:261:ASP:OD1	1:A:262:ILE:N	2.37	0.47
1:A:426:ARG:NH1	1:A:513:ALA:O	2.48	0.47
1:A:435:LEU:HD12	1:A:477:ALA:O	2.13	0.47
1:A:457:TYR:CE1	1:A:458:TRP:CZ2	3.02	0.47
1:A:347:GLU:HG3	1:A:350:GLY:N	2.19	0.47
1:A:375:LYS:HD2	1:A:375:LYS:C	2.29	0.47
1:A:186:PRO:HD3	1:A:292:ALA:CB	2.43	0.47
1:A:385:LEU:HD11	1:A:392:ARG:HB2	1.96	0.47
1:A:431:LEU:HD12	1:A:431:LEU:HA	1.64	0.47
1:A:64:ARG:NH1	1:A:169:LEU:CA	2.77	0.47
1:A:84:THR:HA	1:A:106:LEU:O	2.14	0.47
1:A:182:ARG:HG3	1:A:310:LEU:HD22	1.96	0.47
1:A:385:LEU:HB2	1:A:391:GLU:OE1	2.15	0.47
1:A:74:THR:HG23	1:A:79:ALA:HB2	1.96	0.47
1:A:145:LEU:HA	1:A:145:LEU:HD23	1.55	0.47
1:A:451:LEU:N	1:A:451:LEU:HD13	2.30	0.47
1:A:86:SER:O	1:A:87:ALA:HB2	2.14	0.47
1:A:328:SER:O	1:A:329:GLU:C	2.59	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:18:ARG:O	1:A:22:ARG:HB2	2.15	0.46
1:A:200:ILE:CG2	1:A:207:ILE:HB	2.46	0.46
1:A:213:GLU:OE2	1:A:220:LEU:HB3	2.15	0.46
1:A:274:MET:HE1	1:A:287:PRO:CG	2.40	0.46
1:A:417:LEU:CD2	1:A:418:HIS:CD2	2.98	0.46
1:A:381:VAL:CG1	1:A:382:GLY:N	2.79	0.46
1:A:98:SER:HA	1:A:103:VAL:HG23	1.96	0.46
1:A:187:VAL:HG11	1:A:220:LEU:HD22	1.97	0.46
1:A:309:ARG:NH1	1:A:309:ARG:HG2	2.29	0.46
1:A:497:TYR:CD1	1:A:497:TYR:N	2.83	0.46
1:A:171:LEU:HD23	1:A:171:LEU:HA	1.55	0.46
1:A:172:GLU:O	1:A:173:LEU:C	2.58	0.46
1:A:87:ALA:O	1:A:109:MET:HE2	2.15	0.46
1:A:512:LEU:C	1:A:513:ALA:O	2.55	0.46
1:A:249:ASP:CG	1:A:250:GLU:H	2.07	0.46
1:A:250:GLU:C	1:A:252:PHE:N	2.72	0.46
1:A:392:ARG:HH11	1:A:409:LEU:HD21	1.79	0.46
1:A:177:ASP:CG	1:A:309:ARG:HE	2.24	0.45
1:A:447:LEU:HA	1:A:447:LEU:HD23	1.70	0.45
1:A:12:GLU:O	1:A:15:GLU:N	2.50	0.45
1:A:46:ASN:OD1	1:A:305:ILE:HG22	2.16	0.45
1:A:36:LYS:HE3	1:A:38:GLU:CD	2.41	0.45
1:A:76:GLU:OE1	1:A:78:LYS:HD3	2.16	0.45
1:A:229:PRO:O	1:A:246:ARG:NH1	2.49	0.45
1:A:407:VAL:CG1	1:A:409:LEU:CD1	2.94	0.45
1:A:10:ALA:N	1:A:11:PRO:CD	2.79	0.45
1:A:385:LEU:HD13	1:A:391:GLU:HG2	1.98	0.45
1:A:447:LEU:O	1:A:450:PHE:HB3	2.17	0.45
1:A:116:ILE:CG2	1:A:117:LYS:N	2.79	0.45
1:A:185:VAL:HA	1:A:186:PRO:HD2	1.89	0.45
1:A:429:HIS:HB3	1:A:430:PRO:CD	2.34	0.45
1:A:11:PRO:HG2	1:A:16:TYR:OH	2.16	0.45
1:A:107:ILE:CB	1:A:128:VAL:HG12	2.47	0.45
1:A:212:VAL:HA	1:A:263:ILE:O	2.17	0.45
1:A:407:VAL:HG13	1:A:409:LEU:HD12	1.98	0.45
1:A:415:ALA:HA	1:A:419:VAL:HB	1.98	0.45
1:A:249:ASP:H	1:A:252:PHE:HD1	1.63	0.45
1:A:157:PHE:CD2	1:A:252:PHE:CE2	3.05	0.45
1:A:356:CYS:O	1:A:359:LEU:N	2.44	0.45
1:A:399:LEU:C	1:A:401:ASP:H	2.25	0.45
1:A:448:LEU:HD12	1:A:448:LEU:HA	1.62	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:391:GLU:O	1:A:394:GLU:HG3	2.16	0.44
1:A:107:ILE:HD13	1:A:121:VAL:HG13	1.98	0.44
1:A:351:SER:OG	1:A:352:PHE:N	2.47	0.44
1:A:159:HIS:HB3	1:A:162:VAL:HB	2.00	0.44
1:A:250:GLU:C	1:A:252:PHE:H	2.24	0.44
1:A:324:LEU:HD13	1:A:324:LEU:HA	1.47	0.44
1:A:409:LEU:HD22	1:A:409:LEU:O	2.17	0.44
1:A:5:GLN:N	1:A:6:PRO:CD	2.80	0.44
1:A:66:ALA:O	1:A:70:MET:HG3	2.17	0.44
1:A:154:VAL:HA	1:A:155:PRO:HD2	1.79	0.44
1:A:157:PHE:C	1:A:252:PHE:HZ	2.25	0.44
1:A:199:LEU:C	1:A:199:LEU:HD12	2.41	0.44
1:A:238:PHE:HB3	1:A:239:ALA:H	1.60	0.44
1:A:352:PHE:CE2	1:A:379:ILE:CD1	3.00	0.44
1:A:409:LEU:HD12	1:A:409:LEU:H	1.83	0.44
1:A:409:LEU:CD1	1:A:409:LEU:H	2.31	0.44
1:A:141:LYS:HD2	1:A:141:LYS:HA	1.64	0.44
1:A:5:GLN:N	1:A:6:PRO:HD2	2.32	0.44
1:A:233:PRO:CG	1:A:234:ARG:H	2.30	0.44
1:A:358:LEU:N	1:A:358:LEU:CD1	2.80	0.44
1:A:98:SER:HB2	1:A:103:VAL:O	2.18	0.44
1:A:293:LEU:O	1:A:296:MET:HB3	2.18	0.44
1:A:123:GLY:O	1:A:124:PHE:C	2.60	0.43
1:A:251:THR:O	1:A:255:CYS:HB2	2.17	0.43
1:A:392:ARG:O	1:A:393:LYS:C	2.61	0.43
1:A:190:GLY:HA3	1:A:252:PHE:HD2	1.83	0.43
1:A:296:MET:HE3	1:A:296:MET:HB2	1.88	0.43
1:A:351:SER:OG	1:A:353:LEU:HD23	2.17	0.43
1:A:380:PHE:CG	1:A:423:VAL:HG21	2.53	0.43
1:A:407:VAL:HG13	1:A:409:LEU:HD11	1.99	0.43
1:A:119:ASP:O	1:A:123:GLY:N	2.46	0.43
1:A:83:ILE:HA	1:A:152:THR:H	1.84	0.43
1:A:189:GLY:HA2	1:A:244:VAL:HG11	1.99	0.43
1:A:434:ARG:HB2	1:A:436:TYR:HE1	1.82	0.43
1:A:268:ASP:OD2	1:A:330:ARG:NH1	2.51	0.43
1:A:398:MET:O	1:A:400:ASN:N	2.52	0.43
1:A:419:VAL:H	1:A:419:VAL:HG23	1.57	0.43
1:A:448:LEU:O	1:A:451:LEU:N	2.51	0.43
1:A:247:ILE:CD1	1:A:248:GLY:N	2.76	0.43
1:A:278:PHE:CD1	1:A:278:PHE:C	2.96	0.43
1:A:434:ARG:NE	1:A:503:THR:HG21	2.34	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:443:SER:OG	1:A:444:PRO:HD2	2.19	0.43
1:A:79:ALA:HB1	1:A:103:VAL:HG11	1.94	0.43
1:A:390:GLU:H	1:A:390:GLU:HG3	1.64	0.43
1:A:398:MET:C	1:A:400:ASN:N	2.77	0.43
1:A:352:PHE:O	1:A:355:PHE:HB3	2.18	0.43
1:A:419:VAL:C	1:A:421:TYR:H	2.25	0.43
1:A:158:ASP:OD2	1:A:249:ASP:N	2.51	0.43
1:A:247:ILE:CD1	1:A:248:GLY:C	2.80	0.43
1:A:358:LEU:H	1:A:358:LEU:CD1	2.20	0.43
1:A:396:LEU:HD13	1:A:396:LEU:HA	1.42	0.43
1:A:64:ARG:NH1	1:A:169:LEU:HA	2.34	0.43
1:A:74:THR:CG2	1:A:79:ALA:CB	2.97	0.43
1:A:76:GLU:O	1:A:78:LYS:N	2.52	0.43
1:A:220:LEU:HA	1:A:247:ILE:HG21	2.00	0.43
1:A:173:LEU:HD12	1:A:173:LEU:HA	1.66	0.42
1:A:347:GLU:HG2	1:A:350:GLY:CA	2.49	0.42
1:A:435:LEU:C	1:A:436:TYR:CD1	2.97	0.42
1:A:435:LEU:HG	1:A:476:LEU:HD21	2.01	0.42
1:A:108:VAL:CG2	1:A:142:ALA:HB2	2.49	0.42
1:A:381:VAL:HG12	1:A:382:GLY:N	2.34	0.42
1:A:397:GLN:O	1:A:398:MET:C	2.58	0.42
1:A:64:ARG:HH12	1:A:169:LEU:CA	2.32	0.42
1:A:198:VAL:O	1:A:202:GLN:HG2	2.19	0.42
1:A:229:PRO:HB2	1:A:246:ARG:NE	2.35	0.42
1:A:47:VAL:N	1:A:308:GLU:O	2.48	0.42
1:A:74:THR:HG22	1:A:79:ALA:CB	2.50	0.42
1:A:343:VAL:HG13	1:A:343:VAL:O	2.20	0.42
1:A:52:ARG:HH11	1:A:52:ARG:HD3	1.34	0.42
1:A:199:LEU:O	1:A:202:GLN:N	2.50	0.42
1:A:400:ASN:O	1:A:400:ASN:ND2	2.53	0.42
1:A:272:ALA:O	1:A:275:LYS:N	2.52	0.42
1:A:344:THR:HG22	1:A:376:ASN:CB	2.47	0.42
1:A:344:THR:HA	1:A:378:CYS:HA	2.01	0.42
1:A:459:ASN:CB	1:A:480:GLU:HB2	2.50	0.42
1:A:142:ALA:CB	1:A:153:TRP:HZ3	2.32	0.42
1:A:204:MET:HA	1:A:205:PRO:HD2	1.74	0.42
1:A:220:LEU:HG	1:A:224:LEU:HD22	2.02	0.42
1:A:271:CYS:CB	1:A:327:VAL:HG13	2.33	0.42
1:A:16:TYR:OH	1:A:160:PRO:HA	2.19	0.42
1:A:247:ILE:HD12	1:A:247:ILE:C	2.44	0.42
1:A:442:GLU:HG3	1:A:443:SER:N	2.34	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:106:LEU:HG	1:A:107:ILE:N	2.34	0.42
1:A:5:GLN:CG	1:A:6:PRO:HD3	2.33	0.41
1:A:201:LYS:HD2	1:A:201:LYS:HA	1.64	0.41
1:A:436:TYR:O	1:A:476:LEU:HD23	2.19	0.41
1:A:261:ASP:CG	1:A:262:ILE:H	2.24	0.41
1:A:465:TYR:HD1	1:A:475:VAL:HG23	1.86	0.41
1:A:83:ILE:HG22	1:A:152:THR:HB	2.02	0.41
1:A:130:LEU:HA	1:A:130:LEU:HD12	1.64	0.41
1:A:157:PHE:CD1	1:A:189:GLY:HA3	2.56	0.41
1:A:220:LEU:O	1:A:222:ALA:N	2.53	0.41
1:A:330:ARG:HD2	1:A:330:ARG:HA	1.86	0.41
1:A:409:LEU:CD1	1:A:409:LEU:N	2.84	0.41
1:A:299:TYR:CE1	1:A:303:HIS:CE1	3.08	0.41
1:A:70:MET:CE	1:A:83:ILE:CD1	2.97	0.41
1:A:345:ILE:HA	1:A:346:PRO:HD3	1.91	0.41
1:A:21:LEU:HD23	1:A:21:LEU:HA	1.86	0.41
1:A:26:TYR:O	1:A:27:GLU:C	2.63	0.41
1:A:189:GLY:N	1:A:244:VAL:HG21	2.36	0.41
1:A:242:VAL:CG2	1:A:288:SER:HB3	2.51	0.41
1:A:277:LEU:HD12	1:A:277:LEU:HA	1.61	0.41
1:A:343:VAL:H	1:A:343:VAL:HG12	1.56	0.41
1:A:419:VAL:HA	1:A:422:MET:HB2	2.02	0.41
1:A:476:LEU:HD23	1:A:476:LEU:HA	1.84	0.41
1:A:17:LEU:O	1:A:17:LEU:HD23	2.21	0.41
1:A:107:ILE:HG22	1:A:128:VAL:HG12	2.01	0.41
1:A:159:HIS:CD2	1:A:161:MET:H	2.21	0.41
1:A:74:THR:C	1:A:76:GLU:N	2.78	0.40
1:A:353:LEU:O	1:A:354:LYS:C	2.64	0.40
1:A:220:LEU:O	1:A:223:ALA:N	2.54	0.40
1:A:417:LEU:HD21	1:A:418:HIS:CD2	2.57	0.40
1:A:417:LEU:HD23	1:A:418:HIS:CD2	2.57	0.40
1:A:508:PHE:CE1	1:A:512:LEU:HB2	2.56	0.40
1:A:116:ILE:HG23	1:A:117:LYS:HG2	2.03	0.40
1:A:135:PHE:C	1:A:137:GLU:N	2.79	0.40
1:A:344:THR:CG2	1:A:376:ASN:HB3	2.46	0.40
1:A:158:ASP:CG	1:A:249:ASP:HB2	2.46	0.40
1:A:224:LEU:HD12	1:A:224:LEU:HA	1.83	0.40
1:A:422:MET:O	1:A:423:VAL:C	2.59	0.40
1:A:45:ASP:C	1:A:46:ASN:ND2	2.80	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	490/514 (95%)	360 (74%)	91 (19%)	39 (8%)	1 1

All (39) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	6	PRO
1	A	8	SER
1	A	52	ARG
1	A	82	VAL
1	A	114	ALA
1	A	126	GLY
1	A	146	SER
1	A	247	ILE
1	A	248	GLY
1	A	395	ILE
1	A	13	GLY
1	A	62	LYS
1	A	133	ALA
1	A	158	ASP
1	A	236	GLY
1	A	336	GLN
1	A	357	GLN
1	A	427	PRO
1	A	7	LEU
1	A	88	GLY
1	A	145	LEU
1	A	199	LEU
1	A	347	GLU
1	A	348	GLU
1	A	396	LEU
1	A	509	ARG
1	A	59	HIS
1	A	144	GLU

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Mol	Chain	Res	Type
1	A	147	GLN
1	A	81	GLY
1	A	87	ALA
1	A	115	ASP
1	A	256	GLN
1	A	353	LEU
1	A	394	GLU
1	A	430	PRO
1	A	11	PRO
1	A	287	PRO
1	A	110	PRO

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	391/408 (96%)	278 (71%)	113 (29%)	0 1

All (113) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	5	GLN
1	A	8	SER
1	A	17	LEU
1	A	22	ARG
1	A	30	GLN
1	A	32	THR
1	A	34	LEU
1	A	36	LYS
1	A	43	ARG
1	A	46	ASN
1	A	48	ILE
1	A	49	LEU
1	A	50	VAL
1	A	52	ARG
1	A	55	ARG

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Mol	Chain	Res	Type
1	A	58	VAL
1	A	62	LYS
1	A	69	MET
1	A	74	THR
1	A	77	GLN
1	A	78	LYS
1	A	82	VAL
1	A	86	SER
1	A	100	ARG
1	A	103	VAL
1	A	108	VAL
1	A	111	THR
1	A	115	ASP
1	A	116	ILE
1	A	117	LYS
1	A	127	GLU
1	A	130	LEU
1	A	131	HIS
1	A	134	ASN
1	A	136	ASP
1	A	137	GLU
1	A	143	ILE
1	A	146	SER
1	A	148	GLN
1	A	158	ASP
1	A	168	THR
1	A	171	LEU
1	A	175	GLN
1	A	182	ARG
1	A	198	VAL
1	A	199	LEU
1	A	200	ILE
1	A	207	ILE
1	A	208	LYS
1	A	216	ASP
1	A	217	SER
1	A	219	CYS
1	A	224	LEU
1	A	228	HIS
1	A	235	VAL
1	A	245	LYS
1	A	250	GLU

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Mol	Chain	Res	Type
1	A	251	THR
1	A	253	ARG
1	A	254	LEU
1	A	256	GLN
1	A	257	GLU
1	A	262	ILE
1	A	263	ILE
1	A	265	VAL
1	A	270	ILE
1	A	275	LYS
1	A	277	LEU
1	A	282	ARG
1	A	288	SER
1	A	291	LEU
1	A	293	LEU
1	A	297	LYS
1	A	300	ILE
1	A	302	LEU
1	A	309	ARG
1	A	310	LEU
1	A	319	VAL
1	A	324	LEU
1	A	331	CYS
1	A	337	ARG
1	A	340	LEU
1	A	343	VAL
1	A	347	GLU
1	A	354	LYS
1	A	358	LEU
1	A	375	LYS
1	A	379	ILE
1	A	384	ARG
1	A	386	SER
1	A	394	GLU
1	A	396	LEU
1	A	397	GLN
1	A	409	LEU
1	A	412	ASP
1	A	417	LEU
1	A	434	ARG
1	A	435	LEU
1	A	443	SER

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Mol	Chain	Res	Type
1	A	447	LEU
1	A	451	LEU
1	A	452	ASN
1	A	454	LEU
1	A	457	TYR
1	A	460	ILE
1	A	461	SER
1	A	466	ARG
1	A	470	THR
1	A	475	VAL
1	A	476	LEU
1	A	497	TYR
1	A	503	THR
1	A	509	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (8) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	5	GLN
1	A	159	HIS
1	A	175	GLN
1	A	202	GLN
1	A	304	ASN
1	A	336	GLN
1	A	400	ASN
1	A	418	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 ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry

1 ligand is 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	PLP	A	962	1	15,15,16	1.96	6 (40%)	21,22,23	2.98	11 (52%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	PLP	A	962	1	-	5/6/6/8	0/1/1/1

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	962	PLP	C2-N1	3.58	1.40	1.33
2	A	962	PLP	P-O4P	-3.11	1.50	1.60
2	A	962	PLP	C6-N1	2.66	1.39	1.34
2	A	962	PLP	C5A-C5	2.55	1.57	1.50
2	A	962	PLP	C5-C4	2.49	1.43	1.40
2	A	962	PLP	P-O2P	-2.08	1.47	1.54

All (11) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	962	PLP	C5A-C5-C6	-6.30	109.08	119.36
2	A	962	PLP	C4A-C4-C5	5.71	126.83	120.94
2	A	962	PLP	C5A-C5-C4	5.63	133.75	122.64
2	A	962	PLP	O4P-C5A-C5	3.63	116.16	109.36
2	A	962	PLP	C4A-C4-C3	-3.55	114.60	120.52
2	A	962	PLP	O3-C3-C2	3.46	124.76	117.58
2	A	962	PLP	C2A-C2-N1	3.16	123.60	117.64

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	962	PLP	C2A-C2-C3	-3.15	117.11	120.80
2	A	962	PLP	O3-C3-C4	-2.47	111.67	118.10
2	A	962	PLP	C4-C3-C2	2.35	123.39	119.89
2	A	962	PLP	O3P-P-O2P	2.10	115.69	107.80

There are no chirality outliers.

All (5) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	962	PLP	C4-C5-C5A-O4P
2	A	962	PLP	C6-C5-C5A-O4P
2	A	962	PLP	C5A-O4P-P-O1P
2	A	962	PLP	C5A-O4P-P-O2P
2	A	962	PLP	C5A-O4P-P-O3P

There are no ring outliers.

1 monomer is involved in 1 short contact:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	962	PLP	1	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 [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	494/514 (96%)	-0.15	26 (5%) 32 24	8, 32, 80, 99	0

All (26) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	251	THR	4.5
1	A	472	TYR	4.1
1	A	469	GLY	3.9
1	A	470	THR	3.9
1	A	250	GLU	3.6
1	A	471	ASP	3.3
1	A	345	ILE	3.2
1	A	80	HIS	3.2
1	A	75	GLU	3.0
1	A	468	HIS	3.0
1	A	467	SER	2.7
1	A	473	GLY	2.7
1	A	457	TYR	2.6
1	A	7	LEU	2.6
1	A	76	GLU	2.6
1	A	351	SER	2.6
1	A	74	THR	2.5
1	A	458	TRP	2.4
1	A	337	ARG	2.3
1	A	375	LYS	2.3
1	A	403	GLY	2.3
1	A	404	TYR	2.2
1	A	376	ASN	2.1
1	A	352	PHE	2.1
1	A	335	GLU	2.1
1	A	6	PRO	2.1

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(\AA^2)	Q<0.9
2	PLP	A	962	15/16	0.98	0.05	5,11,40,83	0

6.5 Other polymers [i](#)

There are no such residues in this entry.