



Full wwPDB X-ray Structure Validation Report

Feb 27, 2014 – 01:51 PM GMT

PDB ID : 4A0M
Title : CRYSTAL STRUCTURE OF BETAINE ALDEHYDE DEHYDROGENASE
FROM SPINACH IN COMPLEX WITH NAD
Authors : Gonzalez-Segura, L.; Rudino-Pinera, E.; Diaz-Sanchez, A.G.; Munoz-Clares,
R.A.
Deposited on : 2011-09-09
Resolution : 2.30 Å(reported)

This is a full wwPDB validation report for a publicly released PDB entry.
We welcome your comments at validation@mail.wwpdb.org
A user guide is available at <http://wwpdb.org/ValidationPDFNotes.html>

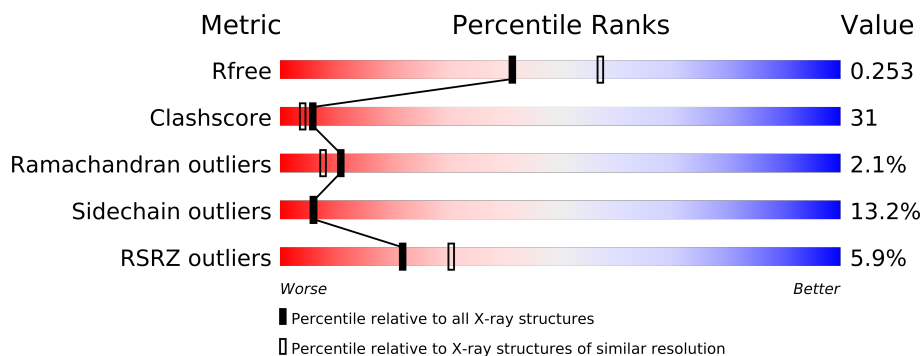
The following versions of software and data (see [references](#)) were used in the production of this report:

MolProbity : 4.02b-467
Mogul : 1.15 2013
Xtriage (Phenix) : dev-1323
EDS : stable22639
Percentile statistics : 21963
Refmac : 5.8.0049
CCP4 : 6.3.0 (Settle)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et. al. (1996)
Validation Pipeline (wwPDB-VP) : stable22683

1 Overall quality at a glance

The reported resolution of this entry is 2.30 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}	66092	2929 (2.30-2.30)
Clashscore	79885	3679 (2.30-2.30)
Ramachandran outliers	78287	3642 (2.30-2.30)
Sidechain outliers	78261	3641 (2.30-2.30)
RSRZ outliers	66119	2930 (2.30-2.30)

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 on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria. The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density.

Mol	Chain	Length	Quality of chain
1	A	496	
1	B	496	
1	C	496	
1	D	496	

The following table lists non-polymeric compounds that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Geometry	Electron density
2	K	A	1501	-	X
2	K	B	1499	-	X
2	K	C	1500	-	X
2	K	C	1501	-	X

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Mol	Type	Chain	Res	Geometry	Electron density
4	GOL	C	1499	-	X
4	GOL	D	1499	-	X
4	GOL	D	1502	-	X

2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 16124 atoms, of which 0 are hydrogen and 0 are deuterium.

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.

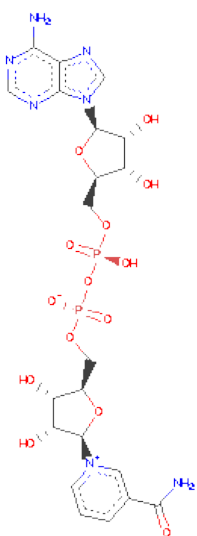
- Molecule 1 is a protein called BETAINE ALDEHYDE DEHYDROGENASE, CHLORO-PLASTIC.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	494	Total	C	N	O	S	0	5	0
			3838	2461	637	723	17			
1	B	494	Total	C	N	O	S	0	6	0
			3844	2462	639	726	17			
1	C	494	Total	C	N	O	S	0	7	0
			3854	2471	640	726	17			
1	D	494	Total	C	N	O	S	0	5	0
			3838	2461	637	723	17			

- Molecule 2 is POTASSIUM ION (three-letter code: K) (formula: K).

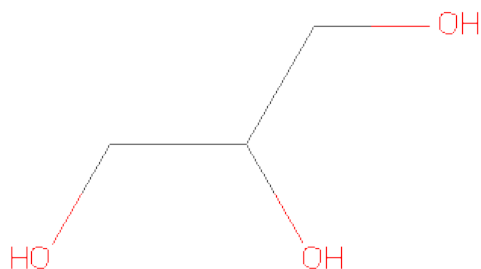
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	B	2	Total	K	0	0
			2	2		
2	A	2	Total	K	0	0
			2	2		
2	D	1	Total	K	0	0
			1	1		
2	C	3	Total	K	0	0
			3	3		

- Molecule 3 is NICOTINAMIDE-ADENINE-DINUCLEOTIDE (three-letter code: NAD) (formula: C₂₁H₂₇N₇O₁₄P₂).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
3	A	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
3	B	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
3	C	1	Total	C	N	O	P	0	0
			44	21	7	14	2		
3	D	1	Total	C	N	O	P	0	0
			44	21	7	14	2		

- Molecule 4 is GLYCEROL (three-letter code: GOL) (formula: C₃H₈O₃).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total C O 6 3 3	0	0
4	A	1	Total C O 6 3 3	0	0
4	C	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0
4	D	1	Total C O 6 3 3	0	0

- Molecule 5 is water.

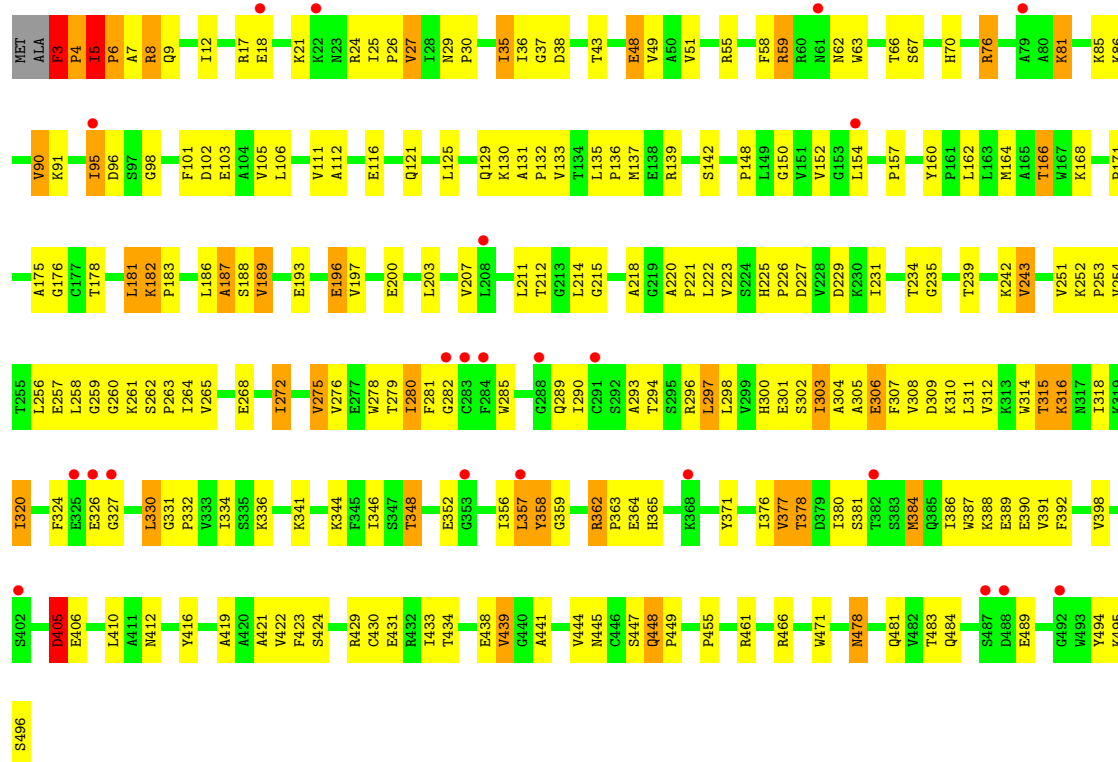
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	170	Total O 170 170	0	0
5	B	128	Total O 128 128	0	0
5	C	129	Total O 129 129	0	0
5	D	97	Total O 97 97	0	0

3 Residue-property plots

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors 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.

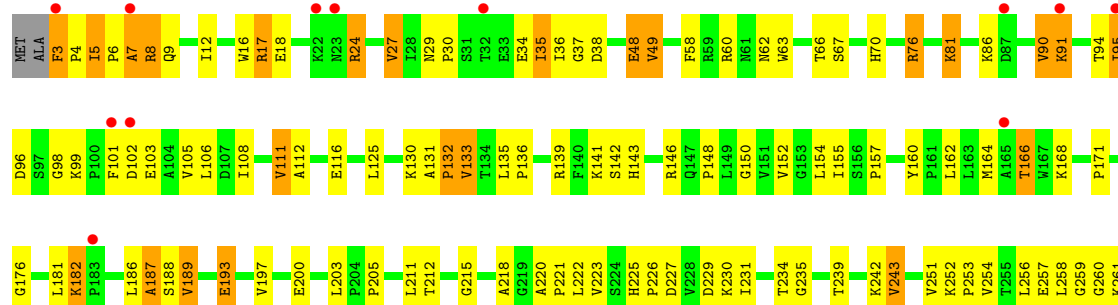
• Molecule 1: BETAINE ALDEHYDE DEHYDROGENASE, CHLOROPLASTIC

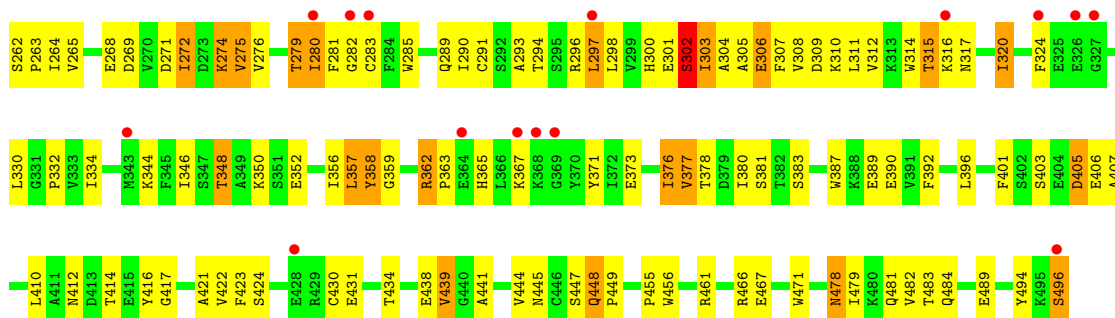
Chain A: 



• Molecule 1: BETAINE ALDEHYDE DEHYDROGENASE, CHLOROPLASTIC

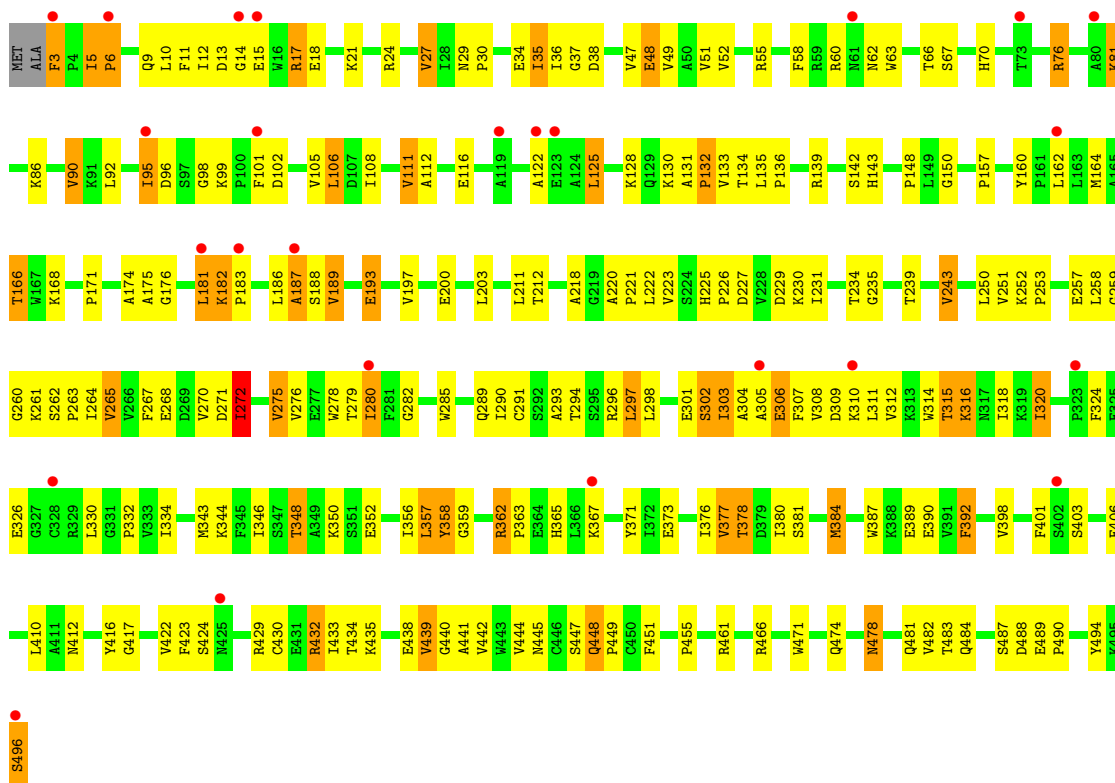
Chain B: 





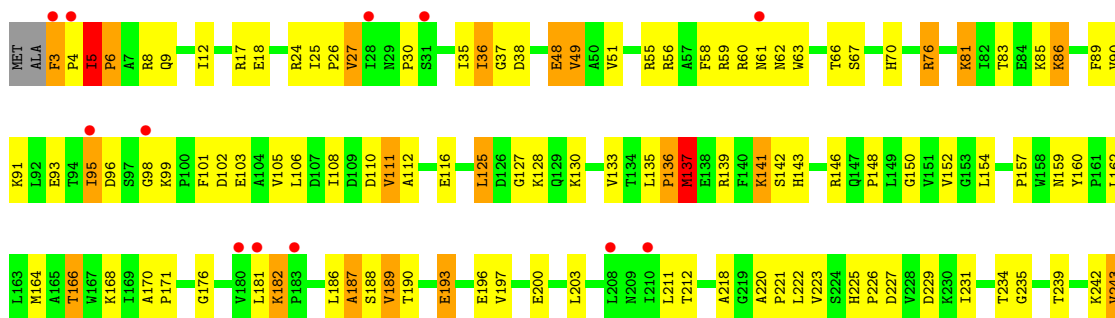
• Molecule 1: BETAINE ALDEHYDE DEHYDROGENASE, CHLOROPLASTIC

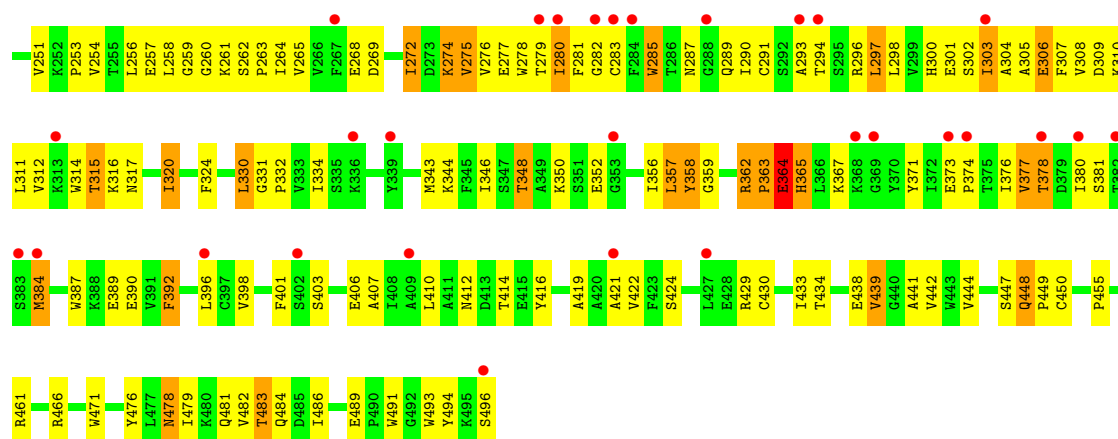
Chain C:



• Molecule 1: BETAINE ALDEHYDE DEHYDROGENASE, CHLOROPLASTIC

Chain D:





4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	69.41Å 80.98Å 85.54Å 79.06° 84.94° 77.99°	Depositor
Resolution (Å)	29.08 – 2.30 29.08 – 2.25	Depositor EDS
% Data completeness (in resolution range)	96.6 (29.08-2.30) 90.1 (29.08-2.25)	Depositor EDS
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.26 (at 2.24Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.213 , 0.247 0.231 , 0.253	Depositor DCC
R_{free} test set	3808 reflections (4.99%)	DCC
Wilson B-factor (Å ²)	43.1	Xtriage
Anisotropy	0.051	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 48.4	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning	$\langle L \rangle = 0.45$, $\langle L^2 \rangle = 0.28$	Xtriage
Outliers	0 of 76329 reflections	Xtriage
F_o, F_c correlation	0.94	EDS
Total number of atoms	16124	wwPDB-VP
Average B, all atoms (Å ²)	55.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.77% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: GOL, K, NAD

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	0.59	1/3932 (0.0%)	0.62	2/5349 (0.0%)
1	B	0.55	2/3938 (0.1%)	0.61	3/5356 (0.1%)
1	C	0.53	0/3948	0.59	0/5371
1	D	0.52	0/3932	0.60	0/5349
All	All	0.55	3/15750 (0.0%)	0.60	5/21425 (0.0%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1

All (3) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	7	ALA	C-N	-5.80	1.20	1.34
1	B	16	TRP	CB-CG	-5.48	1.40	1.50
1	A	278	TRP	CE3-CZ3	-5.17	1.29	1.38

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	7	ALA	O-C-N	7.04	133.96	122.70
1	B	7	ALA	C-N-CA	-6.12	106.41	121.70
1	A	405	ASP	CB-CG-OD1	-6.00	112.90	118.30
1	B	7	ALA	CA-C-N	-5.92	104.19	117.20
1	A	3	PHE	C-N-CD	-5.57	108.35	120.60

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	3	PHE	Peptide

5.2 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 hydrogens added by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, and the number in parentheses is this value normalized per 1000 atoms of the molecule in the chain. The Symm-Clashes column gives symmetry related clashes, in the same way as for the Clashes column.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	3838	0	3831	237	0
1	B	3844	0	3829	241	0
1	C	3854	0	3846	266	0
1	D	3838	0	3831	281	0
2	A	2	0	0	0	0
2	B	2	0	0	0	0
2	C	3	0	0	0	0
2	D	1	0	0	0	0
3	A	44	0	26	5	0
3	B	44	0	26	9	0
3	C	44	0	26	8	0
3	D	44	0	26	6	0
4	A	12	0	16	1	0
4	C	6	0	8	8	0
4	D	24	0	32	9	0
5	A	170	0	0	13	0
5	B	128	0	0	14	0
5	C	129	0	0	10	0
5	D	97	0	0	10	0
All	All	16124	0	15497	974	0

Clashscore is defined as the number of clashes calculated for the entry per 1000 atoms (including hydrogens) of the entry. The overall clashscore for this entry is 31.

All (974) close contacts within the same asymmetric unit are listed below.

Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:60:ARG:CB	1:B:62[B]:ASN:HD21	1.14	1.53

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:60:ARG:HB3	1:B:62[B]:ASN:ND2	1.17	1.46
1:A:6:PRO:HB2	1:A:7:ALA:CA	1.43	1.37
1:B:60:ARG:CB	1:B:62[B]:ASN:ND2	1.73	1.35
1:C:280:ILE:HG22	1:D:494:TYR:CE2	1.63	1.33
1:A:24:ARG:HD3	1:A:38:ASP:OD2	1.32	1.27
1:A:6:PRO:CB	1:A:7:ALA:HA	1.65	1.21
1:A:301:GLU:HB2	5:A:2094:HOH:O	1.38	1.18
1:C:55:ARG:HH12	4:C:1499:GOL:C3	1.57	1.17
1:D:450[B]:CYS:SG	4:D:1500:GOL:H2	1.87	1.14
1:A:5:ILE:HG22	1:A:6:PRO:N	1.64	1.11
1:C:270:VAL:HG21	1:C:275:VAL:HG11	1.29	1.11
1:C:280:ILE:CG2	1:D:494:TYR:CE2	2.38	1.06
1:C:270:VAL:CG2	1:C:275:VAL:HG11	1.84	1.06
1:D:450[B]:CYS:HG	4:D:1500:GOL:H2	1.05	1.03
1:B:5:ILE:HD11	1:B:95:ILE:HD11	1.36	1.03
1:D:3:PHE:CE2	1:D:95:ILE:HG21	1.95	1.01
1:A:76:ARG:HG3	1:A:76:ARG:HH11	1.25	0.99
1:B:24:ARG:HD3	1:B:38:ASP:OD2	1.63	0.99
1:A:6:PRO:HB2	1:A:7:ALA:CB	1.94	0.98
1:C:76:ARG:HH11	1:C:76:ARG:HG3	1.26	0.98
1:C:225:HIS:HD2	1:C:227:ASP:H	1.12	0.97
1:A:315:THR:HA	1:A:318:ILE:HD12	1.43	0.97
1:C:5:ILE:HG23	1:C:6:PRO:N	1.78	0.97
1:B:76:ARG:HH11	1:B:76:ARG:HG3	1.29	0.97
1:D:225:HIS:HD2	1:D:227:ASP:H	1.11	0.97
1:D:297:LEU:HB2	5:D:2071:HOH:O	1.64	0.97
1:D:320:ILE:HG21	1:D:373:GLU:OE2	1.65	0.96
1:B:271:ASP:CG	1:B:274:LYS:HD2	1.85	0.95
1:C:5:ILE:CG2	1:C:6:PRO:N	2.30	0.95
1:C:96:ASP:OD2	1:C:189:VAL:HG13	1.66	0.95
1:A:6:PRO:CB	1:A:7:ALA:CA	2.30	0.94
1:A:3:PHE:CD1	1:A:3:PHE:N	2.32	0.94
1:D:76:ARG:HH11	1:D:76:ARG:HG3	1.29	0.94
1:A:6:PRO:HB2	1:A:7:ALA:HA	0.94	0.93
1:D:110:ASP:OD2	4:D:1501:GOL:H2	1.65	0.93
1:B:60:ARG:HB2	1:B:62[B]:ASN:HD21	0.78	0.92
1:C:24:ARG:HD3	1:C:38:ASP:OD2	1.69	0.92
1:C:280:ILE:HG22	1:D:494:TYR:HE2	1.01	0.91
1:A:225:HIS:HD2	1:A:227:ASP:H	1.14	0.91
1:A:3:PHE:HD1	1:A:3:PHE:N	1.70	0.90
1:B:225:HIS:HD2	1:B:227:ASP:H	1.13	0.90
1:B:3:PHE:N	1:B:4:PRO:HD2	1.88	0.89

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:5:ILE:HG23	1:C:6:PRO:CD	2.01	0.89
1:C:55:ARG:NH1	4:C:1499:GOL:C3	2.36	0.87
1:C:316:LYS:HD2	1:C:358:TYR:HE2	1.39	0.87
1:D:95:ILE:HG22	1:D:324:PHE:CZ	2.09	0.86
1:D:363:PRO:O	1:D:364:GLU:HB2	1.73	0.86
1:D:5:ILE:H	1:D:5:ILE:HD13	1.41	0.85
1:A:242:LYS:HE2	1:D:127:GLY:CA	2.07	0.85
1:B:268:GLU:HA	1:B:303:ILE:HD11	1.57	0.85
1:B:60:ARG:HB3	1:B:62[B]:ASN:HD22	1.07	0.85
1:C:225:HIS:CD2	1:C:227:ASP:H	1.95	0.85
1:D:225:HIS:CD2	1:D:227:ASP:H	1.95	0.84
1:C:272:ILE:HG13	1:C:272:ILE:O	1.78	0.83
1:C:15:GLU:HG2	1:C:17:ARG:HH11	1.43	0.83
1:C:150:GLY:HA3	4:C:1499:GOL:O3	1.76	0.83
1:D:268:GLU:HA	1:D:303:ILE:HD11	1.58	0.83
1:B:3:PHE:HB2	1:B:91:LYS:HZ1	1.43	0.82
1:B:225:HIS:CD2	1:B:227:ASP:H	1.97	0.82
1:C:102:ASP:O	1:C:105:VAL:HG22	1.80	0.82
1:B:5:ILE:HD11	1:B:95:ILE:CD1	2.08	0.82
1:D:24:ARG:HD3	1:D:38:ASP:OD2	1.79	0.82
1:C:55:ARG:HH12	4:C:1499:GOL:H31	1.44	0.82
1:D:5:ILE:H	1:D:5:ILE:CD1	1.93	0.82
1:D:272:ILE:HD12	1:D:307:PHE:HA	1.60	0.82
1:A:225:HIS:CD2	1:A:227:ASP:H	1.97	0.82
1:A:5:ILE:CG2	1:A:6:PRO:N	2.39	0.81
1:C:305:ALA:O	1:C:306:GLU:HB3	1.80	0.81
1:A:481:GLN:HE21	1:A:483:THR:HG21	1.44	0.81
1:A:341:LYS:HE3	5:A:2110:HOH:O	1.79	0.81
1:C:268:GLU:HA	1:C:303:ILE:HD11	1.62	0.81
1:D:95:ILE:HG22	1:D:324:PHE:HZ	1.46	0.81
1:A:272:ILE:HD12	1:A:307:PHE:HA	1.61	0.81
1:A:481:GLN:HE21	1:A:483:THR:CG2	1.93	0.81
1:D:481:GLN:HE21	1:D:483:THR:HG21	1.46	0.81
1:B:272:ILE:HD12	1:B:307:PHE:HA	1.62	0.80
1:B:481:GLN:HE21	1:B:483:THR:CG2	1.94	0.80
1:D:3:PHE:CZ	1:D:95:ILE:HG21	2.16	0.80
1:C:101:PHE:O	1:C:105:VAL:HG13	1.82	0.79
1:C:481:GLN:HE21	1:C:483:THR:CG2	1.95	0.79
1:A:162:LEU:O	1:A:166:THR:HG23	1.83	0.79
1:D:157:PRO:HG3	1:D:234:THR:HG22	1.64	0.79
1:C:5:ILE:HG23	1:C:6:PRO:HD2	1.65	0.79
1:B:95:ILE:HG22	1:B:324:PHE:CE2	2.17	0.78

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:268:GLU:HA	1:A:303:ILE:HD11	1.66	0.78
1:A:24:ARG:CD	1:A:38:ASP:OD2	2.23	0.78
1:C:5:ILE:HD11	1:C:95:ILE:HD11	1.63	0.78
1:D:481:GLN:HE21	1:D:483:THR:CG2	1.95	0.78
1:C:142:SER:OG	1:C:483:THR:HG22	1.84	0.78
1:C:481:GLN:HE21	1:C:483:THR:HG21	1.47	0.77
1:A:95:ILE:HG22	1:A:324:PHE:CE2	2.17	0.77
1:D:55:ARG:O	1:D:59:ARG:HG3	1.84	0.77
1:B:162:LEU:O	1:B:166:THR:HG23	1.84	0.77
1:A:5:ILE:H	1:A:6:PRO:HD3	1.50	0.77
1:C:9:GLN:OE1	1:C:18:GLU:HA	1.84	0.77
1:A:51:VAL:HG21	1:A:225:HIS:CE1	2.20	0.76
1:A:344:LYS:O	1:A:348:THR:HG23	1.86	0.76
1:C:162:LEU:O	1:C:166:THR:HG23	1.84	0.76
1:A:9:GLN:OE1	1:A:18:GLU:HA	1.85	0.76
1:D:320:ILE:HD11	1:D:371:TYR:CD1	2.21	0.76
1:A:242:LYS:HE2	1:D:127:GLY:HA2	1.65	0.76
1:D:51:VAL:HG21	1:D:225:HIS:CE1	2.21	0.76
1:A:362:ARG:HD3	1:A:363:PRO:HD2	1.66	0.76
1:B:9:GLN:OE1	1:B:18:GLU:HA	1.86	0.76
1:B:3:PHE:N	1:B:4:PRO:CD	2.49	0.76
1:B:95:ILE:HG22	1:B:324:PHE:CZ	2.21	0.75
1:D:365:HIS:H	1:D:365:HIS:CD2	2.03	0.75
1:B:261:LYS:HG3	1:B:296:ARG:HD2	1.68	0.75
1:A:455:PRO:HG3	1:A:471:TRP:CZ3	2.21	0.75
1:D:9:GLN:OE1	1:D:18:GLU:HA	1.87	0.75
1:B:390[B]:GLU:OE2	5:B:2102:HOH:O	2.04	0.75
1:D:278:TRP:O	1:D:281:PHE:N	2.20	0.75
1:D:260:GLY:HA2	1:D:416:TYR:CD1	2.22	0.75
1:B:320:ILE:HD11	1:B:371:TYR:CD1	2.22	0.75
1:C:5:ILE:HD11	1:C:95:ILE:CD1	2.17	0.75
1:C:429:ARG:HA	1:C:432:ARG:NH2	2.02	0.75
1:C:362:ARG:HD3	1:C:363:PRO:HD2	1.68	0.75
1:B:362:ARG:HD3	1:B:363:PRO:HD2	1.69	0.75
1:B:5:ILE:HG22	1:B:6:PRO:O	1.86	0.74
1:C:95:ILE:HG22	1:C:324:PHE:CE2	2.21	0.74
1:A:142:SER:OG	1:A:483:THR:HG22	1.87	0.74
1:D:320:ILE:HD11	1:D:371:TYR:HD1	1.51	0.74
1:B:275:VAL:O	1:B:279:THR:HG23	1.87	0.74
1:B:3:PHE:CB	1:B:91:LYS:HZ1	2.01	0.74
1:C:15:GLU:CG	1:C:17:ARG:HH11	2.01	0.74
1:C:267:PHE:O	1:C:270:VAL:CG1	2.35	0.74

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:162:LEU:O	1:D:166:THR:HG23	1.86	0.73
1:D:3:PHE:CG	1:D:91:LYS:NZ	2.56	0.73
1:B:142:SER:OG	1:B:483:THR:HG22	1.88	0.73
1:C:455:PRO:HG3	1:C:471:TRP:CZ3	2.23	0.73
1:C:316:LYS:HD2	1:C:358:TYR:CE2	2.23	0.73
1:C:270:VAL:CG2	1:C:275:VAL:CG1	2.66	0.73
1:B:320:ILE:HD11	1:B:371:TYR:HD1	1.53	0.73
1:D:297:LEU:N	5:D:2071:HOH:O	2.21	0.73
1:B:60:ARG:HB2	1:B:62[B]:ASN:ND2	1.64	0.73
1:C:430:CYS:O	1:C:434:THR:HG23	1.89	0.73
1:C:261:LYS:HG3	1:C:296:ARG:HD2	1.70	0.73
1:A:280:ILE:HG22	1:B:494:TYR:CE2	2.23	0.72
1:B:157:PRO:HG3	1:B:234:THR:HG22	1.69	0.72
1:A:289:GLN:HE22	1:A:334:ILE:H	1.37	0.72
1:A:96:ASP:OD2	1:A:189:VAL:HG13	1.89	0.72
1:B:481:GLN:HE21	1:B:483:THR:HG21	1.53	0.72
1:A:130:LYS:NZ	1:B:431:GLU:OE1	2.22	0.72
1:A:157:PRO:HG3	1:A:234:THR:HG22	1.72	0.72
1:D:3:PHE:HE2	1:D:95:ILE:HG21	1.50	0.72
1:D:430:CYS:O	1:D:434:THR:HG23	1.89	0.72
1:D:396:LEU:HD21	5:D:2071:HOH:O	1.88	0.72
1:A:261:LYS:HG3	1:A:296:ARG:HD2	1.70	0.72
1:C:320:ILE:HD11	1:C:371:TYR:CD1	2.24	0.72
1:D:274:LYS:O	1:D:277:GLU:N	2.23	0.72
1:A:95:ILE:HG22	1:A:324:PHE:CZ	2.25	0.72
1:D:311:LEU:O	1:D:315:THR:HG22	1.90	0.71
1:C:135:LEU:HD21	1:C:142:SER:CB	2.21	0.71
1:D:289:GLN:HE22	1:D:334:ILE:H	1.39	0.71
1:C:251[A]:VAL:HG11	1:D:258:LEU:HD11	1.72	0.71
1:B:300:HIS:ND1	1:B:302:SER:HB2	2.05	0.71
1:D:5:ILE:CD1	1:D:5:ILE:N	2.53	0.71
1:B:430:CYS:O	1:B:434:THR:HG23	1.90	0.71
1:D:455:PRO:HG3	1:D:471:TRP:CZ3	2.25	0.71
1:B:455:PRO:HG3	1:B:471:TRP:CZ3	2.26	0.71
1:A:135:LEU:HD21	1:A:142:SER:CB	2.21	0.71
1:A:260:GLY:HA2	1:A:416:TYR:CD1	2.25	0.71
1:A:320:ILE:HD11	1:A:371:TYR:CD1	2.26	0.71
1:B:357:LEU:HD23	1:B:357:LEU:O	1.91	0.71
1:C:251[A]:VAL:O	1:C:251[A]:VAL:HG12	1.91	0.70
1:C:157:PRO:HG3	1:C:234:THR:HG22	1.73	0.70
1:D:344:LYS:O	1:D:348:THR:HG23	1.91	0.70
1:B:271:ASP:CG	1:B:274:LYS:CD	2.59	0.70

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:320:ILE:HD11	1:C:371:TYR:HD1	1.56	0.70
1:B:260:GLY:HA2	1:B:416:TYR:CD1	2.26	0.70
1:A:430:CYS:O	1:A:434:THR:HG23	1.91	0.70
1:D:414:THR:CG2	5:D:2070:HOH:O	2.40	0.70
1:C:272:ILE:O	1:C:272:ILE:CG1	2.39	0.70
1:D:5:ILE:HG12	1:D:36:ILE:HG13	1.74	0.70
1:B:135:LEU:HD21	1:B:142:SER:CB	2.22	0.70
1:B:261:LYS:HG3	1:B:296:ARG:CD	2.21	0.70
1:C:344:LYS:O	1:C:348:THR:HG23	1.92	0.70
1:C:270:VAL:HG23	1:C:275:VAL:HG11	1.74	0.70
1:D:261:LYS:HG3	1:D:296:ARG:HD2	1.73	0.70
1:A:251:VAL:HG11	1:B:258:LEU:HD11	1.73	0.70
1:D:450[B]:CYS:SG	4:D:1500:GOL:C2	2.76	0.69
1:C:260:GLY:HA2	1:C:416:TYR:CD1	2.26	0.69
1:D:275:VAL:O	1:D:279:THR:HG23	1.92	0.69
1:D:63:TRP:O	1:D:66:THR:HB	1.92	0.69
1:D:261:LYS:HG3	1:D:296:ARG:CD	2.23	0.69
1:D:272:ILE:HA	1:D:275:VAL:HG13	1.75	0.69
1:D:135:LEU:HD21	1:D:142:SER:CB	2.23	0.69
1:D:112:ALA:O	1:D:116:GLU:HG3	1.93	0.69
1:D:142:SER:OG	1:D:483:THR:HG22	1.92	0.69
1:B:63:TRP:O	1:B:66:THR:HB	1.91	0.69
1:C:55:ARG:HH12	4:C:1499:GOL:H32	1.55	0.69
1:C:272:ILE:HA	1:C:275:VAL:HG13	1.75	0.69
1:C:76:ARG:NH1	1:C:76:ARG:HG3	2.05	0.69
1:C:95:ILE:HG22	1:C:324:PHE:CZ	2.27	0.69
1:C:482:VAL:HG21	5:C:2039:HOH:O	1.93	0.69
1:B:414:THR:HG22	5:B:2108:HOH:O	1.92	0.69
1:B:289:GLN:HE22	1:B:334:ILE:H	1.41	0.69
1:C:289:GLN:HE22	1:C:334:ILE:H	1.38	0.69
1:C:311:LEU:O	1:C:315:THR:HG22	1.93	0.69
1:A:63:TRP:O	1:A:66:THR:HB	1.93	0.69
1:B:311:LEU:O	1:B:315:THR:HG22	1.92	0.69
1:A:357:LEU:HD23	1:A:357:LEU:O	1.93	0.69
1:A:261:LYS:HG3	1:A:296:ARG:CD	2.22	0.69
1:C:357:LEU:O	1:C:357:LEU:HD23	1.93	0.68
1:A:275:VAL:O	1:A:279:THR:HG23	1.93	0.68
1:D:357:LEU:HD23	1:D:357:LEU:O	1.93	0.68
1:B:242:LYS:NZ	5:B:2080:HOH:O	2.25	0.68
1:C:435:LYS:HE2	5:C:2103:HOH:O	1.93	0.68
1:D:3:PHE:HE2	1:D:95:ILE:HD12	1.59	0.68
1:B:3:PHE:HB2	1:B:91:LYS:NZ	2.09	0.68

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:76:ARG:CG	1:C:76:ARG:HH11	2.06	0.68
1:D:196:GLU:HG2	5:D:2002:HOH:O	1.93	0.68
1:D:3:PHE:HZ	1:D:324:PHE:CZ	2.12	0.68
1:D:182:LYS:HD2	1:D:218:ALA:HB3	1.76	0.68
1:C:267:PHE:O	1:C:270:VAL:HG13	1.94	0.67
1:B:272:ILE:HA	1:B:275:VAL:HG13	1.75	0.67
1:B:96:ASP:OD2	1:B:189:VAL:HG13	1.94	0.67
1:C:275:VAL:O	1:C:279:THR:HG23	1.95	0.67
1:C:96:ASP:OD2	1:C:189:VAL:CG1	2.40	0.67
1:C:258:LEU:HD11	1:D:251:VAL:HG11	1.75	0.67
1:C:270:VAL:HG23	1:C:275:VAL:CG1	2.25	0.67
1:A:76:ARG:CG	1:A:76:ARG:HH11	2.03	0.67
1:A:215:GLY:HA3	3:A:1498:NAD:C8A	2.24	0.67
1:A:444:VAL:HB	1:B:484:GLN:CB	2.25	0.67
1:D:305:ALA:O	1:D:306:GLU:CB	2.43	0.67
1:B:5:ILE:CG2	1:B:6:PRO:O	2.43	0.67
1:A:251:VAL:HG12	1:A:251:VAL:O	1.95	0.67
1:C:305:ALA:O	1:C:306:GLU:CB	2.43	0.66
1:D:9:GLN:NE2	1:D:24:ARG:HH21	1.93	0.66
1:A:258:LEU:HD11	1:B:251:VAL:HG11	1.76	0.66
1:A:320:ILE:HD11	1:A:371:TYR:HD1	1.57	0.66
1:A:272:ILE:HA	1:A:275:VAL:HG13	1.77	0.66
1:A:431:GLU:HB2	5:A:2136:HOH:O	1.95	0.66
1:B:76:ARG:HH11	1:B:76:ARG:CG	2.06	0.66
1:D:390[B]:GLU:HG3	1:D:390[B]:GLU:O	1.94	0.66
1:D:4:PRO:C	1:D:5:ILE:O	2.30	0.66
1:A:81:LYS:HD3	1:A:200:GLU:OE1	1.96	0.66
1:B:406:GLU:O	1:B:410:LEU:HB2	1.96	0.66
1:B:3:PHE:CB	1:B:91:LYS:NZ	2.59	0.66
1:D:135:LEU:HD21	1:D:142:SER:HB3	1.77	0.66
1:A:259:GLY:HA3	3:A:1498:NAD:O2D	1.96	0.66
1:D:493:TRP:HD1	1:D:494:TYR:CE1	2.14	0.65
1:B:6:PRO:HG2	1:B:193:GLU:OE2	1.96	0.65
1:B:357:LEU:O	1:B:358:TYR:HB2	1.96	0.65
1:C:63:TRP:O	1:C:66:THR:HB	1.97	0.65
1:C:55:ARG:NH1	4:C:1499:GOL:H32	2.10	0.65
1:D:272:ILE:HD13	1:D:306:GLU:HG2	1.77	0.65
1:A:306:GLU:HG2	1:A:310:LYS:HZ3	1.61	0.65
1:C:390[B]:GLU:HG3	1:C:390[B]:GLU:O	1.97	0.65
1:B:6:PRO:CG	1:B:193:GLU:OE2	2.45	0.65
1:D:272:ILE:CD1	1:D:306:GLU:HG2	2.27	0.65
1:C:261:LYS:HG3	1:C:296:ARG:CD	2.26	0.65

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:251:VAL:O	1:B:251:VAL:HG12	1.96	0.65
1:C:306:GLU:O	1:C:310:LYS:HG2	1.96	0.65
1:D:3:PHE:HZ	1:D:324:PHE:HZ	1.44	0.65
1:B:390[B]:GLU:O	1:B:390[B]:GLU:HG3	1.97	0.65
1:C:272:ILE:HD11	1:C:306:GLU:HG2	1.78	0.64
1:D:314:TRP:O	1:D:317:ASN:HB2	1.97	0.64
1:A:405:ASP:C	1:A:405:ASP:OD1	2.30	0.64
1:B:271:ASP:OD2	1:B:274:LYS:NZ	2.29	0.64
1:B:168:LYS:O	1:B:171:PRO:HD2	1.98	0.64
1:C:259:GLY:H	3:C:1498:NAD:H71N	1.45	0.64
1:C:365:HIS:H	1:C:365:HIS:CD2	2.13	0.64
1:D:3:PHE:CZ	1:D:95:ILE:CG2	2.80	0.64
1:A:66:THR:HG22	1:A:67:SER:O	1.98	0.64
1:D:259:GLY:HA3	3:D:1498:NAD:O2D	1.98	0.64
1:A:5:ILE:HG22	1:A:6:PRO:CA	2.28	0.64
1:D:274:LYS:O	1:D:275:VAL:C	2.35	0.64
1:D:76:ARG:HH11	1:D:76:ARG:CG	2.09	0.64
1:A:30:PRO:HB2	1:A:332:PRO:HG2	1.79	0.64
1:B:365:HIS:CD2	1:B:365:HIS:H	2.15	0.64
1:C:251[A]:VAL:HG11	1:D:258:LEU:CD1	2.28	0.64
1:A:305:ALA:O	1:A:306:GLU:HB2	1.99	0.63
1:C:34:GLU:O	1:C:36:ILE:HG23	1.98	0.63
5:A:2162:HOH:O	1:B:314:TRP:HE3	1.81	0.63
1:B:182:LYS:HD2	1:B:218:ALA:HB3	1.79	0.63
1:A:251:VAL:HG11	1:B:258:LEU:CD1	2.29	0.63
1:C:66:THR:HG22	1:C:67:SER:O	1.99	0.63
1:B:308:VAL:O	1:B:312:VAL:HG13	1.99	0.63
1:A:390[B]:GLU:O	1:A:390[B]:GLU:HG3	1.97	0.63
1:C:182:LYS:HD2	1:C:218:ALA:HB3	1.80	0.63
1:A:76:ARG:NH1	1:A:76:ARG:HG3	2.04	0.62
1:C:6:PRO:HB3	1:C:193:GLU:OE2	1.98	0.62
1:D:396:LEU:CD2	5:D:2071:HOH:O	2.46	0.62
1:B:447:SER:C	1:B:449:PRO:HD3	2.20	0.62
1:C:455:PRO:HG3	1:C:471:TRP:CE3	2.34	0.62
1:C:3:PHE:C	1:C:3:PHE:CD1	2.67	0.62
1:B:298:LEU:HD21	1:B:387:TRP:HH2	1.65	0.62
1:C:135:LEU:HD21	1:C:142:SER:HB2	1.81	0.62
1:C:377:VAL:CG2	1:C:380:ILE:HD11	2.29	0.62
1:D:291:CYS:HB3	3:D:1498:NAD:C6N	2.29	0.62
1:A:306:GLU:HG2	1:A:310:LYS:NZ	2.13	0.62
1:A:494:TYR:HB3	5:A:2162:HOH:O	2.00	0.62
1:B:103:GLU:OE2	1:B:285:TRP:CD1	2.53	0.62

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:76:ARG:HG3	1:D:76:ARG:NH1	2.07	0.61
1:D:251:VAL:O	1:D:251:VAL:HG12	1.99	0.61
1:C:259:GLY:HA3	3:C:1498:NAD:O2D	1.99	0.61
1:C:12:ILE:HD11	1:C:211:LEU:HD21	1.81	0.61
1:B:412:ASN:HD21	1:B:438:GLU:H	1.48	0.61
1:C:9:GLN:NE2	1:C:24:ARG:HH21	1.97	0.61
1:D:312:VAL:O	1:D:316:LYS:HB2	2.01	0.61
1:C:312:VAL:O	1:C:316:LYS:HB2	2.00	0.61
1:D:493:TRP:CD1	1:D:494:TYR:CE1	2.88	0.61
1:A:305:ALA:O	1:A:306:GLU:CB	2.49	0.61
1:C:412:ASN:HD21	1:C:438:GLU:H	1.49	0.61
1:C:298:LEU:HD21	1:C:387:TRP:HH2	1.65	0.61
1:B:350:LYS:HE3	1:B:356:ILE:HD12	1.81	0.61
1:C:447:SER:C	1:C:449:PRO:HD3	2.21	0.61
1:A:377:VAL:CG2	1:A:380:ILE:HD11	2.31	0.61
3:C:1498:NAD:H52A	3:C:1498:NAD:O2N	2.01	0.61
1:A:298:LEU:HD21	1:A:387:TRP:HH2	1.66	0.61
1:A:455:PRO:HG3	1:A:471:TRP:CE3	2.36	0.60
1:C:258:LEU:CD1	1:D:251:VAL:HG11	2.31	0.60
1:C:444:VAL:HB	1:D:484:GLN:CB	2.31	0.60
1:C:105:VAL:HG23	1:C:106:LEU:HD13	1.83	0.60
1:B:76:ARG:HG3	1:B:76:ARG:NH1	2.09	0.60
1:A:135:LEU:HD21	1:A:142:SER:HB3	1.82	0.60
1:D:66:THR:CG2	1:D:70:HIS:HB3	2.31	0.60
1:B:17:ARG:HG2	5:B:2006:HOH:O	2.01	0.60
1:A:494:TYR:CE2	1:B:280:ILE:HG22	2.36	0.60
1:C:66:THR:CG2	1:C:70:HIS:HB3	2.31	0.60
1:D:265:VAL:HG22	1:D:422:VAL:HG23	1.84	0.60
1:D:3:PHE:CE2	1:D:95:ILE:CG2	2.80	0.60
1:A:168:LYS:O	1:A:171:PRO:HD2	2.02	0.60
1:D:3:PHE:CB	1:D:91:LYS:NZ	2.64	0.60
1:B:265:VAL:HG22	1:B:422:VAL:HG23	1.83	0.60
1:C:150:GLY:CA	4:C:1499:GOL:O3	2.48	0.60
1:D:298:LEU:HD21	1:D:387:TRP:HH2	1.66	0.60
1:A:311:LEU:O	1:A:315:THR:HG22	2.02	0.59
1:D:27:VAL:HG13	1:D:37:GLY:C	2.23	0.59
1:C:377:VAL:HG22	1:C:380:ILE:HD11	1.84	0.59
1:C:81:LYS:HG2	1:C:197:VAL:HG13	1.84	0.59
1:D:412:ASN:HD21	1:D:438:GLU:H	1.49	0.59
1:A:316:LYS:HD2	1:A:358:TYR:HE2	1.67	0.59
1:B:377:VAL:CG2	1:B:380:ILE:HD11	2.33	0.59
1:A:6:PRO:HB2	1:A:7:ALA:HB2	1.82	0.59

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:315:THR:HG23	5:C:2074:HOH:O	2.01	0.59
1:C:135:LEU:HD21	1:C:142:SER:HB3	1.85	0.59
1:B:66:THR:CG2	1:B:70:HIS:HB3	2.32	0.59
1:B:81:LYS:HG2	1:B:197:VAL:HG13	1.85	0.59
1:D:377:VAL:CG2	1:D:380:ILE:HD11	2.32	0.59
1:A:135:LEU:HD21	1:A:142:SER:HB2	1.84	0.59
1:D:66:THR:HG22	1:D:67:SER:O	2.02	0.59
1:B:377:VAL:HG22	1:B:380:ILE:HD11	1.84	0.59
1:C:357:LEU:O	1:C:358:TYR:HB2	2.02	0.59
1:D:264:ILE:CD1	1:D:279:THR:HG22	2.32	0.59
1:B:301:GLU:HA	1:B:304:ALA:HB2	1.85	0.59
1:A:258:LEU:CD1	1:B:251:VAL:HG11	2.31	0.59
1:A:447:SER:C	1:A:449:PRO:HD3	2.24	0.59
1:B:312:VAL:O	1:B:316:LYS:HB2	2.02	0.59
1:A:101:PHE:O	1:A:105:VAL:HG13	2.03	0.59
1:D:168:LYS:O	1:D:171:PRO:HD2	2.03	0.59
1:B:135:LEU:HD21	1:B:142:SER:HB2	1.83	0.58
1:D:81:LYS:HG2	1:D:197:VAL:HG13	1.85	0.58
1:A:66:THR:CG2	1:A:70:HIS:HB3	2.34	0.58
1:A:182:LYS:HD2	1:A:218:ALA:HB3	1.84	0.58
1:B:30:PRO:HB2	1:B:332:PRO:HG2	1.85	0.58
1:C:55:ARG:NH1	4:C:1499:GOL:H31	2.12	0.58
1:C:51:VAL:HG21	1:C:225:HIS:CE1	2.38	0.58
1:B:182:LYS:NZ	3:B:1498:NAD:O2B	2.37	0.58
1:C:81:LYS:HD3	1:C:200:GLU:OE1	2.03	0.58
1:D:412:ASN:ND2	1:D:438:GLU:H	2.02	0.58
1:D:56:ARG:HD2	1:D:60:ARG:HH12	1.66	0.58
1:C:3:PHE:O	1:C:3:PHE:CD1	2.56	0.58
1:B:306:GLU:O	1:B:310:LYS:HG2	2.04	0.58
1:B:135:LEU:HD21	1:B:142:SER:HB3	1.84	0.58
1:A:96:ASP:CG	1:A:189:VAL:HG13	2.24	0.58
1:A:365:HIS:H	1:A:365:HIS:CD2	2.21	0.58
1:C:265:VAL:HG22	1:C:422:VAL:HG23	1.84	0.58
1:A:377:VAL:HG22	1:A:380:ILE:HD11	1.84	0.58
1:A:304:ALA:O	1:A:308:VAL:HG12	2.03	0.58
1:A:336:LYS:NZ	1:D:116:GLU:OE1	2.35	0.58
1:A:484:GLN:CB	1:B:444:VAL:HB	2.33	0.58
1:A:311:LEU:O	1:A:315:THR:CG2	2.51	0.58
1:D:373:GLU:O	1:D:374:PRO:C	2.40	0.58
1:B:257[A]:GLU:HB3	3:B:1498:NAD:N7N	2.18	0.58
1:D:95:ILE:HG22	1:D:324:PHE:CE2	2.38	0.57
1:B:96:ASP:CG	1:B:189:VAL:HG13	2.24	0.57

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:314:TRP:O	1:D:317:ASN:CB	2.52	0.57
1:A:265:VAL:HG22	1:A:422:VAL:HG23	1.85	0.57
1:C:350:LYS:HE3	1:C:356:ILE:HD12	1.85	0.57
1:A:220:ALA:HB3	1:A:221:PRO:HD3	1.85	0.57
1:D:301:GLU:HA	1:D:304:ALA:HB2	1.85	0.57
1:A:25[B]:ILE:HG23	1:A:26:PRO:HD2	1.86	0.57
1:C:21:LYS:NZ	5:C:2002:HOH:O	2.37	0.57
1:B:101:PHE:O	1:B:105:VAL:HG13	2.04	0.57
1:C:105:VAL:CG2	1:C:106:LEU:HD13	2.34	0.57
1:D:30:PRO:HB2	1:D:332:PRO:HG2	1.86	0.57
1:D:101:PHE:O	1:D:105:VAL:HG13	2.04	0.57
1:D:414:THR:HG23	5:D:2070:HOH:O	2.03	0.57
1:B:242:LYS:NZ	5:B:2083:HOH:O	2.36	0.57
1:D:377:VAL:HG22	1:D:380:ILE:HD11	1.86	0.57
1:C:101:PHE:O	1:C:105:VAL:CG1	2.52	0.57
1:B:103:GLU:HG2	1:B:285:TRP:HE1	1.69	0.57
1:B:141:LYS:CD	5:B:2051:HOH:O	2.51	0.57
1:C:308:VAL:O	1:C:311:LEU:HB3	2.03	0.57
1:A:301:GLU:HA	1:A:304:ALA:HB2	1.87	0.57
1:B:95:ILE:HG22	1:B:324:PHE:HE2	1.69	0.57
1:D:5:ILE:HG22	1:D:6:PRO:N	2.19	0.57
1:D:304:ALA:O	1:D:308:VAL:HG12	2.04	0.57
1:D:308:VAL:O	1:D:312:VAL:HG13	2.04	0.57
1:D:396:LEU:HD11	5:D:2071:HOH:O	2.04	0.57
1:A:306:GLU:O	1:A:310:LYS:HG2	2.05	0.57
1:C:490:PRO:HA	1:D:274:LYS:HG2	1.87	0.57
1:D:447:SER:C	1:D:449:PRO:HD3	2.24	0.57
1:B:268:GLU:CA	1:B:303:ILE:HD11	2.33	0.57
1:B:35:ILE:O	1:B:35:ILE:HG13	2.05	0.57
1:B:48:GLU:HG3	5:B:2019:HOH:O	2.04	0.56
1:A:308:VAL:O	1:A:312:VAL:HG13	2.05	0.56
1:B:481:GLN:HE21	1:B:483:THR:HG23	1.67	0.56
1:C:412:ASN:ND2	1:C:438:GLU:H	2.03	0.56
1:D:188:SER:HB3	1:D:212:THR:HG21	1.88	0.56
1:C:280:ILE:HG21	1:D:494:TYR:CE2	2.38	0.56
1:D:96:ASP:OD2	1:D:189:VAL:CG1	2.53	0.56
1:A:95:ILE:HB	5:A:2011:HOH:O	2.04	0.56
1:B:81:LYS:HD3	1:B:200:GLU:OE1	2.05	0.56
1:D:406:GLU:O	1:D:410:LEU:HB2	2.05	0.56
1:B:3:PHE:CD1	1:B:3:PHE:C	2.77	0.56
1:D:455:PRO:HG3	1:D:471:TRP:CE3	2.40	0.56
1:B:66:THR:HG23	1:B:70:HIS:HB3	1.88	0.56

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:66:THR:HG23	1:A:70:HIS:HB3	1.87	0.56
1:B:141:LYS:HD3	5:B:2051:HOH:O	2.04	0.56
1:D:220:ALA:HB3	1:D:221:PRO:HD3	1.86	0.56
1:D:102:ASP:O	1:D:105:VAL:HG22	2.06	0.56
1:D:268:GLU:CA	1:D:303:ILE:HD11	2.34	0.56
1:B:412:ASN:ND2	1:B:438:GLU:H	2.02	0.56
1:A:55:ARG:HD2	1:A:59:ARG:CZ	2.36	0.56
1:A:444:VAL:HB	1:B:484:GLN:HB3	1.87	0.55
1:C:301:GLU:HA	1:C:304:ALA:HB2	1.87	0.55
1:A:357:LEU:O	1:A:358:TYR:HB2	2.05	0.55
1:A:381:SER:HB3	1:A:384:MET:HG2	1.89	0.55
1:B:188:SER:HB3	1:B:212:THR:HG21	1.88	0.55
1:C:188:SER:HB3	1:C:212:THR:HG21	1.87	0.55
1:B:268:GLU:HA	1:B:303:ILE:CD1	2.34	0.55
1:C:168:LYS:O	1:C:171:PRO:HD2	2.06	0.55
1:D:272:ILE:HD11	1:D:310:LYS:HG3	1.87	0.55
1:D:357:LEU:O	1:D:358:TYR:HB2	2.06	0.55
1:C:225:HIS:HD2	1:C:227:ASP:N	1.94	0.55
1:D:291:CYS:HB3	3:D:1498:NAD:C5N	2.36	0.55
1:D:81:LYS:HD3	1:D:200:GLU:OE1	2.07	0.55
1:D:25[B]:ILE:HG23	1:D:26:PRO:HD2	1.87	0.55
1:C:30:PRO:HB2	1:C:332:PRO:HG2	1.88	0.55
1:D:66:THR:HG23	1:D:70:HIS:HB3	1.89	0.55
1:C:66:THR:HG23	1:C:70:HIS:HB3	1.88	0.55
1:A:264:ILE:CD1	1:A:279:THR:HG22	2.37	0.55
1:C:496:SER:HB3	1:D:314:TRP:CZ2	2.42	0.55
1:B:3:PHE:C	1:B:3:PHE:HD1	2.10	0.55
1:B:308:VAL:O	1:B:311:LEU:HB3	2.07	0.55
1:A:444:VAL:HB	1:B:484:GLN:HB2	1.88	0.55
1:B:344:LYS:O	1:B:348:THR:HG23	2.05	0.55
1:C:304:ALA:O	1:C:308:VAL:HG12	2.06	0.55
1:D:363:PRO:O	1:D:364:GLU:CB	2.48	0.55
1:B:455:PRO:HG3	1:B:471:TRP:CE3	2.42	0.55
1:B:48:GLU:OE1	1:B:48:GLU:HA	2.06	0.55
1:A:326:GLU:HG2	1:A:327:GLY:N	2.20	0.54
1:A:95:ILE:HG22	1:A:324:PHE:HE2	1.67	0.54
1:C:220:ALA:HB3	1:C:221:PRO:HD3	1.89	0.54
1:C:60:ARG:O	1:C:62:ASN:N	2.37	0.54
1:C:235:GLY:O	1:C:258:LEU:HA	2.07	0.54
1:B:220:ALA:HB3	1:B:221:PRO:HD3	1.89	0.54
1:B:223:VAL:HA	1:B:231:ILE:HD11	1.89	0.54
1:B:272:ILE:HD11	1:B:310:LYS:HG3	1.87	0.54

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:95:ILE:HG22	1:C:324:PHE:HE2	1.70	0.54
1:B:242:LYS:HD3	1:D:486:ILE:HD12	1.90	0.54
1:C:308:VAL:O	1:C:312:VAL:HG13	2.08	0.54
1:A:308:VAL:O	1:A:311:LEU:HB3	2.08	0.54
1:D:308:VAL:O	1:D:311:LEU:HB3	2.07	0.54
1:B:275:VAL:O	1:B:279:THR:CG2	2.55	0.54
1:B:260:GLY:HA2	1:B:416:TYR:CG	2.43	0.54
1:B:304:ALA:O	1:B:308:VAL:HG12	2.07	0.54
1:B:259:GLY:HA3	3:B:1498:NAD:O2D	2.08	0.54
1:D:225:HIS:HD2	1:D:227:ASP:N	1.94	0.54
1:B:76:ARG:HD2	5:B:2012:HOH:O	2.06	0.54
1:A:268:GLU:N	1:A:268:GLU:OE1	2.29	0.54
1:C:481:GLN:NE2	1:C:483:THR:HG21	2.20	0.54
1:B:66:THR:HG22	1:B:67:SER:O	2.08	0.54
1:C:86:LYS:HE3	5:C:2024:HOH:O	2.08	0.54
1:B:481:GLN:NE2	1:B:483:THR:HG21	2.23	0.53
1:A:214:LEU:CD1	1:D:70:HIS:HB2	2.37	0.53
1:D:396:LEU:CD1	5:D:2071:HOH:O	2.57	0.53
1:B:66:THR:HG21	1:B:70:HIS:CD2	2.42	0.53
1:C:66:THR:CG2	1:C:67:SER:N	2.71	0.53
1:A:496:SER:O	1:B:317:ASN:ND2	2.41	0.53
1:D:278:TRP:O	1:D:279:THR:C	2.46	0.53
1:A:272:ILE:HG21	1:A:303:ILE:HG21	1.91	0.53
1:D:260:GLY:HA2	1:D:416:TYR:CG	2.44	0.53
1:B:155:ILE:HG22	3:B:1498:NAD:H4B	1.90	0.53
1:D:239:THR:HA	1:D:242:LYS:HE3	1.91	0.53
1:A:406:GLU:O	1:A:410:LEU:HB2	2.08	0.53
1:C:264:ILE:CD1	1:C:279:THR:HG22	2.38	0.53
1:B:8:ARG:O	1:B:24:ARG:NH2	2.35	0.53
1:A:242:LYS:HE2	1:D:127:GLY:HA3	1.88	0.53
1:D:358:TYR:CD1	1:D:359:GLY:N	2.77	0.53
1:A:272:ILE:HD11	1:A:310:LYS:HG3	1.90	0.53
1:B:357:LEU:O	1:B:358:TYR:CB	2.56	0.53
1:D:141:LYS:HG3	1:D:486:ILE:HD13	1.91	0.53
1:B:257[B]:GLU:HG2	3:B:1498:NAD:H72N	1.74	0.53
1:C:406:GLU:O	1:C:410:LEU:HB2	2.09	0.52
1:B:225:HIS:CD2	1:B:226:PRO:HD2	2.44	0.52
1:D:103:GLU:HG2	1:D:285:TRP:CZ3	2.45	0.52
1:C:494:TYR:CE2	1:D:280:ILE:HG22	2.44	0.52
1:C:223:VAL:HG22	5:C:2051:HOH:O	2.10	0.52
1:C:290:ILE:HB	1:C:293:ALA:HB2	1.91	0.52
1:D:56:ARG:HD2	1:D:60:ARG:NH1	2.25	0.52

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:148:PRO:HG3	1:C:175:ALA:O	2.09	0.52
1:A:21:LYS:NZ	1:D:61:ASN:HD22	2.07	0.52
1:C:223:VAL:HA	1:C:231:ILE:HD11	1.92	0.52
1:A:412:ASN:ND2	1:A:438:GLU:H	2.07	0.52
1:A:48:GLU:OE1	1:A:48:GLU:HA	2.08	0.52
1:B:133:VAL:HG11	5:B:2054:HOH:O	2.09	0.52
1:D:66:THR:HG21	1:D:70:HIS:CD2	2.44	0.52
1:B:272:ILE:HG21	1:B:303:ILE:HG21	1.92	0.52
1:B:305:ALA:O	1:B:306:GLU:CB	2.56	0.52
1:D:76:ARG:NH1	1:D:76:ARG:CG	2.71	0.52
1:D:348:THR:O	1:D:352:GLU:HG3	2.10	0.52
1:A:102:ASP:O	1:A:105:VAL:HG22	2.09	0.52
1:D:4:PRO:O	1:D:5:ILE:C	2.49	0.52
1:D:305:ALA:O	1:D:306:GLU:HB3	2.09	0.52
1:D:381:SER:HB3	1:D:384:MET:HG2	1.91	0.52
1:D:5:ILE:HD12	1:D:5:ILE:N	2.26	0.51
1:B:271:ASP:OD1	1:B:274:LYS:HD2	2.09	0.51
1:C:95:ILE:HA	5:C:2009:HOH:O	2.08	0.51
1:D:272:ILE:HG13	1:D:272:ILE:O	2.09	0.51
1:D:279:THR:HG21	1:D:307:PHE:HZ	1.75	0.51
1:B:414:THR:CG2	5:B:2108:HOH:O	2.55	0.51
1:A:412:ASN:HD21	1:A:438:GLU:H	1.58	0.51
1:A:439:VAL:HG13	1:A:441:ALA:H	1.76	0.51
1:A:188:SER:HB3	1:A:212:THR:HG21	1.93	0.51
1:B:186:LEU:O	1:B:187:ALA:HB2	2.11	0.51
1:D:160:TYR:CE1	4:D:1500:GOL:H32	2.46	0.51
1:C:5:ILE:HG22	1:C:6:PRO:N	2.24	0.51
1:D:447:SER:O	1:D:448:GLN:HB2	2.11	0.51
1:C:260:GLY:HA2	1:C:416:TYR:CG	2.45	0.51
1:A:235:GLY:O	1:A:258:LEU:HA	2.10	0.51
1:D:300:HIS:ND1	1:D:302:SER:HB2	2.26	0.51
1:A:178:THR:HG22	1:A:207:VAL:HG22	1.93	0.51
1:A:300:HIS:ND1	1:A:302:SER:HB2	2.25	0.51
1:C:279:THR:HG21	1:C:307:PHE:HZ	1.76	0.51
1:D:96:ASP:O	1:D:96:ASP:OD1	2.29	0.51
1:A:35:ILE:O	1:A:35:ILE:HG13	2.08	0.51
1:D:272:ILE:HG21	1:D:303:ILE:HG21	1.92	0.51
1:C:29:ASN:HB2	1:C:36:ILE:HD13	1.93	0.51
1:A:481:GLN:NE2	1:A:483:THR:HG21	2.18	0.51
1:A:481:GLN:HE21	1:A:483:THR:HG23	1.74	0.51
1:D:235:GLY:O	1:D:258:LEU:HA	2.11	0.50
1:C:257[B]:GLU:HB3	3:C:1498:NAD:C7N	2.41	0.50

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:444:VAL:HB	1:D:484:GLN:HB3	1.93	0.50
1:D:58:PHE:CE1	1:D:150:GLY:HA2	2.46	0.50
1:D:4:PRO:O	1:D:5:ILE:O	2.30	0.50
1:D:225:HIS:CD2	1:D:226:PRO:HD2	2.46	0.50
1:C:66:THR:HG21	1:C:70:HIS:CD2	2.45	0.50
1:A:5:ILE:H	1:A:6:PRO:CD	2.20	0.50
1:A:5:ILE:O	1:A:6:PRO:O	2.29	0.50
1:C:15:GLU:HG2	1:C:17:ARG:NH1	2.19	0.50
1:A:481:GLN:NE2	5:A:2157:HOH:O	2.41	0.50
1:A:348:THR:HG22	1:C:134:THR:OG1	2.12	0.50
1:D:291:CYS:SG	3:D:1498:NAD:C4N	2.99	0.50
1:D:186:LEU:O	1:D:187:ALA:HB2	2.11	0.50
1:C:381:SER:HB3	1:C:384:MET:HG2	1.93	0.50
1:C:272:ILE:CD1	1:C:306:GLU:HG2	2.42	0.50
1:C:225:HIS:CD2	1:C:226:PRO:HD2	2.46	0.50
1:C:6:PRO:HG2	1:C:92:LEU:HD13	1.93	0.50
1:D:264:ILE:HD11	1:D:279:THR:HG22	1.94	0.50
1:D:85:LYS:NZ	1:D:200:GLU:OE2	2.45	0.50
1:D:223:VAL:HA	1:D:231:ILE:HD11	1.94	0.50
1:D:481:GLN:NE2	1:D:483:THR:HG21	2.21	0.50
1:A:5:ILE:N	1:A:6:PRO:CD	2.74	0.50
1:B:66:THR:HG21	1:B:70:HIS:HD2	1.76	0.50
1:C:186:LEU:O	1:C:187:ALA:HB2	2.11	0.50
1:C:474:GLN:NE2	5:C:2122:HOH:O	2.42	0.50
1:B:5:ILE:HG22	1:B:5:ILE:O	2.06	0.50
1:A:148:PRO:HG3	1:A:175:ALA:O	2.12	0.50
1:C:48:GLU:OE1	1:C:48:GLU:HA	2.12	0.50
1:B:182:LYS:C	1:B:182:LYS:HE2	2.32	0.50
1:C:27:VAL:HG13	1:C:37:GLY:C	2.32	0.50
1:C:478:ASN:ND2	1:D:466:ARG:HH21	2.09	0.50
1:D:282:GLY:HA2	1:D:448:GLN:CG	2.42	0.49
1:D:290:ILE:HB	1:D:293:ALA:HB2	1.94	0.49
1:C:51:VAL:HG23	1:C:52:VAL:N	2.27	0.49
1:A:362:ARG:HH11	1:A:362:ARG:HG3	1.77	0.49
1:C:160:TYR:HB2	1:C:164:MET:HG2	1.94	0.49
1:C:315:THR:HG21	1:C:376:ILE:HD11	1.95	0.49
1:C:15:GLU:CD	1:C:17:ARG:NH1	2.66	0.49
1:A:348:THR:O	1:A:352:GLU:HG3	2.12	0.49
1:C:10:LEU:HD13	1:C:211:LEU:HD22	1.94	0.49
1:C:438:GLU:HG2	4:D:1502:GOL:H31	1.94	0.49
1:A:282:GLY:HA2	1:A:448:GLN:CG	2.43	0.49
1:D:3:PHE:CZ	1:D:324:PHE:CZ	2.98	0.49

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:235:GLY:O	1:B:258:LEU:HA	2.12	0.49
1:A:386:ILE:HB	5:A:2113:HOH:O	2.13	0.49
1:A:484:GLN:HB3	1:B:444:VAL:HB	1.94	0.49
1:D:148:PRO:HG3	1:D:176:GLY:HA3	1.95	0.49
1:C:268:GLU:HA	1:C:303:ILE:CD1	2.38	0.49
1:C:348:THR:O	1:C:352:GLU:HG3	2.12	0.49
1:A:182:LYS:HG2	1:A:211:LEU:O	2.13	0.49
1:C:392:PHE:CE1	3:C:1498:NAD:H2D	2.48	0.49
1:B:257[B]:GLU:HG2	3:B:1498:NAD:N7N	2.28	0.49
1:B:447:SER:O	1:B:448:GLN:HB2	2.13	0.49
1:B:141:LYS:HG2	5:B:2051:HOH:O	2.13	0.49
1:C:62:ASN:O	1:C:62:ASN:OD1	2.31	0.49
1:C:291:CYS:HB3	3:C:1498:NAD:C6N	2.42	0.49
1:A:223:VAL:HA	1:A:231:ILE:HD11	1.93	0.49
1:D:160:TYR:HB2	1:D:164:MET:HG2	1.94	0.48
1:D:95:ILE:CG2	1:D:324:PHE:HZ	2.21	0.48
1:B:7:ALA:O	1:B:8:ARG:HD3	2.12	0.48
1:D:261:LYS:HG3	1:D:296:ARG:HD3	1.95	0.48
1:B:148:PRO:HG3	1:B:176:GLY:HA3	1.95	0.48
1:A:290:ILE:HB	1:A:293:ALA:HB2	1.93	0.48
1:B:272:ILE:O	1:B:272:ILE:HG13	2.13	0.48
1:C:257[B]:GLU:HG2	3:C:1498:NAD:O7N	2.12	0.48
1:A:98:GLY:O	1:A:332:PRO:HD2	2.13	0.48
1:C:439:VAL:HG13	1:C:441:ALA:H	1.77	0.48
1:A:314:TRP:CZ2	1:B:496:SER:HB3	2.48	0.48
1:A:264:ILE:HD13	1:A:279:THR:HG22	1.93	0.48
1:C:66:THR:HG21	1:C:70:HIS:HD2	1.78	0.48
1:C:182:LYS:HE2	1:C:182:LYS:C	2.32	0.48
1:B:29:ASN:HB2	1:B:36:ILE:HD13	1.94	0.48
1:A:272:ILE:O	1:A:272:ILE:HG13	2.12	0.48
1:A:260:GLY:HA2	1:A:416:TYR:CG	2.48	0.48
1:D:320:ILE:O	1:D:365:HIS:HE1	1.97	0.48
1:C:96:ASP:CG	1:C:189:VAL:HG13	2.31	0.48
1:D:239:THR:O	1:D:243:VAL:HG13	2.13	0.48
1:B:160:TYR:HB2	1:B:164:MET:HG2	1.95	0.48
1:A:29:ASN:HB2	1:A:36:ILE:HD13	1.95	0.48
1:C:76:ARG:CG	1:C:76:ARG:NH1	2.69	0.48
1:B:225:HIS:HD2	1:B:227:ASP:N	1.96	0.48
1:A:66:THR:CG2	1:A:67:SER:N	2.76	0.48
1:C:148:PRO:HG3	1:C:176:GLY:HA3	1.95	0.48
1:B:271:ASP:OD2	1:B:274:LYS:CD	2.62	0.48
1:D:146:ARG:HG2	1:D:479:ILE:HD13	1.95	0.48

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:11:PHE:CZ	1:C:14:GLY:HA2	2.49	0.48
1:A:3:PHE:O	1:A:4:PRO:O	2.32	0.48
1:B:257[B]:GLU:OE2	1:B:456:TRP:O	2.31	0.48
1:A:276:VAL:HG11	1:A:314:TRP:CD1	2.49	0.48
1:A:27:VAL:HG13	1:A:37:GLY:C	2.34	0.48
1:B:242:LYS:HD3	1:D:486:ILE:CD1	2.44	0.48
1:C:60:ARG:HB3	1:C:62:ASN:HB3	1.95	0.48
1:D:315:THR:HG21	1:D:376:ILE:HD11	1.96	0.48
1:C:448:GLN:N	1:C:449:PRO:CD	2.76	0.48
1:B:86:LYS:O	1:B:90:VAL:HG12	2.14	0.48
1:A:51:VAL:HG21	1:A:225:HIS:NE2	2.28	0.47
1:B:182:LYS:HG2	1:B:211:LEU:O	2.14	0.47
1:D:159:ASN:HD21	3:D:1498:NAD:H5N	1.79	0.47
1:D:48:GLU:HA	1:D:48:GLU:OE1	2.13	0.47
1:A:62:ASN:O	1:A:62:ASN:OD1	2.32	0.47
1:C:280:ILE:CG2	1:D:494:TYR:CD2	2.93	0.47
1:B:76:ARG:NH1	1:B:76:ARG:CG	2.71	0.47
1:C:106:LEU:HA	1:C:106:LEU:HD12	1.54	0.47
1:A:182:LYS:HE2	1:A:182:LYS:C	2.35	0.47
1:A:256:LEU:HB3	1:A:258:LEU:HD21	1.97	0.47
1:A:225:HIS:HD2	1:A:227:ASP:N	1.96	0.47
1:D:135:LEU:HD21	1:D:142:SER:HB2	1.93	0.47
1:D:3:PHE:HZ	1:D:95:ILE:CG2	2.27	0.47
1:A:279:THR:HG21	1:A:307:PHE:HZ	1.79	0.47
1:B:282:GLY:HA2	1:B:448:GLN:CG	2.44	0.47
1:C:239:THR:O	1:C:243:VAL:HG13	2.15	0.47
1:C:15:GLU:CG	1:C:17:ARG:NH1	2.76	0.47
1:D:481:GLN:HE21	1:D:483:THR:HG23	1.75	0.47
1:C:98:GLY:O	1:C:332:PRO:HD2	2.15	0.47
1:C:60:ARG:C	1:C:62:ASN:H	2.17	0.47
1:A:466:ARG:HH21	1:B:478:ASN:ND2	2.12	0.47
1:A:86:LYS:O	1:A:90:VAL:HG12	2.14	0.47
1:C:35:ILE:O	1:C:35:ILE:HG13	2.15	0.47
1:A:358:TYR:CD1	1:A:359:GLY:N	2.83	0.47
1:D:3:PHE:CB	1:D:4:PRO:CD	2.92	0.47
1:B:279:THR:HG21	1:B:307:PHE:HZ	1.80	0.47
1:C:86:LYS:O	1:C:90:VAL:HG12	2.15	0.47
1:A:58:PHE:CE1	1:A:150:GLY:HA2	2.50	0.47
1:A:225:HIS:HA	1:A:226:PRO:HD3	1.71	0.47
1:A:66:THR:HG21	1:A:70:HIS:CD2	2.50	0.47
1:B:102:ASP:O	1:B:105:VAL:HG22	2.14	0.47
1:B:229:ASP:O	1:B:253:PRO:HD2	2.14	0.47

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:303:ILE:H	1:C:303:ILE:HG13	1.48	0.47
1:C:444:VAL:HB	1:D:484:GLN:HB2	1.96	0.47
1:D:362:ARG:HH11	1:D:362:ARG:HG3	1.79	0.47
1:A:25[B]:ILE:HD11	1:A:214:LEU:HD11	1.97	0.47
1:C:66:THR:HG22	1:C:67:SER:N	2.30	0.47
1:B:261:LYS:CG	1:B:296:ARG:HD2	2.44	0.46
1:C:48:GLU:OE1	1:C:48:GLU:CA	2.64	0.46
1:C:276:VAL:HG11	1:C:314:TRP:CD1	2.50	0.46
1:B:27:VAL:HG13	1:B:37:GLY:C	2.36	0.46
1:B:58:PHE:CE1	1:B:150:GLY:HA2	2.50	0.46
1:B:3:PHE:HD1	1:B:4:PRO:HD3	1.78	0.46
1:A:225:HIS:O	1:A:252:LYS:NZ	2.49	0.46
1:A:306:GLU:CG	1:A:310:LYS:NZ	2.78	0.46
1:B:12:ILE:HD11	1:B:211:LEU:HD21	1.96	0.46
1:B:448:GLN:N	1:B:449:PRO:CD	2.78	0.46
1:A:196:GLU:O	1:A:197:VAL:C	2.54	0.46
1:B:95:ILE:HG22	1:B:324:PHE:HZ	1.78	0.46
1:B:281:PHE:O	1:B:285:TRP:HB3	2.15	0.46
1:B:48:GLU:OE1	1:B:48:GLU:CA	2.63	0.46
1:D:283:CYS:SG	1:D:396:LEU:HD23	2.56	0.46
1:B:66:THR:CG2	1:B:67:SER:N	2.78	0.46
1:A:182:LYS:NZ	3:A:1498:NAD:O2B	2.48	0.46
1:B:290:ILE:HB	1:B:293:ALA:HB2	1.96	0.46
1:A:229:ASP:O	1:A:253:PRO:HD2	2.16	0.46
1:C:358:TYR:CD1	1:C:359:GLY:N	2.83	0.46
1:A:76:ARG:NH1	1:A:76:ARG:CG	2.68	0.46
1:C:324:PHE:HD2	5:C:2077:HOH:O	1.97	0.46
1:D:51:VAL:HG21	1:D:225:HIS:NE2	2.31	0.46
1:D:256:LEU:HB3	1:D:258:LEU:HD21	1.97	0.46
1:C:5:ILE:CG2	1:C:6:PRO:CD	2.81	0.46
1:B:315:THR:HG21	1:B:376:ILE:HD11	1.97	0.46
1:D:12:ILE:HD11	1:D:211:LEU:HD21	1.98	0.46
1:C:466:ARG:HH21	1:D:478:ASN:ND2	2.13	0.46
1:B:91:LYS:O	1:B:95:ILE:HG23	2.16	0.46
1:B:350:LYS:HE3	1:B:356:ILE:CD1	2.43	0.46
1:B:348:THR:O	1:B:352:GLU:HG3	2.14	0.46
1:C:362:ARG:HG3	1:C:362:ARG:HH11	1.80	0.46
1:A:148:PRO:HG3	1:A:176:GLY:HA3	1.98	0.46
1:C:278:TRP:CH2	1:D:491:TRP:CD2	3.04	0.46
1:C:487:SER:O	1:C:488:ASP:CB	2.62	0.46
1:D:268:GLU:HA	1:D:303:ILE:CD1	2.36	0.46
1:C:229:ASP:O	1:C:253:PRO:HD2	2.16	0.46

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:181:LEU:HD13	1:A:183:PRO:HG3	1.97	0.45
1:A:447:SER:O	1:A:448:GLN:HB2	2.15	0.45
1:B:98:GLY:O	1:B:332:PRO:HD2	2.16	0.45
1:C:357:LEU:O	1:C:358:TYR:CB	2.65	0.45
1:C:264:ILE:HD13	1:C:279:THR:HG22	1.98	0.45
1:B:276:VAL:HG11	1:B:314:TRP:CD1	2.51	0.45
1:B:242:LYS:HG2	1:D:486:ILE:HD12	1.97	0.45
1:D:276:VAL:HG11	1:D:314:TRP:CD1	2.51	0.45
1:D:401:PHE:CD2	1:D:407:ALA:HB2	2.51	0.45
1:D:264:ILE:HG23	1:D:297:LEU:HA	1.99	0.45
1:D:414:THR:HB	1:D:416:TYR:H	1.82	0.45
1:A:8:ARG:O	1:A:24:ARG:NH2	2.30	0.45
1:C:268:GLU:CA	1:C:303:ILE:HD11	2.38	0.45
1:C:51:VAL:CG2	1:C:52:VAL:N	2.79	0.45
1:C:6:PRO:CB	1:C:193:GLU:OE2	2.62	0.45
1:A:320:ILE:O	1:A:365:HIS:HE1	1.99	0.45
1:D:358:TYR:CD1	1:D:358:TYR:C	2.90	0.45
1:B:215:GLY:HA3	3:B:1498:NAD:C8A	2.47	0.45
1:C:282:GLY:HA2	1:C:448:GLN:CG	2.47	0.45
1:A:262:SER:HA	1:A:263:PRO:HD3	1.87	0.45
1:D:264:ILE:HD13	1:D:279:THR:HG22	1.97	0.45
1:D:448:GLN:N	1:D:449:PRO:CD	2.79	0.45
1:A:280:ILE:HD11	1:A:311:LEU:HD12	1.98	0.45
1:D:182:LYS:HG2	1:D:211:LEU:O	2.17	0.45
1:B:108:ILE:HA	1:B:111:VAL:HG13	1.98	0.45
1:A:8:ARG:HG3	1:A:9:GLN:H	1.81	0.45
1:A:341:LYS:CE	5:A:2110:HOH:O	2.49	0.45
1:B:103:GLU:OE2	1:B:285:TRP:HD1	2.00	0.45
1:A:448:GLN:N	1:A:449:PRO:CD	2.79	0.45
1:A:35:ILE:O	1:A:35:ILE:CG1	2.65	0.45
1:B:264:ILE:HG21	5:B:2091:HOH:O	2.16	0.45
1:B:146:ARG:HG2	1:B:479:ILE:HD13	1.99	0.45
1:C:3:PHE:N	1:C:3:PHE:CD1	2.84	0.45
1:B:29:ASN:OD1	1:B:30:PRO:HD2	2.17	0.45
1:D:93:GLU:OE1	1:D:190:THR:OG1	2.24	0.45
1:B:403:SER:OG	1:B:405:ASP:OD1	2.33	0.45
1:A:309:ASP:O	1:A:312:VAL:HG22	2.17	0.45
1:C:481:GLN:HE21	1:C:483:THR:HG23	1.74	0.45
1:D:346:ILE:HG23	1:D:356:ILE:HD11	1.99	0.45
1:A:5:ILE:N	1:A:6:PRO:HD3	2.17	0.44
1:D:66:THR:CG2	1:D:67:SER:N	2.80	0.44
1:B:282:GLY:HA2	1:B:448:GLN:HG2	1.99	0.44

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:48:GLU:OE1	1:A:48:GLU:CA	2.64	0.44
1:D:478:ASN:ND2	1:D:478:ASN:C	2.70	0.44
1:D:350:LYS:HE3	1:D:356:ILE:HD12	1.98	0.44
1:D:392:PHE:O	5:D:2069:HOH:O	2.21	0.44
1:D:89:PHE:HB3	1:D:108:ILE:HD12	1.98	0.44
1:D:229:ASP:O	1:D:253:PRO:HD2	2.17	0.44
1:D:3:PHE:HB3	1:D:91:LYS:NZ	2.32	0.44
1:A:362:ARG:NH1	1:A:362:ARG:HG3	2.32	0.44
1:A:257[B]:GLU:HB3	3:A:1498:NAD:C7N	2.47	0.44
1:D:282:GLY:HA2	1:D:448:GLN:HG2	1.98	0.44
1:A:160:TYR:HB2	1:A:164:MET:HG2	1.99	0.44
1:A:239:THR:O	1:A:243:VAL:HG13	2.17	0.44
1:A:261:LYS:HG3	1:A:296:ARG:HD3	1.98	0.44
1:C:451:PHE:CZ	1:D:137:MET:HG3	2.51	0.44
1:B:362:ARG:HG3	1:B:362:ARG:HH11	1.82	0.44
1:D:261:LYS:CG	1:D:296:ARG:HD2	2.46	0.44
1:A:484:GLN:HB2	1:B:444:VAL:HB	1.99	0.44
1:A:478:ASN:ND2	1:B:466:ARG:HH21	2.15	0.44
1:D:450[A]:CYS:O	4:D:1501:GOL:H12	2.18	0.44
1:C:5:ILE:HA	1:C:6:PRO:HD3	1.81	0.44
1:D:96:ASP:OD2	1:D:189:VAL:HG13	2.17	0.44
1:D:401:PHE:HD2	1:D:403:SER:O	2.01	0.44
1:D:439:VAL:HG13	1:D:441:ALA:H	1.82	0.44
1:C:429:ARG:HA	1:C:432:ARG:HH21	1.77	0.44
1:B:291:CYS:HB3	3:B:1498:NAD:C6N	2.48	0.44
1:C:112:ALA:O	1:C:116:GLU:HG3	2.18	0.44
1:D:5:ILE:CG2	1:D:6:PRO:N	2.79	0.44
1:C:51:VAL:HG21	1:C:225:HIS:NE2	2.32	0.44
1:C:139:ARG:HH12	1:C:489:GLU:HB2	1.83	0.44
1:C:280:ILE:HG21	1:D:494:TYR:CD2	2.53	0.44
1:D:9:GLN:NE2	1:D:24:ARG:NH2	2.64	0.44
1:A:251:VAL:HG13	1:B:256:LEU:HD12	1.99	0.44
1:A:103:GLU:HG2	1:A:285:TRP:HE1	1.82	0.44
1:D:193:GLU:HA	1:D:193:GLU:OE1	2.18	0.44
1:B:261:LYS:HG3	1:B:296:ARG:HD3	1.97	0.44
1:B:256:LEU:HB3	1:B:258:LEU:HD21	1.99	0.44
1:D:170:ALA:HB3	1:D:171:PRO:HD3	2.00	0.44
1:D:429:ARG:O	1:D:433:ILE:HG12	2.18	0.44
1:B:112:ALA:O	1:B:116:GLU:HG3	2.18	0.44
1:A:152:VAL:HG23	1:A:154:LEU:HD21	1.99	0.44
1:D:66:THR:HG21	1:D:70:HIS:HD2	1.80	0.43
1:A:21:LYS:HG3	1:A:43:THR:HG21	2.00	0.43

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:D:108:ILE:HA	1:D:111:VAL:HG13	2.00	0.43
1:A:186:LEU:O	1:A:187:ALA:HB2	2.18	0.43
1:C:320:ILE:O	1:C:365:HIS:HE1	2.01	0.43
1:B:264:ILE:HG23	1:B:297:LEU:HA	2.00	0.43
1:A:495:LYS:HG2	5:A:2163:HOH:O	2.18	0.43
1:D:309:ASP:O	1:D:312:VAL:HG22	2.18	0.43
1:A:268:GLU:HA	1:A:303:ILE:CD1	2.44	0.43
1:A:168:LYS:C	1:A:171:PRO:HD2	2.39	0.43
1:D:152:VAL:HG23	1:D:154:LEU:HD21	2.01	0.43
1:C:99:LYS:HE2	1:C:99:LYS:HB3	1.76	0.43
1:B:401:PHE:CD2	1:B:407:ALA:HB2	2.53	0.43
1:B:262:SER:HA	1:B:263:PRO:HD3	1.91	0.43
1:B:139:ARG:HH12	1:B:489:GLU:HB2	1.83	0.43
1:A:312:VAL:O	1:A:316:LYS:HB2	2.18	0.43
1:B:168:LYS:C	1:B:171:PRO:HD2	2.39	0.43
1:D:257[B]:GLU:HB3	3:D:1498:NAD:C7N	2.49	0.43
1:D:447:SER:O	1:D:448:GLN:CB	2.66	0.43
1:B:297:LEU:HB2	1:B:396:LEU:HD11	2.00	0.43
1:D:110:ASP:CG	4:D:1501:GOL:H2	2.35	0.43
1:A:225:HIS:CD2	1:A:226:PRO:HD2	2.53	0.43
1:A:252:LYS:HE3	1:A:252:LYS:HB2	1.83	0.43
1:A:91:LYS:O	1:A:95:ILE:HG23	2.17	0.43
1:A:12:ILE:HD11	1:A:211:LEU:HD21	1.99	0.43
1:A:346:ILE:HG23	1:A:356:ILE:HD11	2.00	0.43
1:C:401:PHE:HD2	1:C:403:SER:O	2.02	0.43
1:A:378:THR:HG22	1:A:398:VAL:HB	2.01	0.43
1:B:280:ILE:HD11	1:B:311:LEU:HD12	2.00	0.43
1:D:401:PHE:CE2	1:D:407:ALA:HB2	2.54	0.43
1:D:136:PRO:O	1:D:137:MET:C	2.55	0.43
1:C:122:ALA:HB2	1:C:174:ALA:HB1	2.01	0.43
1:A:137:MET:HB3	5:A:2044:HOH:O	2.19	0.43
1:B:94:THR:HG23	1:B:99:LYS:O	2.18	0.43
1:C:358:TYR:CD1	1:C:358:TYR:C	2.92	0.43
1:C:58:PHE:CE1	1:C:150:GLY:HA2	2.54	0.43
1:D:98:GLY:O	1:D:332:PRO:HD2	2.19	0.43
1:C:359:GLY:HA2	1:C:373:GLU:OE1	2.19	0.43
1:A:300:HIS:O	1:A:301:GLU:C	2.58	0.43
1:B:5:ILE:HG23	1:B:6:PRO:HD2	2.00	0.43
1:D:272:ILE:HD12	1:D:307:PHE:CA	2.41	0.43
1:A:262:SER:HB3	1:A:419:ALA:O	2.19	0.43
1:A:391:VAL:HB	5:A:2126:HOH:O	2.19	0.43
1:A:131:ALA:HA	1:A:132:PRO:HD3	1.86	0.43

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:C:272:ILE:HG21	1:C:303:ILE:HG21	2.00	0.43
1:D:303:ILE:HG13	1:D:303:ILE:H	1.53	0.43
1:C:390[A]:GLU:HG3	5:C:2065:HOH:O	2.18	0.43
1:C:30:PRO:HG2	1:C:98:GLY:HA3	2.00	0.43
1:D:48:GLU:OE1	1:D:48:GLU:CA	2.67	0.43
1:A:280:ILE:HG21	1:A:318:ILE:HD11	2.00	0.42
1:C:9:GLN:HB3	1:C:17:ARG:O	2.19	0.42
1:A:348:THR:HG22	1:C:134:THR:CG2	2.49	0.42
1:A:282:GLY:HA2	1:A:448:GLN:HG2	2.00	0.42
1:D:137:MET:H	1:D:137:MET:HG2	1.54	0.42
1:B:439:VAL:HG13	1:B:441:ALA:H	1.84	0.42
1:D:482:VAL:HG22	1:D:482:VAL:O	2.19	0.42
1:B:252:LYS:HB2	1:B:252:LYS:HE3	1.75	0.42
1:B:62[A]:ASN:OD1	1:B:62[A]:ASN:O	2.37	0.42
1:D:3:PHE:HB2	1:D:4:PRO:CD	2.49	0.42
1:C:225:HIS:HA	1:C:226:PRO:HD3	1.76	0.42
1:C:193:GLU:OE1	1:C:193:GLU:HA	2.20	0.42
1:D:278:TRP:O	1:D:280:ILE:N	2.52	0.42
1:C:60:ARG:C	1:C:62:ASN:N	2.72	0.42
1:C:314:TRP:CZ2	1:D:496:SER:HB3	2.54	0.42
1:A:357:LEU:O	1:A:358:TYR:CB	2.68	0.42
1:C:105:VAL:CG2	1:C:106:LEU:N	2.83	0.42
1:B:358:TYR:CD1	1:B:358:TYR:C	2.93	0.42
1:D:357:LEU:CD2	1:D:357:LEU:O	2.67	0.42
1:D:262:SER:HA	1:D:263:PRO:HD3	1.89	0.42
1:D:493:TRP:HD1	1:D:494:TYR:CD1	2.37	0.42
1:C:264:ILE:HD11	1:C:279:THR:HG22	2.01	0.42
1:C:362:ARG:HG3	1:C:362:ARG:NH1	2.34	0.42
1:A:129:GLN:O	1:A:130:LYS:HB2	2.20	0.42
3:C:1498:NAD:H8A	3:C:1498:NAD:H2B	1.80	0.42
1:D:139:ARG:HH12	1:D:489:GLU:HB2	1.85	0.42
1:C:272:ILE:HD13	1:C:272:ILE:HG21	1.79	0.42
1:D:305:ALA:O	1:D:306:GLU:HB2	2.18	0.42
1:B:35:ILE:CG1	1:B:35:ILE:O	2.65	0.42
1:D:330:LEU:HD22	1:D:331:GLY:O	2.20	0.42
1:C:108:ILE:HA	1:C:111:VAL:HG13	2.01	0.42
1:C:264:ILE:HG23	1:C:297:LEU:HA	2.01	0.42
1:B:3:PHE:O	1:B:3:PHE:CD1	2.73	0.42
1:C:447:SER:O	1:C:448:GLN:HB2	2.19	0.42
1:D:125:LEU:O	1:D:128:LYS:HB2	2.20	0.42
1:C:130:LYS:HA	1:C:143:HIS:CD2	2.54	0.42
1:A:315:THR:HG21	1:A:376:ILE:HD11	2.02	0.42

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:A:264:ILE:HG23	1:A:297:LEU:HA	2.02	0.42
1:B:362:ARG:HG3	1:B:362:ARG:NH1	2.35	0.42
1:C:3:PHE:O	1:C:3:PHE:HD1	2.00	0.42
1:D:362:ARG:NH1	1:D:362:ARG:HG3	2.35	0.42
1:A:358:TYR:C	1:A:358:TYR:CD1	2.93	0.42
1:C:181:LEU:HD13	1:C:183:PRO:HG3	2.01	0.42
1:C:182:LYS:HG2	1:C:211:LEU:O	2.19	0.42
1:D:306:GLU:O	1:D:307:PHE:C	2.57	0.42
1:C:251[A]:VAL:HG13	1:D:256:LEU:HD12	2.02	0.42
1:D:182:LYS:HE2	1:D:182:LYS:C	2.40	0.42
1:D:12:ILE:HG21	1:D:49:VAL:HG23	2.02	0.42
1:A:30:PRO:HG2	1:A:98:GLY:HA3	2.02	0.42
1:C:350:LYS:HE3	1:C:356:ILE:CD1	2.49	0.42
1:B:264:ILE:HA	1:B:421:ALA:O	2.19	0.42
1:A:121:GLN:NE2	5:A:2038:HOH:O	2.53	0.42
1:B:205:PRO:HD2	5:B:2022:HOH:O	2.19	0.42
1:D:62:ASN:OD1	1:D:62:ASN:O	2.37	0.42
1:A:264:ILE:HA	1:A:421:ALA:O	2.20	0.41
1:A:261:LYS:CG	1:A:296:ARG:HD2	2.45	0.41
1:A:256:LEU:HD12	1:B:251:VAL:HG13	2.02	0.41
1:B:257[B]:GLU:CG	3:B:1498:NAD:H72N	2.33	0.41
1:B:257[A]:GLU:OE2	1:B:467:GLU:HG3	2.20	0.41
1:B:283:CYS:SG	1:B:396:LEU:HD23	2.60	0.41
1:A:423:PHE:CD2	1:A:445:ASN:HA	2.55	0.41
1:B:381:SER:HG	1:B:383[A]:SER:HB2	1.84	0.41
1:C:3:PHE:N	1:C:3:PHE:HD1	2.18	0.41
1:B:359:GLY:HA2	1:B:373:GLU:OE1	2.20	0.41
1:D:268:GLU:HG2	1:D:269:ASP:N	2.34	0.41
1:A:251:VAL:O	1:A:251:VAL:CG1	2.67	0.41
1:C:252:LYS:HB2	1:C:252:LYS:HE3	1.82	0.41
1:B:357:LEU:CD2	1:B:357:LEU:O	2.66	0.41
1:D:262:SER:HB3	1:D:419:ALA:O	2.21	0.41
1:C:125:LEU:O	1:C:128:LYS:HB2	2.19	0.41
1:B:143:HIS:CE1	1:B:482:VAL:HG22	2.55	0.41
1:A:139:ARG:HH12	1:A:489:GLU:HB2	1.85	0.41
1:C:280:ILE:HD11	1:C:311:LEU:HD12	2.02	0.41
1:C:434:THR:HB	1:C:442:VAL:HG11	2.02	0.41
1:D:58:PHE:CZ	1:D:150:GLY:HA2	2.56	0.41
1:D:182:LYS:HD2	1:D:218:ALA:CB	2.47	0.41
1:B:12:ILE:HG21	1:B:49:VAL:HG23	2.03	0.41
1:C:47:VAL:O	1:C:51:VAL:HG13	2.21	0.41
1:D:30:PRO:HG2	1:D:98:GLY:HA3	2.03	0.41

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
1:B:152:VAL:HG23	1:B:154:LEU:HD21	2.03	0.41
1:A:264:ILE:HG23	1:A:264:ILE:O	2.20	0.41
1:A:494:TYR:CZ	1:B:280:ILE:HG22	2.55	0.41
1:D:357:LEU:O	1:D:358:TYR:CB	2.68	0.41
1:B:346:ILE:HG23	1:B:356:ILE:HD11	2.03	0.41
1:B:143:HIS:CE1	1:B:482:VAL:CG2	3.04	0.41
1:B:423:PHE:CD2	1:B:445:ASN:HA	2.56	0.41
1:C:315:THR:HA	1:C:318:ILE:HD12	2.03	0.41
1:D:264:ILE:HA	1:D:421:ALA:O	2.20	0.41
1:B:271:ASP:OD2	1:B:274:LYS:CE	2.68	0.41
1:C:182:LYS:CE	1:C:183:PRO:O	2.69	0.41
1:D:171:PRO:HB2	1:D:476:TYR:CE2	2.55	0.41
1:C:346:ILE:HG23	1:C:356:ILE:HD11	2.02	0.41
1:A:429:ARG:O	1:A:433:ILE:HG12	2.21	0.41
1:C:262:SER:HA	1:C:263:PRO:HD3	1.86	0.41
1:B:203:LEU:HA	1:B:203:LEU:HD23	1.82	0.41
1:C:378:THR:HG22	1:C:398:VAL:HB	2.02	0.41
1:A:447:SER:O	1:A:448:GLN:CB	2.69	0.41
1:B:239:THR:O	1:B:243:VAL:HG13	2.21	0.41
1:D:306:GLU:O	1:D:309:ASP:N	2.54	0.40
1:B:268:GLU:HG2	1:B:269:ASP:N	2.37	0.40
1:D:168:LYS:C	1:D:171:PRO:HD2	2.41	0.40
1:C:478:ASN:C	1:C:478:ASN:ND2	2.75	0.40
1:D:482:VAL:CG2	1:D:482:VAL:O	2.69	0.40
1:B:130:LYS:HA	1:B:143:HIS:CD2	2.56	0.40
1:D:83:THR:O	1:D:86:LYS:HB2	2.21	0.40
1:C:423:PHE:CD2	1:C:445:ASN:HA	2.56	0.40
1:C:309:ASP:O	1:C:312:VAL:HG22	2.20	0.40
1:D:434:THR:HB	1:D:442:VAL:HG11	2.03	0.40
1:C:250:LEU:C	1:C:251[B]:VAL:HG22	2.42	0.40
1:C:439:VAL:HG13	1:C:440:GLY:N	2.36	0.40
1:A:281:PHE:O	1:A:285:TRP:HB3	2.21	0.40
1:C:131:ALA:HA	1:C:132:PRO:HD3	1.90	0.40
1:C:484:GLN:CB	1:D:444:VAL:HB	2.51	0.40
1:A:112:ALA:O	1:A:116:GLU:HG3	2.21	0.40
1:A:330:LEU:HD22	1:A:331:GLY:O	2.22	0.40
1:A:471:TRP:CZ2	4:A:1499:GOL:H12	2.57	0.40
1:C:438:GLU:HG2	4:D:1502:GOL:C3	2.52	0.40
1:B:401:PHE:CE2	1:B:407:ALA:HB2	2.56	0.40
1:D:378:THR:HG22	1:D:398:VAL:HB	2.02	0.40
1:D:280:ILE:HD11	1:D:311:LEU:HD12	2.03	0.40
1:C:429:ARG:O	1:C:433:ILE:HG12	2.21	0.40

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Atom-1	Atom-2	Distance(Å)	Clash(Å)
3:A:1498:NAD:H8A	3:A:1498:NAD:H2B	1.97	0.40
1:C:168:LYS:C	1:C:171:PRO:HD2	2.42	0.40
1:D:130:LYS:HA	1:D:143:HIS:CD2	2.56	0.40
1:B:131:ALA:HA	1:B:132:PRO:HD3	1.88	0.40
1:C:95:ILE:HG22	1:C:324:PHE:HZ	1.84	0.40
1:C:343:MET:O	1:C:346:ILE:HB	2.22	0.40
1:D:285:TRP:C	1:D:287:ASN:N	2.74	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	497/496 (100%)	456 (92%)	31 (6%)	10 (2%)	11	8
1	B	498/496 (100%)	463 (93%)	26 (5%)	9 (2%)	13	10
1	C	499/496 (101%)	458 (92%)	30 (6%)	11 (2%)	10	7
1	D	497/496 (100%)	450 (90%)	35 (7%)	12 (2%)	9	6
All	All	1991/1984 (100%)	1827 (92%)	122 (6%)	42 (2%)	11	8

All (42) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	6	PRO
1	A	306	GLU
1	A	358	TYR
1	A	448	GLN
1	B	306	GLU
1	B	358	TYR
1	B	448	GLN
1	C	306	GLU
1	C	358	TYR
1	C	448	GLN
1	D	306	GLU

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Mol	Chain	Res	Type
1	D	358	TYR
1	D	364	GLU
1	D	448	GLN
1	B	187	ALA
1	B	302	SER
1	C	187	ALA
1	D	137	MET
1	D	187	ALA
1	A	4	PRO
1	A	5	ILE
1	A	187	ALA
1	B	357	LEU
1	D	357	LEU
1	B	424	SER
1	C	357	LEU
1	A	136	PRO
1	A	357	LEU
1	B	136	PRO
1	C	6	PRO
1	C	302	SER
1	C	424	SER
1	D	5	ILE
1	D	6	PRO
1	D	424	SER
1	A	424	SER
1	D	363	PRO
1	C	136	PRO
1	C	272	ILE
1	D	136	PRO
1	C	417	GLY
1	B	417	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	413/409 (101%)	362 (88%)	51 (12%)	7 7

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	414/409 (101%)	359 (87%)	55 (13%)	6	6
1	C	415/409 (102%)	361 (87%)	54 (13%)	6	6
1	D	413/409 (101%)	357 (86%)	56 (14%)	5	5
All	All	1655/1636 (101%)	1439 (87%)	216 (13%)	6	6

All (216) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	3	PHE
1	A	5	ILE
1	A	8	ARG
1	A	17	ARG
1	A	27	VAL
1	A	35	ILE
1	A	48	GLU
1	A	49	VAL
1	A	59	ARG
1	A	76	ARG
1	A	81	LYS
1	A	85	LYS
1	A	90	VAL
1	A	95	ILE
1	A	106	LEU
1	A	111	VAL
1	A	125	LEU
1	A	133	VAL
1	A	166	THR
1	A	181	LEU
1	A	182	LYS
1	A	189	VAL
1	A	193	GLU
1	A	196	GLU
1	A	203	LEU
1	A	222	LEU
1	A	243	VAL
1	A	254	VAL
1	A	272	ILE
1	A	275	VAL
1	A	280	ILE
1	A	294	THR
1	A	297	LEU

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Mol	Chain	Res	Type
1	A	303	ILE
1	A	315	THR
1	A	316	LYS
1	A	320	ILE
1	A	330	LEU
1	A	348	THR
1	A	362	ARG
1	A	364	GLU
1	A	377	VAL
1	A	378	THR
1	A	384	MET
1	A	388	LYS
1	A	389	GLU
1	A	392	PHE
1	A	405	ASP
1	A	439	VAL
1	A	461	ARG
1	A	478	ASN
1	B	3	PHE
1	B	5	ILE
1	B	8	ARG
1	B	17	ARG
1	B	24	ARG
1	B	27	VAL
1	B	34	GLU
1	B	35	ILE
1	B	48	GLU
1	B	49	VAL
1	B	76	ARG
1	B	81	LYS
1	B	90	VAL
1	B	91	LYS
1	B	95	ILE
1	B	106	LEU
1	B	111	VAL
1	B	125	LEU
1	B	132	PRO
1	B	133	VAL
1	B	166	THR
1	B	181	LEU
1	B	182	LYS
1	B	189	VAL

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Mol	Chain	Res	Type
1	B	193	GLU
1	B	222	LEU
1	B	230	LYS
1	B	243	VAL
1	B	254	VAL
1	B	272	ILE
1	B	274	LYS
1	B	275	VAL
1	B	279	THR
1	B	280	ILE
1	B	294	THR
1	B	297	LEU
1	B	302	SER
1	B	303	ILE
1	B	309	ASP
1	B	315	THR
1	B	320	ILE
1	B	330	LEU
1	B	348	THR
1	B	362	ARG
1	B	367	LYS
1	B	376	ILE
1	B	377	VAL
1	B	378	THR
1	B	389	GLU
1	B	392	PHE
1	B	405	ASP
1	B	439	VAL
1	B	461	ARG
1	B	478	ASN
1	B	496	SER
1	C	3	PHE
1	C	5	ILE
1	C	13	ASP
1	C	17	ARG
1	C	27	VAL
1	C	35	ILE
1	C	48	GLU
1	C	49	VAL
1	C	76	ARG
1	C	81	LYS
1	C	90	VAL

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Mol	Chain	Res	Type
1	C	95	ILE
1	C	106	LEU
1	C	111	VAL
1	C	125	LEU
1	C	132	PRO
1	C	133	VAL
1	C	166	THR
1	C	181	LEU
1	C	182	LYS
1	C	189	VAL
1	C	193	GLU
1	C	203	LEU
1	C	222	LEU
1	C	230	LYS
1	C	243	VAL
1	C	265	VAL
1	C	271	ASP
1	C	272	ILE
1	C	275	VAL
1	C	280	ILE
1	C	285	TRP
1	C	294	THR
1	C	297	LEU
1	C	302	SER
1	C	303	ILE
1	C	315	THR
1	C	316	LYS
1	C	320	ILE
1	C	326	GLU
1	C	330	LEU
1	C	348	THR
1	C	362	ARG
1	C	367	LYS
1	C	377	VAL
1	C	378	THR
1	C	384	MET
1	C	389	GLU
1	C	392	PHE
1	C	432	ARG
1	C	439	VAL
1	C	461	ARG
1	C	478	ASN

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Mol	Chain	Res	Type
1	C	496	SER
1	D	3	PHE
1	D	5	ILE
1	D	8	ARG
1	D	17	ARG
1	D	27	VAL
1	D	35	ILE
1	D	36	ILE
1	D	48	GLU
1	D	49	VAL
1	D	76	ARG
1	D	81	LYS
1	D	86	LYS
1	D	90	VAL
1	D	95	ILE
1	D	99	LYS
1	D	106	LEU
1	D	111	VAL
1	D	125	LEU
1	D	133	VAL
1	D	137	MET
1	D	141	LYS
1	D	166	THR
1	D	181	LEU
1	D	182	LYS
1	D	189	VAL
1	D	193	GLU
1	D	203	LEU
1	D	222	LEU
1	D	243	VAL
1	D	254	VAL
1	D	272	ILE
1	D	274	LYS
1	D	275	VAL
1	D	280	ILE
1	D	285	TRP
1	D	294	THR
1	D	297	LEU
1	D	303	ILE
1	D	315	THR
1	D	320	ILE
1	D	330	LEU

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Mol	Chain	Res	Type
1	D	343	MET
1	D	348	THR
1	D	362	ARG
1	D	364	GLU
1	D	365	HIS
1	D	367	LYS
1	D	377	VAL
1	D	378	THR
1	D	384	MET
1	D	389	GLU
1	D	392	PHE
1	D	439	VAL
1	D	461	ARG
1	D	478	ASN
1	D	483	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (45) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	70	HIS
1	A	143	HIS
1	A	225	HIS
1	A	289	GLN
1	A	365	HIS
1	A	385	GLN
1	A	412	ASN
1	A	475	ASN
1	A	478	ASN
1	A	481	GLN
1	A	484	GLN
1	B	70	HIS
1	B	225	HIS
1	B	249	GLN
1	B	289	GLN
1	B	317	ASN
1	B	365	HIS
1	B	385	GLN
1	B	412	ASN
1	B	478	ASN
1	B	481	GLN
1	B	484	GLN
1	C	70	HIS

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Mol	Chain	Res	Type
1	C	143	HIS
1	C	225	HIS
1	C	289	GLN
1	C	317	ASN
1	C	365	HIS
1	C	385	GLN
1	C	412	ASN
1	C	475	ASN
1	C	478	ASN
1	C	481	GLN
1	C	484	GLN
1	D	61	ASN
1	D	70	HIS
1	D	143	HIS
1	D	225	HIS
1	D	289	GLN
1	D	365	HIS
1	D	385	GLN
1	D	412	ASN
1	D	478	ASN
1	D	481	GLN
1	D	484	GLN

5.3.3 RNA ⓘ

There are no RNA chains 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 carbohydrates in this entry.

5.6 Ligand geometry ⓘ

Of 19 ligands modelled in this entry, 8 are monoatomic - leaving 11 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and

the number of bonds (or angles) that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
3	NAD	A	1498	-	48,48,48	1.35	6 (12%)	73,73,73	1.81	14 (19%)
4	GOL	A	1499	-	5,5,5	0.95	0	5,5,5	0.85	0
4	GOL	A	1500	-	5,5,5	0.61	0	5,5,5	0.80	0
3	NAD	B	1498	-	48,48,48	1.57	9 (18%)	73,73,73	1.95	14 (19%)
3	NAD	C	1498	-	48,48,48	1.43	9 (18%)	73,73,73	1.72	9 (12%)
4	GOL	C	1499	-	5,5,5	0.43	0	5,5,5	0.14	0
3	NAD	D	1498	-	48,48,48	1.38	7 (14%)	73,73,73	1.91	11 (15%)
4	GOL	D	1499	-	5,5,5	0.64	0	5,5,5	1.47	0
4	GOL	D	1500	-	5,5,5	0.45	0	5,5,5	1.74	2 (40%)
4	GOL	D	1501	-	5,5,5	0.40	0	5,5,5	0.71	0
4	GOL	D	1502	-	5,5,5	0.66	0	5,5,5	0.58	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	NAD	A	1498	-	-	0/30/62/62	0/3/5/5
4	GOL	A	1499	-	-	0/4/4/4	0/0/0/0
4	GOL	A	1500	-	-	0/4/4/4	0/0/0/0
3	NAD	B	1498	-	-	0/30/62/62	0/3/5/5
3	NAD	C	1498	-	-	0/30/62/62	0/3/5/5
4	GOL	C	1499	-	-	0/4/4/4	0/0/0/0
3	NAD	D	1498	-	-	0/30/62/62	0/3/5/5
4	GOL	D	1499	-	-	0/4/4/4	0/0/0/0
4	GOL	D	1500	-	-	0/4/4/4	0/0/0/0
4	GOL	D	1501	-	-	0/4/4/4	0/0/0/0
4	GOL	D	1502	-	-	0/4/4/4	0/0/0/0

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	A	1498	NAD	C4A-N9A	-4.14	1.31	1.37
3	B	1498	NAD	C4A-N9A	-4.13	1.31	1.37

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
3	C	1498	NAD	C8A-N9A	-3.99	1.30	1.36
3	B	1498	NAD	C8A-N9A	-3.81	1.30	1.36
3	D	1498	NAD	C4A-N9A	-3.62	1.32	1.37
3	C	1498	NAD	C4A-N9A	-3.61	1.32	1.37
3	A	1498	NAD	C8A-N9A	-3.30	1.31	1.36
3	B	1498	NAD	C2N-N1N	-3.30	1.30	1.35
3	D	1498	NAD	C8A-N9A	-3.18	1.31	1.36
3	D	1498	NAD	C2N-N1N	-3.05	1.31	1.35
3	D	1498	NAD	C2B-C1B	-2.79	1.49	1.53
3	D	1498	NAD	O7N-C7N	2.73	1.30	1.24
3	B	1498	NAD	C2D-C1D	-2.63	1.49	1.53
3	A	1498	NAD	O7N-C7N	2.48	1.30	1.24
3	C	1498	NAD	O7N-C7N	2.44	1.29	1.24
3	A	1498	NAD	C5A-N7A	-2.44	1.31	1.40
3	C	1498	NAD	C5A-C4A	-2.38	1.35	1.40
3	B	1498	NAD	PA-O2A	-2.37	1.44	1.55
3	D	1498	NAD	C2D-C1D	-2.35	1.50	1.53
3	C	1498	NAD	C2A-N1A	-2.35	1.29	1.33
3	D	1498	NAD	PA-O2A	-2.32	1.44	1.55
3	C	1498	NAD	C2N-N1N	-2.28	1.32	1.35
3	A	1498	NAD	PA-O2A	-2.23	1.45	1.55
3	C	1498	NAD	C2D-C1D	-2.23	1.50	1.53
3	B	1498	NAD	C5A-N7A	-2.23	1.31	1.40
3	B	1498	NAD	C5A-C4A	-2.22	1.35	1.40
3	A	1498	NAD	C4A-N3A	-2.18	1.32	1.35
3	B	1498	NAD	C1D-N1N	-2.14	1.42	1.48
3	B	1498	NAD	C2B-C1B	-2.12	1.50	1.53
3	C	1498	NAD	C4A-N3A	-2.10	1.32	1.35
3	C	1498	NAD	C5A-N7A	-2.06	1.32	1.40

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	1498	NAD	N3A-C2A-N1A	-10.22	120.17	128.71
3	B	1498	NAD	N3A-C2A-N1A	-9.40	120.85	128.71
3	C	1498	NAD	N3A-C2A-N1A	-8.85	121.31	128.71
3	A	1498	NAD	N3A-C2A-N1A	-7.47	122.47	128.71
3	D	1498	NAD	O4B-C1B-C2B	-5.43	98.44	106.77
3	B	1498	NAD	N3A-C4A-N9A	4.93	134.34	125.43
3	B	1498	NAD	O4B-C1B-N9A	-4.80	103.97	108.44
3	A	1498	NAD	N3A-C4A-N9A	4.59	133.73	125.43
3	C	1498	NAD	C4A-C5A-N7A	-4.33	105.81	109.52

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	A	1498	NAD	C4B-O4B-C1B	4.28	114.39	109.75
3	D	1498	NAD	N3A-C4A-N9A	4.27	133.14	125.43
3	B	1498	NAD	O7N-C7N-N7N	-4.01	116.79	122.59
3	A	1498	NAD	O4B-C1B-C2B	-3.94	100.73	106.77
3	A	1498	NAD	O4D-C1D-C2D	-3.87	100.83	106.77
3	C	1498	NAD	N3A-C4A-N9A	3.82	132.34	125.43
3	B	1498	NAD	C3N-C7N-N7N	3.62	121.89	117.77
3	B	1498	NAD	C5A-C4A-N3A	-3.61	117.83	125.70
3	A	1498	NAD	C5A-C4A-N3A	-3.50	118.08	125.70
3	C	1498	NAD	C5A-C4A-N3A	-3.50	118.08	125.70
3	B	1498	NAD	O4D-C1D-C2D	-3.31	101.70	106.77
3	D	1498	NAD	C3N-C7N-N7N	3.25	121.47	117.77
3	A	1498	NAD	O7N-C7N-N7N	-3.23	117.93	122.59
3	A	1498	NAD	O2B-C2B-C3B	-3.01	102.04	111.83
3	D	1498	NAD	C4A-C5A-N7A	-3.00	106.95	109.52
3	B	1498	NAD	C4A-C5A-N7A	-2.95	106.99	109.52
3	C	1498	NAD	O7N-C7N-N7N	-2.93	118.35	122.59
3	B	1498	NAD	C2A-N3A-C4A	2.90	122.27	114.01
3	D	1498	NAD	C5A-C4A-N3A	-2.86	119.46	125.70
3	C	1498	NAD	O4D-C1D-C2D	-2.67	102.68	106.77
3	B	1498	NAD	O4B-C1B-C2B	-2.55	102.86	106.77
3	B	1498	NAD	C5D-C4D-C3D	-2.50	105.21	115.21
3	D	1498	NAD	O4D-C1D-C2D	-2.46	103.00	106.77
3	D	1498	NAD	C2A-N1A-C6A	2.44	123.18	118.77
3	C	1498	NAD	C2A-N3A-C4A	2.42	120.91	114.01
3	A	1498	NAD	O2N-PN-O3	2.40	115.27	108.79
3	A	1498	NAD	C5N-C4N-C3N	-2.37	117.24	120.32
3	C	1498	NAD	O2B-C2B-C1B	2.37	118.40	111.23
3	A	1498	NAD	C3B-C2B-C1B	2.37	104.62	100.91
3	D	1498	NAD	C2A-N3A-C4A	2.34	120.66	114.01
3	A	1498	NAD	O7N-C7N-C3N	2.33	122.20	119.58
3	C	1498	NAD	C3N-C7N-N7N	2.31	120.40	117.77
3	A	1498	NAD	C2A-N3A-C4A	2.31	120.59	114.01
3	B	1498	NAD	C5N-C4N-C3N	-2.28	117.36	120.32
4	D	1500	GOL	O1-C1-C2	2.23	120.58	109.71
4	D	1500	GOL	O2-C2-C1	2.05	117.55	108.22
3	D	1498	NAD	O2N-PN-O3	2.03	114.26	108.79
3	B	1498	NAD	C3B-C2B-C1B	2.02	104.08	100.91
3	A	1498	NAD	O2A-PA-O3	2.02	114.73	105.14
3	B	1498	NAD	N7A-C8A-N9A	-2.02	108.65	114.36
3	D	1498	NAD	C8A-N9A-C4A	2.01	108.43	106.90

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

6 Fit of model and data ⓘ

6.1 Protein, DNA and RNA chains ⓘ

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

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2			OWAB(Å ²)	Q<0.9
1	A	494/496 (99%)	0.34	23 (4%)	30	40	26, 52, 74, 103	0
1	B	494/496 (99%)	0.44	27 (5%)	24	33	24, 52, 74, 111	0
1	C	494/496 (99%)	0.52	25 (5%)	27	37	26, 57, 81, 93	0
1	D	494/496 (99%)	0.62	41 (8%)	11	18	29, 58, 84, 95	0
All	All	1976/1984 (99%)	0.48	116 (5%)	22	30	24, 54, 80, 111	0

All (116) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	305	ALA	5.9
1	D	61	ASN	5.7
1	D	402	SER	5.7
1	D	3	PHE	5.1
1	A	61	ASN	4.7
1	C	15	GLU	4.1
1	B	3	PHE	4.0
1	D	313	LYS	4.0
1	B	324	PHE	4.0
1	C	73	THR	3.9
1	C	14	GLY	3.8
1	C	80	ALA	3.7
1	B	316	LYS	3.6
1	C	367	LYS	3.6
1	A	327	GLY	3.5
1	C	6	PRO	3.5
1	A	95	ILE	3.2
1	D	98	GLY	3.1
1	B	428	GLU	3.1
1	B	368	LYS	3.0
1	B	327	GLY	3.0

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Mol	Chain	Res	Type	RSRZ
1	D	284	PHE	3.0
1	B	102	ASP	3.0
1	B	22	LYS	2.9
1	D	496	SER	2.9
1	D	95	ILE	2.9
1	D	373	GLU	2.9
1	D	336	LYS	2.9
1	D	181	LEU	2.8
1	D	427	LEU	2.8
1	D	288	GLY	2.8
1	C	496	SER	2.8
1	C	95	ILE	2.8
1	D	282	GLY	2.7
1	D	183	PRO	2.7
1	B	283	CYS	2.7
1	D	280	ILE	2.7
1	C	101	PHE	2.7
1	A	325	GLU	2.7
1	C	122	ALA	2.7
1	C	402	SER	2.7
1	D	339	TYR	2.7
1	D	409	ALA	2.7
1	B	326	GLU	2.6
1	D	396	LEU	2.6
1	B	364	GLU	2.6
1	A	326	GLU	2.6
1	A	79	ALA	2.6
1	D	293	ALA	2.6
1	D	267	PHE	2.6
1	C	310	LYS	2.5
1	B	280	ILE	2.5
1	A	282	GLY	2.5
1	C	3	PHE	2.5
1	D	384	MET	2.5
1	D	28	ILE	2.5
1	B	282	GLY	2.5
1	C	328	CYS	2.5
1	D	208	LEU	2.5
1	B	496	SER	2.4
1	A	368	LYS	2.4
1	B	95	ILE	2.4
1	A	402	SER	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	154	LEU	2.4
1	B	7	ALA	2.4
1	D	303	ILE	2.4
1	C	61	ASN	2.4
1	B	367	LYS	2.4
1	D	210	ILE	2.4
1	C	119	ALA	2.3
1	D	279	THR	2.3
1	C	162	LEU	2.3
1	D	380	ILE	2.3
1	A	18	GLU	2.3
1	C	123	GLU	2.3
1	D	378	THR	2.3
1	B	101	PHE	2.2
1	B	32	THR	2.2
1	D	382	THR	2.2
1	B	23	ASN	2.2
1	A	288	GLY	2.2
1	C	183	PRO	2.2
1	D	4	PRO	2.2
1	A	208	LEU	2.2
1	C	181	LEU	2.2
1	A	492	GLY	2.2
1	B	87	ASP	2.2
1	C	425	ASN	2.2
1	A	284	PHE	2.2
1	B	369	GLY	2.2
1	D	294	THR	2.2
1	D	421	ALA	2.2
1	D	369	GLY	2.1
1	A	487	SER	2.1
1	D	180	VAL	2.1
1	D	368	LYS	2.1
1	D	353	GLY	2.1
1	C	323	PRO	2.1
1	A	283	CYS	2.1
1	A	357	LEU	2.1
1	B	183	PRO	2.1
1	B	165	ALA	2.1
1	A	488	ASP	2.1
1	B	91	LYS	2.1
1	B	297	LEU	2.1

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Mol	Chain	Res	Type	RSRZ
1	D	31	SER	2.1
1	D	383[A]	SER	2.1
1	D	283	CYS	2.0
1	A	22	LYS	2.0
1	C	187	ALA	2.0
1	D	374	PRO	2.0
1	A	382	THR	2.0
1	C	280	ILE	2.0
1	A	353	GLY	2.0
1	B	343	MET	2.0
1	A	291	CYS	2.0

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

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

6.3 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. 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	RSR	LLDF	B-factors(Å ²)	Q<0.9
4	GOL	C	1499	6/6	0.43	21.85	54,62,64,73	0
4	GOL	D	1502	6/6	0.26	8.02	62,65,73,74	0
4	GOL	D	1499	6/6	0.23	7.30	45,50,54,58	0
2	K	A	1501	1/1	0.28	6.03	76,76,76,76	0
2	K	B	1499	1/1	0.23	4.27	69,69,69,69	0
2	K	C	1500	1/1	0.22	3.71	69,69,69,69	0
2	K	C	1501	1/1	0.22	3.11	64,64,64,64	0
4	GOL	D	1500	6/6	0.21	1.96	41,51,52,65	0
4	GOL	A	1499	6/6	0.15	1.16	56,61,69,70	0
4	GOL	D	1501	6/6	0.16	0.83	58,61,64,73	0

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Mol	Type	Chain	Res	Atoms	RSR	LLDF	B-factors(\AA^2)	Q<0.9
4	GOL	A	1500	6/6	0.19	0.67	51,59,65,65	0
2	K	D	1497	1/1	0.21	0.57	94,94,94,94	0
3	NAD	C	1498	44/44	0.13	-0.38	37,49,62,66	0
2	K	A	1497	1/1	0.15	-0.52	85,85,85,85	0
3	NAD	A	1498	44/44	0.11	-0.58	34,48,58,71	0
3	NAD	D	1498	44/44	0.11	-0.96	38,51,61,70	0
3	NAD	B	1498	44/44	0.11	-1.15	31,43,51,55	0
2	K	C	1497	1/1	0.10	-3.04	85,85,85,85	0
2	K	B	1497	1/1	0.07	-3.20	63,63,63,63	0

6.5 Other polymers ⓘ

There are no such residues in this entry.