



Full wwPDB X-ray Structure Validation Report ⓘ

May 26, 2020 – 01:55 pm BST

PDB ID : 1K9X
Title : Structure of Pyrococcus furiosus carboxypeptidase Apo-Yb
Authors : Arndt, J.W.; Hao, B.; Ramakrishnan, V.; Cheng, T.; Chan, S.I.; Chan, M.K.
Deposited on : 2001-10-31
Resolution : 2.30 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.11

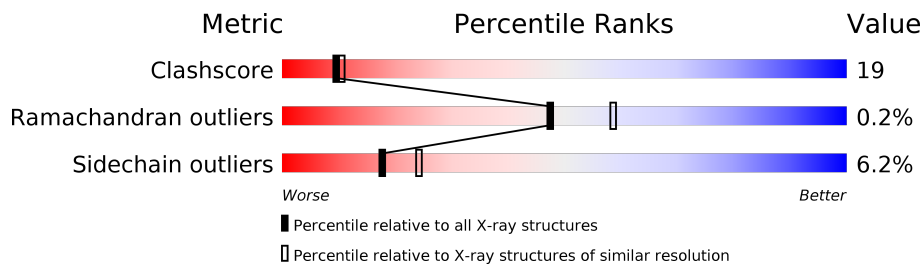
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.30 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))
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (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 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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	499	64% (green), 32% (yellow), . (orange)
1	B	499	58% (green), 38% (yellow), . (orange)
1	C	499	64% (green), 33% (yellow), . (orange)
1	D	499	57% (green), 38% (yellow), . (orange)

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 17261 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 M32 carboxypeptidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	497	4163	2700	699	755	9	0	0	0
1	B	497	4163	2700	699	755	9	0	0	0
1	C	497	4163	2700	699	755	9	0	0	0
1	D	497	4163	2700	699	755	9	0	0	0

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
			Total	O		
2	A	182	182	182	0	0
2	B	109	109	109	0	0
2	C	147	147	147	0	0
2	D	171	171	171	0	0

4 Data and refinement statistics

Xtrriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, α , β , γ	66.34Å 86.78Å 107.89Å 88.64° 78.54° 69.44°	Depositor
Resolution (Å)	48.78 – 2.30	Depositor
% Data completeness (in resolution range)	93.8 (48.78-2.30)	Depositor
R_{merge}	0.04	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.212 , 0.267	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	17261	wwPDB-VP
Average B, all atoms (Å ²)	29.0	wwPDB-VP

5 Model quality [i](#)

5.1 Standard geometry [i](#)

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	0.36	0/4271	0.58	0/5770
1	B	0.40	0/4271	0.61	0/5770
1	C	0.38	0/4271	0.59	0/5770
1	D	0.39	0/4271	0.61	0/5770
All	All	0.38	0/17084	0.60	0/23080

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	4163	0	4144	150	0
1	B	4163	0	4144	185	0
1	C	4163	0	4144	145	0
1	D	4163	0	4144	181	0
2	A	182	0	0	10	0
2	B	109	0	0	10	0
2	C	147	0	0	8	0
2	D	171	0	0	7	0
All	All	17261	0	16576	647	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 19.

All (647) 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:C:116:THR:HG23	1:C:410:ILE:HD11	1.34	1.05
1:A:117:LYS:HA	1:A:117:LYS:HE3	1.37	1.05
1:C:385:GLU:OE2	2:C:559:HOH:O	1.76	1.03
1:A:409:ASP:HB2	1:A:411:HIS:HD2	1.24	1.03
1:D:360:ASN:HD21	1:D:427:THR:HG21	1.29	0.97
1:A:495:LYS:HG3	1:A:499:LEU:HD12	1.47	0.95
1:A:85:GLY:HA3	1:A:289:ILE:HD11	1.46	0.95
1:C:209:ARG:HH11	1:C:209:ARG:HB2	1.33	0.94
1:C:189:LYS:HD3	1:C:499:LEU:HD11	1.49	0.92
1:B:366:ARG:HH11	1:B:366:ARG:HG2	1.34	0.90
1:A:481:ILE:HG22	1:A:483:GLU:HG2	1.53	0.90
1:B:14:LEU:HD21	1:B:86:ILE:HD13	1.54	0.89
1:C:14:LEU:HD21	1:C:86:ILE:HD13	1.54	0.89
1:D:19:ARG:HH11	1:D:19:ARG:HG3	1.35	0.88
1:D:88:ARG:HE	1:D:472:PRO:HG3	1.39	0.88
1:B:179:LEU:HG	1:B:183:LEU:HD12	1.53	0.88
1:A:360:ASN:HD21	1:A:427:THR:HG21	1.38	0.87
1:A:425:ILE:HG23	1:A:485:MET:HE3	1.57	0.87
1:D:366:ARG:HH11	1:D:366:ARG:HG2	1.41	0.86
1:B:443:ASP:HB2	1:B:446:GLU:HG2	1.58	0.86
1:C:116:THR:CG2	1:C:410:ILE:HD11	2.05	0.86
1:D:293:VAL:HG12	1:D:469:SER:HA	1.58	0.86
1:D:383:LEU:HA	1:D:386:MET:HE3	1.58	0.85
1:B:80:ASN:HB3	1:B:83:GLU:HG3	1.59	0.84
1:C:188:ASP:O	1:C:192:GLU:HG2	1.78	0.84
1:C:253:THR:HG21	1:C:267:THR:OG1	1.79	0.83
1:A:376:GLU:HG3	1:A:377:GLU:H	1.44	0.83
1:C:351:ARG:HB3	1:C:351:ARG:HH11	1.42	0.82
1:A:409:ASP:HB2	1:A:411:HIS:CD2	2.14	0.81
1:D:410:ILE:HG22	1:D:413:ALA:HB3	1.60	0.81
1:D:210:GLU:H	1:D:210:GLU:CD	1.84	0.81
1:B:495:LYS:HD2	1:B:499:LEU:HD12	1.62	0.80
1:C:368:LYS:O	1:C:372:LEU:HD23	1.81	0.80
1:B:58:HIS:HE1	1:B:97:ALA:O	1.65	0.79
1:A:433:LEU:HD13	2:A:611:HOH:O	1.84	0.78
1:A:14:LEU:HD21	1:A:86:ILE:HD13	1.66	0.78
1:C:446:GLU:O	1:C:450:LYS:HD3	1.83	0.77
1:A:425:ILE:HA	1:A:485:MET:HE1	1.68	0.76
1:C:402:TYR:HB3	1:C:407:LEU:HD22	1.68	0.76
1:A:186:LEU:HD21	1:A:499:LEU:HD11	1.68	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:365:LEU:HG	1:D:366:ARG:HD2	1.68	0.76
1:C:424:THR:O	1:C:427:THR:HG22	1.85	0.75
1:D:14:LEU:HD21	1:D:86:ILE:HD13	1.68	0.75
1:D:103:GLU:HB3	1:D:106:ARG:HH21	1.51	0.74
1:C:425:ILE:HA	1:C:485:MET:HE1	1.68	0.74
1:A:362:HIS:O	1:A:366:ARG:HD2	1.87	0.74
1:B:200:HIS:O	1:B:203:GLU:HB2	1.88	0.74
1:D:119:TRP:CZ3	1:D:410:ILE:HG12	2.23	0.73
1:C:43:ILE:O	1:C:43:ILE:HD13	1.89	0.73
1:A:9:THR:HA	1:A:12:GLN:HE21	1.54	0.72
1:D:497:LYS:HE2	2:D:534:HOH:O	1.89	0.72
1:D:34:LEU:HD23	1:D:46:ARG:HG2	1.70	0.72
1:A:85:GLY:CA	1:A:289:ILE:HD11	2.19	0.71
1:C:368:LYS:NZ	1:C:372:LEU:HD21	2.04	0.71
1:A:400:ARG:HG3	1:A:404:GLU:OE1	1.89	0.71
1:B:175:MET:SD	1:B:485:MET:HE3	2.31	0.71
1:A:429:LEU:HD13	1:A:485:MET:CE	2.21	0.71
1:C:304:PHE:HA	1:C:308:ILE:HD13	1.72	0.70
1:D:88:ARG:HH12	1:D:89:VAL:CG2	2.04	0.70
1:D:466:ARG:HH21	1:D:467:TRP:HZ2	1.37	0.70
1:C:209:ARG:NH1	1:C:209:ARG:HB2	2.03	0.70
1:A:402:TYR:HB3	1:A:407:LEU:HD22	1.72	0.70
1:D:43:ILE:O	1:D:43:ILE:HD13	1.91	0.69
1:B:122:ALA:HB2	1:B:130:LYS:HB2	1.74	0.69
1:B:229:THR:HG22	1:B:230:ARG:HG3	1.72	0.69
1:B:280:GLN:HG2	1:B:291:GLY:H	1.58	0.69
1:B:261:ARG:HD2	1:B:341:TYR:CE1	2.28	0.69
1:C:189:LYS:CD	1:C:499:LEU:HD11	2.23	0.69
1:D:200:HIS:HD2	1:D:202:LEU:H	1.41	0.69
1:B:48:VAL:HG21	1:C:286:PHE:CE2	2.28	0.68
1:D:172:VAL:HA	1:D:175:MET:HE3	1.75	0.68
1:D:450:LYS:HA	1:D:450:LYS:HE2	1.76	0.68
1:D:265:LEU:HD13	1:D:311:ARG:NH2	2.08	0.68
1:C:243:GLU:HG2	1:C:243:GLU:O	1.92	0.68
1:B:200:HIS:CD2	1:B:202:LEU:H	2.12	0.68
1:D:88:ARG:HH12	1:D:89:VAL:HG23	1.57	0.67
1:A:3:GLU:HA	1:A:6:GLN:HE21	1.58	0.67
1:B:209:ARG:HH21	1:B:235:VAL:HG21	1.57	0.67
1:B:366:ARG:CG	1:B:366:ARG:HH11	2.07	0.67
1:C:34:LEU:O	1:C:34:LEU:HD23	1.95	0.67
1:C:400:ARG:HB2	1:C:400:ARG:HH11	1.60	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:346:ARG:HD3	1:A:348:ASP:OD2	1.94	0.67
1:C:436:HIS:O	1:C:439:LYS:HG2	1.95	0.67
1:C:360:ASN:OD1	1:C:427:THR:HG21	1.95	0.67
1:D:189:LYS:O	1:D:193:GLU:HB2	1.95	0.67
1:D:132:GLU:OE1	1:D:381:LYS:HB3	1.95	0.67
1:B:172:VAL:HA	1:B:175:MET:HE3	1.76	0.66
1:C:100:PHE:CZ	1:C:149:LEU:HD11	2.30	0.66
1:D:383:LEU:HD23	1:D:386:MET:HE1	1.76	0.66
1:A:179:LEU:HG	1:A:183:LEU:HD12	1.76	0.66
1:B:40:LYS:HG3	1:B:41:GLU:HG3	1.76	0.66
1:D:117:LYS:HE3	1:D:117:LYS:HA	1.76	0.66
1:B:424:THR:HA	1:B:427:THR:HG22	1.76	0.66
1:B:362:HIS:O	1:B:366:ARG:CD	2.44	0.66
1:B:409:ASP:HB2	1:B:411:HIS:CD2	2.30	0.66
1:B:25:HIS:NE2	1:C:46:ARG:NH1	2.44	0.66
1:A:261:ARG:HD2	1:A:341:TYR:CE1	2.30	0.66
1:A:117:LYS:CE	1:A:117:LYS:HA	2.18	0.66
1:D:112:THR:O	1:D:116:THR:HG23	1.96	0.66
1:D:293:VAL:HG13	1:D:468:GLY:O	1.96	0.66
1:D:33:ASP:HB3	1:D:46:ARG:NH2	2.10	0.65
1:A:429:LEU:HD13	1:A:485:MET:HE2	1.78	0.65
1:B:334:THR:HB	1:B:335:PRO:HD2	1.78	0.65
1:C:350:ILE:HD12	1:C:350:ILE:N	2.12	0.65
1:A:218:TRP:CZ2	1:A:222:LYS:HE3	2.33	0.64
1:B:119:TRP:CH2	1:B:410:ILE:HG12	2.32	0.64
1:B:346:ARG:HD3	1:B:348:ASP:OD2	1.98	0.64
1:A:229:THR:HG22	1:A:230:ARG:HG3	1.79	0.64
1:B:200:HIS:HD2	1:B:202:LEU:H	1.44	0.64
1:C:200:HIS:HD2	1:C:202:LEU:H	1.45	0.64
2:A:558:HOH:O	1:D:229:THR:HG21	1.97	0.64
1:D:119:TRP:CH2	1:D:410:ILE:HG12	2.33	0.64
1:A:286:PHE:CE2	1:D:48:VAL:HG21	2.32	0.64
1:A:46:ARG:NH1	1:D:25:HIS:NE2	2.45	0.64
1:A:466:ARG:HG2	2:A:674:HOH:O	1.98	0.63
1:B:88:ARG:HE	1:B:472:PRO:HG3	1.63	0.63
1:D:378:ILE:HG21	1:D:386:MET:HE1	1.80	0.63
1:B:80:ASN:HB3	1:B:83:GLU:CG	2.29	0.63
1:D:261:ARG:HD2	1:D:341:TYR:CE1	2.33	0.63
1:D:362:HIS:O	1:D:366:ARG:CD	2.47	0.63
1:C:261:ARG:HD2	1:C:341:TYR:CE1	2.34	0.63
1:A:206:LYS:HE3	1:A:206:LYS:N	2.14	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:209:ARG:NH2	1:A:235:VAL:HG21	2.14	0.62
1:A:206:LYS:HE3	1:A:206:LYS:H	1.63	0.62
1:A:209:ARG:CZ	1:A:235:VAL:HG21	2.29	0.62
1:D:217:LEU:O	1:D:221:GLN:HG3	2.00	0.62
1:A:383:LEU:HD23	1:A:386:MET:HE3	1.80	0.62
1:B:304:PHE:O	1:B:308:ILE:HB	1.99	0.62
1:D:7:ASN:HD22	1:D:10:ILE:H	1.47	0.62
1:B:206:LYS:N	1:B:206:LYS:HD3	2.15	0.62
1:B:362:HIS:O	1:B:366:ARG:HD3	2.00	0.62
1:B:46:ARG:NH1	1:C:25:HIS:NE2	2.48	0.62
1:C:218:TRP:CE3	1:C:322:VAL:HG21	2.35	0.62
1:B:218:TRP:CD2	1:B:322:VAL:HG21	2.35	0.61
1:A:8:GLU:H	1:A:8:GLU:CD	2.03	0.61
1:C:7:ASN:HD22	1:C:10:ILE:H	1.47	0.61
1:D:19:ARG:NH1	1:D:19:ARG:HG3	2.11	0.61
1:B:409:ASP:HB2	1:B:411:HIS:HD2	1.64	0.61
1:C:250:ARG:HB3	2:C:510:HOH:O	2.00	0.61
1:A:218:TRP:CE3	1:A:322:VAL:HG21	2.36	0.61
1:B:70:VAL:O	1:B:74:LYS:HG3	2.00	0.61
1:A:119:TRP:CZ3	1:A:410:ILE:HG12	2.35	0.61
1:B:48:VAL:O	1:B:52:GLU:HG2	2.01	0.60
1:D:315:PHE:O	1:D:319:ILE:HG12	2.01	0.60
1:B:118:ALA:O	1:B:121:GLU:HG2	2.01	0.60
1:D:435:TYR:CZ	1:D:492:ARG:HD2	2.36	0.60
1:B:214:ARG:HD2	1:B:326:ASN:OD1	2.02	0.60
1:B:7:ASN:ND2	1:B:9:THR:HB	2.16	0.60
1:C:40:LYS:NZ	1:C:40:LYS:HB3	2.16	0.60
1:A:319:ILE:HG22	1:A:323:LEU:HG	1.83	0.60
1:A:218:TRP:CD2	1:A:322:VAL:HG21	2.37	0.60
1:B:135:LEU:O	1:B:139:ILE:HG13	2.01	0.60
1:C:218:TRP:CD2	1:C:322:VAL:HG21	2.37	0.60
1:B:34:LEU:HD12	1:B:34:LEU:O	2.02	0.60
1:D:287:THR:HB	1:D:288:PRO:HD2	1.83	0.60
1:A:481:ILE:CG2	1:A:483:GLU:HG2	2.30	0.59
1:B:99:ALA:HB1	1:B:149:LEU:HD12	1.83	0.59
1:D:218:TRP:CE3	1:D:322:VAL:HG21	2.37	0.59
1:A:34:LEU:HD12	1:A:34:LEU:O	2.03	0.59
1:D:33:ASP:HB3	1:D:46:ARG:HH21	1.65	0.59
1:B:360:ASN:OD1	1:B:427:THR:HG21	2.02	0.59
1:D:431:ALA:O	1:D:434:TYR:HB3	2.03	0.59
1:A:176:PHE:CG	1:A:364:LEU:HD13	2.38	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:366:ARG:NH1	1:B:366:ARG:HG2	2.14	0.59
1:D:161:ASP:OD1	1:D:168:ARG:NH2	2.36	0.59
1:B:7:ASN:O	1:B:11:LYS:HG2	2.03	0.58
1:C:5:PHE:CE2	1:C:86:ILE:HD11	2.38	0.58
1:D:304:PHE:O	1:D:308:ILE:HB	2.03	0.58
1:A:304:PHE:O	1:A:308:ILE:HB	2.03	0.58
1:A:368:LYS:O	1:A:372:LEU:HD13	2.02	0.58
1:A:117:LYS:CA	1:A:117:LYS:HE3	2.25	0.58
1:D:177:GLU:O	1:D:181:LYS:HG2	2.03	0.58
1:D:299:GLU:HB3	1:D:426:GLY:HA3	1.84	0.58
1:D:372:LEU:O	1:D:376:GLU:HB2	2.03	0.58
1:A:261:ARG:HB3	1:A:341:TYR:CE2	2.39	0.58
1:C:27:GLN:HE21	1:C:27:GLN:HA	1.68	0.58
1:A:436:HIS:CE1	1:A:481:ILE:HG23	2.39	0.58
1:D:43:ILE:HD13	1:D:43:ILE:C	2.25	0.58
1:C:406:ILE:HG23	1:C:407:LEU:HD13	1.86	0.57
1:A:3:GLU:HA	1:A:6:GLN:NE2	2.18	0.57
1:C:343:ASN:OD1	1:C:497:LYS:HE3	2.05	0.57
1:B:64:PRO:HA	1:B:67:VAL:HG22	1.87	0.57
1:A:436:HIS:NE2	1:A:483:GLU:OE2	2.28	0.57
1:D:225:PHE:CD2	1:D:227:LEU:HD13	2.40	0.57
1:D:200:HIS:CD2	1:D:202:LEU:H	2.23	0.57
1:D:218:TRP:CD2	1:D:322:VAL:HG21	2.40	0.57
1:C:138:ILE:HD13	1:C:412:TRP:O	2.05	0.56
1:C:409:ASP:HB2	1:C:411:HIS:HD2	1.71	0.56
1:A:94:ILE:O	1:A:98:ARG:HG2	2.05	0.56
1:D:466:ARG:NH2	1:D:467:TRP:CZ2	2.74	0.56
1:A:376:GLU:HG3	1:A:377:GLU:N	2.19	0.56
1:C:436:HIS:CE1	1:C:481:ILE:HG23	2.41	0.56
1:A:160:LEU:HD11	1:A:421:PRO:HG3	1.88	0.56
1:B:461:ARG:HA	1:B:465:HIS:HB2	1.87	0.56
1:C:88:ARG:NH1	1:C:470:ILE:O	2.38	0.56
1:B:108:VAL:O	1:B:112:THR:HG22	2.06	0.56
1:B:25:HIS:O	1:B:29:VAL:HG23	2.06	0.56
1:C:225:PHE:CZ	1:C:231:ALA:HB1	2.41	0.56
1:D:383:LEU:HD23	1:D:386:MET:CE	2.35	0.55
1:B:280:GLN:CG	1:B:291:GLY:H	2.19	0.55
1:B:218:TRP:CE2	1:B:322:VAL:HG21	2.42	0.55
1:A:429:LEU:HD13	1:A:485:MET:HE3	1.88	0.55
1:C:51:GLY:O	1:C:55:VAL:HG23	2.07	0.55
1:C:80:ASN:O	1:C:84:ARG:HG3	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:19:ARG:CG	1:D:19:ARG:HH11	2.15	0.55
1:A:360:ASN:HD21	1:A:427:THR:CG2	2.17	0.55
1:D:27:GLN:HA	1:D:27:GLN:HE21	1.71	0.55
1:A:104:PHE:O	1:A:108:VAL:HG23	2.07	0.55
1:D:334:THR:HB	1:D:335:PRO:HD2	1.89	0.54
1:D:366:ARG:HG2	1:D:366:ARG:NH1	2.14	0.54
1:A:186:LEU:HD21	1:A:499:LEU:CD1	2.37	0.54
1:B:391:MET:HE1	2:B:557:HOH:O	2.07	0.54
1:A:249:VAL:CG2	1:A:278:LEU:HD13	2.38	0.54
1:D:88:ARG:NH1	1:D:89:VAL:HG23	2.23	0.54
1:A:80:ASN:OD1	1:A:83:GLU:HG3	2.08	0.54
1:C:490:PHE:O	1:C:494:VAL:HG23	2.08	0.54
1:B:401:LYS:NZ	1:B:401:LYS:HB3	2.21	0.54
1:C:34:LEU:C	1:C:34:LEU:HD23	2.28	0.54
1:D:265:LEU:HD13	1:D:311:ARG:CZ	2.36	0.54
1:A:219:ILE:HG12	1:A:319:ILE:CD1	2.36	0.54
1:A:289:ILE:HD13	1:A:470:ILE:HG12	1.90	0.54
1:B:273:HIS:CD2	1:B:302:SER:HB3	2.42	0.54
1:D:362:HIS:O	1:D:366:ARG:HD3	2.07	0.54
1:C:161:ASP:OD1	1:C:168:ARG:NH2	2.41	0.54
1:C:478:LYS:O	1:C:482:GLY:N	2.38	0.54
1:D:187:LEU:O	1:D:191:LEU:HG	2.08	0.54
1:A:435:TYR:CZ	1:A:492:ARG:HD2	2.42	0.54
1:C:108:VAL:O	1:C:112:THR:HG22	2.07	0.53
1:B:40:LYS:HG2	1:C:229:THR:HA	1.89	0.53
1:B:172:VAL:HA	1:B:175:MET:CE	2.37	0.53
1:B:410:ILE:HG22	1:B:413:ALA:HB3	1.90	0.53
1:C:19:ARG:HH11	1:C:19:ARG:HB2	1.74	0.53
1:A:88:ARG:NE	1:A:472:PRO:HG3	2.23	0.53
1:B:67:VAL:HG12	1:B:94:ILE:HD13	1.90	0.53
1:C:19:ARG:NH1	2:C:509:HOH:O	2.42	0.53
1:D:451:ALA:HA	1:D:453:PHE:CE1	2.44	0.53
1:B:343:ASN:OD1	1:B:497:LYS:HE3	2.09	0.53
1:B:431:ALA:O	1:B:434:TYR:HB3	2.07	0.53
1:A:32:TRP:O	1:A:36:VAL:HG23	2.09	0.53
1:B:212:MET:CE	1:B:260:PHE:HB2	2.39	0.53
1:B:123:LYS:HA	1:B:407:LEU:HD23	1.91	0.53
1:B:189:LYS:O	1:B:193:GLU:HB2	2.09	0.53
1:D:184:LYS:HB3	1:D:185:PRO:CD	2.38	0.53
1:A:200:HIS:CD2	1:A:202:LEU:H	2.27	0.53
1:B:58:HIS:CE1	1:B:97:ALA:O	2.55	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:287:THR:HB	1:B:288:PRO:HD2	1.91	0.53
1:A:41:GLU:OE2	1:D:229:THR:HG23	2.08	0.52
1:B:401:LYS:HZ1	1:B:401:LYS:HB3	1.73	0.52
1:B:411:HIS:H	1:B:411:HIS:CD2	2.27	0.52
1:C:261:ARG:HB3	1:C:341:TYR:CZ	2.43	0.52
1:C:176:PHE:CG	1:C:364:LEU:HD13	2.44	0.52
1:C:437:ILE:HG13	1:C:459:TRP:CD2	2.45	0.52
1:C:62:LEU:HD11	1:C:97:ALA:HB1	1.91	0.52
1:D:276:TYR:CZ	1:D:292:GLY:HA2	2.44	0.52
1:A:26:ALA:O	1:A:30:LEU:HD13	2.09	0.52
1:A:261:ARG:HD2	1:A:341:TYR:CZ	2.44	0.52
1:B:212:MET:HE2	1:B:260:PHE:HB2	1.92	0.52
1:B:400:ARG:HG3	1:B:404:GLU:OE1	2.10	0.52
1:D:152:GLU:O	1:D:153:GLU:HB2	2.09	0.52
1:B:149:LEU:HD21	1:B:162:LEU:HD13	1.92	0.52
1:C:384:PRO:HG2	2:C:511:HOH:O	2.10	0.52
1:C:409:ASP:HB2	1:C:411:HIS:CD2	2.45	0.52
1:C:43:ILE:C	1:C:43:ILE:HD13	2.30	0.52
1:A:186:LEU:CD2	1:A:499:LEU:HD11	2.39	0.52
1:A:348:ASP:HB3	2:A:583:HOH:O	2.09	0.52
1:B:295:LEU:HD13	1:B:419:TYR:HE1	1.74	0.52
1:A:365:LEU:HD22	1:A:391:MET:HE2	1.91	0.52
1:A:280:GLN:OE1	1:A:468:GLY:HA2	2.10	0.51
1:B:99:ALA:O	1:B:148:TYR:HB3	2.10	0.51
1:B:92:ARG:CZ	1:B:96:ILE:HD11	2.40	0.51
1:D:273:HIS:CD2	1:D:302:SER:HB3	2.45	0.51
1:A:154:GLU:HB3	2:A:562:HOH:O	2.11	0.51
1:B:402:TYR:HB3	1:B:407:LEU:HD22	1.92	0.51
1:B:446:GLU:HG3	1:B:447:LYS:N	2.24	0.51
1:D:175:MET:HE1	1:D:485:MET:HE1	1.92	0.51
1:B:275:LEU:HD21	1:B:457:LYS:HG2	1.93	0.51
1:B:349:PHE:O	1:B:408:GLN:NE2	2.43	0.51
1:C:351:ARG:NH1	2:C:563:HOH:O	2.43	0.51
1:C:184:LYS:N	1:C:185:PRO:HD2	2.26	0.51
1:C:193:GLU:HG2	1:C:195:LYS:HE3	1.91	0.51
1:C:159:LEU:HD12	1:C:374:VAL:HG21	1.91	0.51
1:D:29:VAL:HG22	1:D:244:PHE:CE1	2.45	0.51
1:D:275:LEU:HD21	1:D:457:LYS:HG2	1.93	0.51
1:B:238:HIS:HD2	1:B:254:ARG:NH1	2.08	0.51
1:C:86:ILE:HG13	1:C:289:ILE:HD11	1.92	0.51
1:C:425:ILE:HG23	1:C:485:MET:HE3	1.93	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:436:HIS:O	1:D:439:LYS:HG2	2.10	0.51
1:C:368:LYS:HZ2	1:C:372:LEU:HD21	1.73	0.51
1:D:280:GLN:OE1	1:D:468:GLY:HA2	2.10	0.51
1:D:138:ILE:HD13	1:D:412:TRP:O	2.11	0.51
1:D:186:LEU:O	1:D:190:ILE:HG13	2.11	0.51
1:C:103:GLU:HG3	1:C:104:PHE:N	2.26	0.51
1:C:151:TYR:CD2	1:C:155:PRO:HA	2.46	0.51
1:C:46:ARG:NH1	1:C:46:ARG:HB2	2.25	0.51
1:B:23:ILE:HD13	1:B:56:LEU:HD13	1.91	0.50
1:B:48:VAL:HG21	1:C:286:PHE:CZ	2.46	0.50
1:D:182:LYS:O	1:D:186:LEU:HB2	2.11	0.50
1:D:351:ARG:NH1	1:D:409:ASP:OD1	2.44	0.50
1:A:425:ILE:HA	1:A:485:MET:CE	2.39	0.50
1:C:425:ILE:HG23	1:C:485:MET:CE	2.41	0.50
1:A:33:ASP:OD1	1:A:46:ARG:NH2	2.43	0.50
1:C:308:ILE:HD12	1:C:308:ILE:N	2.27	0.50
1:B:7:ASN:HD21	1:B:9:THR:HB	1.73	0.50
1:D:303:ARG:HD2	1:D:307:ASN:ND2	2.26	0.50
1:C:280:GLN:CD	1:C:291:GLY:H	2.15	0.50
1:A:7:ASN:HD21	1:A:9:THR:HB	1.77	0.50
1:B:209:ARG:HG2	1:B:209:ARG:NH1	2.26	0.50
1:D:294:SER:OG	1:D:297:ILE:HG12	2.12	0.50
1:A:176:PHE:CD2	1:A:364:LEU:HD13	2.47	0.50
1:B:281:ASP:HB3	1:B:284:PHE:CD2	2.47	0.50
1:D:366:ARG:HH11	1:D:366:ARG:CG	2.16	0.50
1:C:7:ASN:HD21	1:C:9:THR:HB	1.77	0.50
1:D:195:LYS:HB3	2:D:605:HOH:O	2.11	0.50
1:B:198:ARG:O	1:B:346:ARG:NE	2.45	0.49
1:C:200:HIS:CD2	1:C:202:LEU:H	2.27	0.49
1:C:210:GLU:O	1:C:214:ARG:HG3	2.11	0.49
1:A:160:LEU:HG	1:A:167:LEU:HD23	1.94	0.49
1:B:191:LEU:HB3	1:B:198:ARG:HH21	1.76	0.49
1:B:362:HIS:O	1:B:366:ARG:HD2	2.12	0.49
1:D:192:GLU:HG3	1:D:193:GLU:N	2.27	0.49
1:B:122:ALA:CB	1:B:130:LYS:HB2	2.42	0.49
1:D:459:TRP:HE3	1:D:460:LEU:HD13	1.77	0.49
1:A:140:SER:O	1:A:144:ARG:HG3	2.11	0.49
1:B:33:ASP:OD1	1:B:46:ARG:NH2	2.45	0.49
1:B:82:TYR:HD2	1:B:284:PHE:CE1	2.30	0.49
1:C:334:THR:HB	1:C:335:PRO:HD2	1.94	0.49
1:C:343:ASN:HB3	1:C:498:TYR:HE2	1.76	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:137:LYS:O	1:D:141:LEU:HG	2.11	0.49
1:C:372:LEU:HB3	1:C:378:ILE:HG13	1.93	0.49
1:C:7:ASN:ND2	1:C:9:THR:H	2.11	0.49
1:D:293:VAL:CG1	1:D:468:GLY:O	2.60	0.49
1:A:103:GLU:HA	1:A:106:ARG:NH1	2.28	0.49
1:C:299:GLU:HG2	2:C:540:HOH:O	2.12	0.49
1:B:209:ARG:HH11	1:B:209:ARG:HG2	1.77	0.49
1:B:27:GLN:HE21	1:B:27:GLN:CA	2.25	0.49
1:C:265:LEU:HD13	1:C:311:ARG:NH2	2.28	0.49
1:D:210:GLU:CD	1:D:210:GLU:N	2.61	0.49
1:B:406:ILE:HG23	1:B:407:LEU:HD13	1.95	0.49
1:C:346:ARG:O	1:C:346:ARG:HG2	2.11	0.49
1:C:465:HIS:N	1:C:465:HIS:CD2	2.80	0.49
1:A:7:ASN:ND2	1:A:9:THR:HB	2.28	0.49
1:B:19:ARG:HG2	1:B:60:LEU:HD13	1.94	0.49
1:B:81:GLU:HG2	1:B:82:TYR:CD1	2.48	0.49
1:D:364:LEU:HD12	1:D:364:LEU:O	2.13	0.49
1:D:478:LYS:NZ	2:D:523:HOH:O	2.44	0.49
1:B:27:GLN:HA	1:B:27:GLN:HE21	1.77	0.49
1:A:200:HIS:HD2	1:A:202:LEU:H	1.60	0.48
1:D:355:ASP:O	1:D:359:TYR:HB2	2.13	0.48
1:A:355:ASP:O	1:A:359:TYR:HB2	2.12	0.48
1:B:43:ILE:O	1:B:43:ILE:HD13	2.13	0.48
1:C:43:ILE:HD13	1:C:47:SER:HG	1.78	0.48
1:C:443:ASP:OD1	1:C:447:LYS:HE2	2.11	0.48
1:D:33:ASP:OD1	1:D:46:ARG:NH2	2.35	0.48
1:A:261:ARG:HB3	1:A:341:TYR:CZ	2.48	0.48
1:C:351:ARG:NH1	1:C:409:ASP:OD2	2.46	0.48
1:C:234:ASP:O	1:C:252:THR:HA	2.14	0.48
1:D:7:ASN:HD21	1:D:9:THR:HB	1.79	0.48
1:A:306:GLU:O	1:A:310:GLY:HA3	2.14	0.48
1:A:382:ASP:C	1:A:386:MET:HE2	2.33	0.48
1:A:34:LEU:HD13	1:A:38:MET:CE	2.43	0.48
1:B:215:VAL:O	1:B:219:ILE:HG13	2.14	0.48
1:B:320:TYR:N	1:B:321:PRO:HD2	2.28	0.48
1:B:460:LEU:HB3	1:B:465:HIS:CE1	2.48	0.48
1:A:172:VAL:HA	1:A:175:MET:HE3	1.95	0.48
1:A:334:THR:HB	1:A:335:PRO:HD2	1.96	0.48
1:B:99:ALA:CB	1:B:149:LEU:HD12	2.44	0.48
1:D:400:ARG:HH11	1:D:400:ARG:HG3	1.77	0.48
1:B:429:LEU:HD12	1:B:485:MET:HG3	1.95	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:182:LYS:O	1:C:185:PRO:HG2	2.14	0.48
1:D:225:PHE:HD2	1:D:227:LEU:HD13	1.78	0.48
1:A:34:LEU:HD12	1:A:34:LEU:C	2.34	0.48
1:B:210:GLU:HB3	1:B:214:ARG:HH22	1.79	0.48
1:C:219:ILE:HG12	1:C:319:ILE:CD1	2.43	0.48
1:C:279:GLN:HG2	1:C:461:ARG:CZ	2.44	0.48
1:C:27:GLN:NE2	2:C:547:HOH:O	2.46	0.48
1:C:351:ARG:HH11	1:C:351:ARG:CB	2.20	0.48
1:A:425:ILE:HG22	1:A:429:LEU:HD22	1.96	0.48
1:B:37:ASN:O	1:C:232:ARG:HD2	2.14	0.48
1:C:46:ARG:NH1	2:C:516:HOH:O	2.43	0.48
1:B:44:LEU:O	1:B:48:VAL:HG13	2.13	0.47
1:D:411:HIS:H	1:D:411:HIS:CD2	2.30	0.47
1:B:23:ILE:CD1	1:B:56:LEU:HD13	2.44	0.47
1:D:366:ARG:HD2	1:D:366:ARG:N	2.30	0.47
1:D:493:TRP:O	1:D:497:LYS:HB2	2.14	0.47
1:A:382:ASP:O	1:A:386:MET:HE2	2.15	0.47
1:B:103:GLU:H	1:B:103:GLU:CD	2.17	0.47
1:B:429:LEU:CD1	1:B:485:MET:HG3	2.45	0.47
1:C:429:LEU:O	1:C:433:LEU:HG	2.14	0.47
1:A:225:PHE:CD2	1:A:227:LEU:HD22	2.50	0.47
1:B:144:ARG:O	1:B:147:GLU:HB2	2.15	0.47
1:B:401:LYS:NZ	1:B:404:GLU:HG3	2.30	0.47
1:B:4:VAL:HG13	1:B:82:TYR:CG	2.50	0.47
1:D:218:TRP:HZ3	1:D:319:ILE:HD13	1.79	0.47
1:B:424:THR:O	1:B:427:THR:HG22	2.15	0.47
1:C:212:MET:CE	1:C:260:PHE:HB2	2.45	0.47
1:D:110:GLU:O	1:D:114:LEU:HD13	2.15	0.47
1:D:378:ILE:HG21	1:D:386:MET:CE	2.44	0.47
1:D:360:ASN:ND2	1:D:427:THR:HG21	2.12	0.47
1:B:279:GLN:NE2	1:B:465:HIS:ND1	2.61	0.47
1:D:238:HIS:O	1:D:240:PHE:HD2	1.98	0.47
1:D:249:VAL:CG2	1:D:278:LEU:HD13	2.45	0.47
1:A:238:HIS:O	1:A:240:PHE:HD2	1.98	0.47
1:B:295:LEU:HD13	1:B:419:TYR:CE1	2.50	0.47
1:D:67:VAL:HG23	1:D:68:ASN:N	2.29	0.47
1:A:405:GLY:O	1:A:408:GLN:HG3	2.15	0.46
1:A:495:LYS:HG3	1:A:499:LEU:CD1	2.32	0.46
1:C:434:TYR:O	1:C:438:LYS:HG3	2.15	0.46
1:D:25:HIS:O	1:D:29:VAL:HG23	2.16	0.46
1:A:19:ARG:CG	1:A:19:ARG:HH11	2.27	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:436:HIS:CG	1:A:481:ILE:HD12	2.49	0.46
1:C:465:HIS:H	1:C:465:HIS:CD2	2.33	0.46
1:D:34:LEU:HD22	1:D:38:MET:SD	2.55	0.46
1:A:265:LEU:HD13	1:A:311:ARG:CZ	2.46	0.46
1:C:103:GLU:HG3	1:C:104:PHE:H	1.80	0.46
1:D:151:TYR:CD2	1:D:155:PRO:HA	2.50	0.46
1:A:211:TRP:HB3	1:A:326:ASN:O	2.15	0.46
1:A:239:PRO:HG2	1:A:266:SER:OG	2.14	0.46
1:C:62:LEU:HD11	1:C:97:ALA:CB	2.44	0.46
1:A:269:HIS:NE2	2:A:574:HOH:O	2.35	0.46
1:B:366:ARG:CG	1:B:366:ARG:NH1	2.71	0.46
1:C:241:THR:OG1	1:C:251:ILE:HG22	2.16	0.46
1:C:360:ASN:HD21	1:C:427:THR:HG21	1.81	0.46
1:D:295:LEU:HD13	1:D:419:TYR:HE1	1.81	0.46
1:D:366:ARG:H	1:D:366:ARG:HD2	1.79	0.46
1:D:454:ASP:N	1:D:455:PRO:HD2	2.31	0.46
1:B:144:ARG:HH11	1:B:144:ARG:HG3	1.79	0.46
1:B:151:TYR:O	1:B:151:TYR:CD1	2.69	0.46
1:B:27:GLN:HA	1:B:27:GLN:NE2	2.30	0.46
1:B:355:ASP:O	1:B:359:TYR:HB2	2.15	0.46
1:C:134:TRP:CE3	1:C:137:LYS:HD2	2.51	0.46
1:D:8:GLU:HG2	1:D:12:GLN:HE21	1.80	0.46
1:D:234:ASP:O	1:D:252:THR:HA	2.16	0.46
1:A:176:PHE:HB3	1:A:364:LEU:HD13	1.98	0.46
1:B:214:ARG:HG3	1:B:214:ARG:HH11	1.79	0.46
1:C:219:ILE:HG12	1:C:319:ILE:HD12	1.97	0.46
1:D:303:ARG:NH1	1:D:306:GLU:OE1	2.46	0.46
1:A:280:GLN:HG2	1:A:291:GLY:H	1.81	0.46
1:A:346:ARG:O	1:A:346:ARG:HG2	2.14	0.46
1:B:280:GLN:OE1	1:B:468:GLY:HA2	2.16	0.46
1:C:82:TYR:O	1:C:289:ILE:HD11	2.16	0.46
1:D:366:ARG:NH1	1:D:366:ARG:CG	2.77	0.46
1:D:80:ASN:O	1:D:84:ARG:HG3	2.16	0.46
1:D:88:ARG:HH12	1:D:89:VAL:HG22	1.79	0.46
1:B:364:LEU:HD23	1:B:394:LEU:HD13	1.97	0.46
1:B:366:ARG:O	1:B:370:GLU:HG3	2.16	0.46
1:B:420:PHE:N	1:B:421:PRO:HD2	2.31	0.46
1:D:108:VAL:O	1:D:112:THR:HG22	2.16	0.46
1:D:114:LEU:HD23	1:D:134:TRP:CH2	2.51	0.46
1:D:179:LEU:HG	1:D:183:LEU:HD12	1.97	0.46
1:A:360:ASN:ND2	1:A:427:THR:HG21	2.19	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:445:GLU:OE1	2:A:570:HOH:O	2.20	0.45
1:A:244:PHE:CE1	1:A:250:ARG:CZ	2.99	0.45
1:A:299:GLU:HB3	1:A:426:GLY:HA3	1.97	0.45
1:B:451:ALA:HA	1:B:453:PHE:CE1	2.51	0.45
1:B:351:ARG:CZ	2:B:544:HOH:O	2.64	0.45
1:D:239:PRO:HG3	1:D:253:THR:HA	1.98	0.45
1:D:88:ARG:HE	1:D:472:PRO:CG	2.20	0.45
1:C:350:ILE:CD1	1:C:350:ILE:N	2.79	0.45
1:C:481:ILE:HG22	1:C:483:GLU:HG2	1.97	0.45
1:D:240:PHE:CD1	1:D:242:THR:HG23	2.51	0.45
1:B:62:LEU:HD21	1:B:98:ARG:HB3	1.99	0.45
1:C:372:LEU:HD13	1:C:376:GLU:HG3	1.98	0.45
1:D:219:ILE:HG12	1:D:319:ILE:HD12	1.98	0.45
1:A:206:LYS:HB2	1:A:206:LYS:NZ	2.31	0.45
1:B:424:THR:CA	1:B:427:THR:HG22	2.46	0.45
1:B:447:LYS:HG2	1:B:452:GLU:OE1	2.17	0.45
1:D:362:HIS:O	1:D:366:ARG:HD2	2.15	0.45
1:D:64:PRO:HA	1:D:67:VAL:HG22	1.97	0.45
1:B:372:LEU:HB3	1:B:378:ILE:HG13	1.99	0.45
1:D:390:GLU:OE1	1:D:393:ARG:NE	2.45	0.45
1:B:229:THR:HG23	1:C:41:GLU:OE2	2.17	0.45
1:B:232:ARG:HD3	1:B:250:ARG:HD3	1.98	0.45
1:B:425:ILE:O	1:B:429:LEU:HD13	2.17	0.45
1:C:427:THR:HG23	1:C:428:LEU:N	2.31	0.45
1:D:437:ILE:HG13	1:D:459:TRP:CD2	2.52	0.45
1:A:85:GLY:C	1:A:289:ILE:HD11	2.38	0.45
1:B:9:THR:HA	1:B:12:GLN:HE21	1.82	0.45
1:C:450:LYS:HD2	1:C:450:LYS:N	2.32	0.44
1:D:92:ARG:HD2	1:D:165:GLU:CD	2.37	0.44
1:D:80:ASN:OD1	1:D:83:GLU:HG3	2.15	0.44
1:B:269:HIS:ND1	1:B:306:GLU:OE1	2.47	0.44
1:B:378:ILE:HG22	1:B:379:LYS:N	2.31	0.44
1:B:81:GLU:HG3	2:B:513:HOH:O	2.17	0.44
1:C:179:LEU:HG	1:C:183:LEU:HD12	1.98	0.44
1:C:198:ARG:HB3	1:C:346:ARG:HB2	2.00	0.44
1:B:218:TRP:CZ2	1:B:222:LYS:HE3	2.52	0.44
1:C:427:THR:CG2	1:C:428:LEU:N	2.80	0.44
1:A:119:TRP:CH2	1:A:410:ILE:HG12	2.53	0.44
1:A:365:LEU:C	1:A:365:LEU:HD12	2.37	0.44
1:A:476:LEU:HD13	2:A:523:HOH:O	2.17	0.44
1:B:191:LEU:HB3	1:B:198:ARG:NH2	2.33	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:364:LEU:HD23	1:B:394:LEU:CD1	2.46	0.44
1:C:388:ASN:OD1	1:C:399:PRO:HD2	2.17	0.44
1:A:411:HIS:CD2	1:A:411:HIS:H	2.36	0.44
1:A:436:HIS:NE2	1:A:481:ILE:HG23	2.33	0.44
1:C:287:THR:HB	1:C:288:PRO:HD2	2.00	0.44
1:D:11:LYS:HB2	1:D:11:LYS:HE3	1.85	0.44
1:D:400:ARG:HG3	1:D:404:GLU:OE1	2.18	0.44
1:A:138:ILE:HD13	1:A:412:TRP:O	2.18	0.44
1:C:140:SER:O	1:C:144:ARG:HG3	2.18	0.44
1:D:194:GLY:O	1:D:195:LYS:C	2.56	0.44
1:D:125:LYS:O	1:D:126:ASP:C	2.56	0.43
1:D:43:ILE:HG23	1:D:44:LEU:N	2.32	0.43
1:D:80:ASN:HB2	2:D:631:HOH:O	2.17	0.43
1:A:438:LYS:O	1:A:442:PRO:HA	2.18	0.43
1:D:318:LEU:HD22	1:D:448:VAL:O	2.18	0.43
1:A:232:ARG:HD2	1:D:37:ASN:O	2.18	0.43
1:B:249:VAL:HB	1:B:278:LEU:HD13	2.00	0.43
1:C:154:GLU:OE2	1:C:371:ARG:NH2	2.52	0.43
1:A:10:ILE:O	1:A:14:LEU:HG	2.18	0.43
1:A:280:GLN:CG	1:A:291:GLY:H	2.31	0.43
1:D:184:LYS:HB3	1:D:185:PRO:HD3	2.00	0.43
1:D:280:GLN:CD	1:D:291:GLY:H	2.21	0.43
1:D:365:LEU:C	1:D:365:LEU:HD12	2.38	0.43
1:A:437:ILE:HG13	1:A:459:TRP:CD2	2.54	0.43
1:B:176:PHE:HB3	1:B:364:LEU:HD13	2.00	0.43
1:A:23:ILE:CD1	1:A:56:LEU:HD13	2.48	0.43
1:B:154:GLU:HG3	1:B:155:PRO:HD2	2.00	0.43
1:C:261:ARG:O	1:C:265:LEU:HG	2.17	0.43
1:B:193:GLU:HG2	1:B:195:LYS:HG3	2.01	0.43
1:B:200:HIS:HD2	1:B:202:LEU:HB2	1.84	0.43
1:B:203:GLU:CD	1:B:346:ARG:HH22	2.22	0.43
1:D:293:VAL:CG2	1:D:297:ILE:HG13	2.49	0.43
1:D:218:TRP:CZ3	1:D:322:VAL:HG21	2.53	0.43
1:D:327:LEU:O	1:D:330:MET:HB2	2.19	0.43
1:D:410:ILE:O	1:D:413:ALA:N	2.50	0.43
1:D:80:ASN:CG	1:D:83:GLU:HG3	2.39	0.43
1:A:7:ASN:HD22	1:A:10:ILE:H	1.65	0.43
1:B:63:HIS:CE1	1:B:65:GLU:HB2	2.53	0.43
1:C:10:ILE:O	1:C:14:LEU:HG	2.19	0.43
1:C:7:ASN:ND2	1:C:9:THR:HB	2.34	0.43
1:D:117:LYS:CA	1:D:117:LYS:HE3	2.46	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:434:TYR:O	1:A:437:ILE:HG22	2.19	0.43
1:C:38:MET:HA	1:C:39:PRO:HD3	1.96	0.43
1:A:376:GLU:CD	2:A:572:HOH:O	2.57	0.42
1:B:299:GLU:HG2	2:B:541:HOH:O	2.19	0.42
1:B:5:PHE:CE2	1:B:86:ILE:HD11	2.54	0.42
1:C:249:VAL:HB	1:C:278:LEU:HD13	2.00	0.42
1:D:349:PHE:O	1:D:408:GLN:NE2	2.52	0.42
1:A:349:PHE:O	1:A:408:GLN:NE2	2.51	0.42
1:B:151:TYR:HB3	1:B:158:ALA:HB2	2.00	0.42
1:B:335:PRO:HG2	2:B:571:HOH:O	2.19	0.42
1:D:381:LYS:HE2	2:D:618:HOH:O	2.19	0.42
1:A:265:LEU:HD23	1:A:265:LEU:HA	1.90	0.42
1:A:37:ASN:O	1:D:232:ARG:HD2	2.19	0.42
1:A:365:LEU:CD2	1:A:391:MET:HE2	2.49	0.42
1:A:8:GLU:O	1:A:11:LYS:HB2	2.19	0.42
1:B:184:LYS:HE2	1:B:394:LEU:O	2.19	0.42
1:C:431:ALA:O	1:C:434:TYR:HB3	2.19	0.42
1:D:186:LEU:CD2	1:D:190:ILE:HD11	2.49	0.42
1:D:351:ARG:NH1	1:D:409:ASP:CG	2.73	0.42
1:B:434:TYR:O	1:B:437:ILE:HG22	2.19	0.42
1:D:299:GLU:HG2	2:D:629:HOH:O	2.19	0.42
1:A:5:PHE:CE2	1:A:86:ILE:HD11	2.54	0.42
1:B:339:TYR:CE1	1:B:343:ASN:ND2	2.88	0.42
1:D:313:LYS:O	1:D:317:GLU:HG3	2.20	0.42
1:D:450:LYS:HE2	1:D:450:LYS:CA	2.48	0.42
1:B:17:TYR:CD2	1:B:288:PRO:HD3	2.55	0.42
1:B:210:GLU:CD	1:B:210:GLU:H	2.23	0.42
1:B:351:ARG:NE	2:B:544:HOH:O	2.53	0.42
1:B:424:THR:HA	1:B:427:THR:CG2	2.45	0.42
1:B:474:LYS:O	1:B:478:LYS:HG3	2.18	0.42
1:C:370:GLU:OE2	1:C:420:PHE:HD1	2.03	0.42
1:D:383:LEU:CA	1:D:386:MET:HE3	2.40	0.42
1:D:459:TRP:CE3	1:D:460:LEU:HD13	2.54	0.42
1:D:5:PHE:CE2	1:D:86:ILE:HD11	2.54	0.42
1:A:234:ASP:O	1:A:252:THR:HA	2.20	0.42
1:A:219:ILE:HG12	1:A:319:ILE:HD12	2.01	0.42
1:A:420:PHE:N	1:A:421:PRO:HD2	2.34	0.42
1:B:225:PHE:CZ	1:B:231:ALA:HB1	2.55	0.42
1:A:17:TYR:CD2	1:A:288:PRO:HD3	2.54	0.42
1:B:138:ILE:HA	1:B:141:LEU:HD12	2.02	0.42
1:C:172:VAL:HA	1:C:175:MET:CE	2.50	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:222:LYS:HA	1:C:222:LYS:HD3	1.91	0.42
1:C:349:PHE:HB2	1:C:350:ILE:HD12	2.02	0.42
1:B:250:ARG:HB3	2:B:542:HOH:O	2.20	0.42
1:B:160:LEU:HA	1:B:160:LEU:HD12	1.94	0.41
1:B:276:TYR:CZ	1:B:292:GLY:HA2	2.55	0.41
1:C:400:ARG:NH1	1:C:400:ARG:HB2	2.33	0.41
1:D:369:LEU:O	1:D:373:MET:HG3	2.19	0.41
1:D:370:GLU:OE2	1:D:420:PHE:HD1	2.03	0.41
1:B:119:TRP:CZ3	1:B:410:ILE:HG12	2.55	0.41
1:B:126:ASP:OD1	1:B:126:ASP:O	2.38	0.41
1:B:43:ILE:CG2	1:B:44:LEU:N	2.83	0.41
1:B:478:LYS:HA	2:B:564:HOH:O	2.19	0.41
1:C:360:ASN:ND2	1:C:427:THR:HG21	2.34	0.41
1:C:249:VAL:CG2	1:C:278:LEU:HD13	2.50	0.41
1:B:45:GLU:HG2	1:C:286:PHE:CE2	2.56	0.41
1:D:62:LEU:HD21	1:D:97:ALA:HB1	2.01	0.41
1:A:300:SER:HB2	1:A:429:LEU:HB3	2.02	0.41
1:B:210:GLU:HB3	1:B:214:ARG:NH2	2.35	0.41
1:B:400:ARG:NH2	2:B:596:HOH:O	2.53	0.41
1:C:261:ARG:CG	1:C:262:ARG:N	2.83	0.41
1:C:7:ASN:ND2	1:C:9:THR:N	2.69	0.41
1:D:186:LEU:O	1:D:186:LEU:HD23	2.21	0.41
1:A:299:GLU:HG2	2:A:546:HOH:O	2.20	0.41
1:C:300:SER:HB2	1:C:429:LEU:HB3	2.02	0.41
1:A:14:LEU:HD21	1:A:86:ILE:CD1	2.42	0.41
1:A:247:ARG:NE	1:A:282:GLU:OE2	2.30	0.41
1:A:295:LEU:HD13	1:A:419:TYR:CE1	2.55	0.41
1:B:151:TYR:C	1:B:151:TYR:CD1	2.93	0.41
1:B:92:ARG:NH2	1:B:96:ILE:HD11	2.35	0.41
1:D:192:GLU:O	1:D:193:GLU:C	2.58	0.41
1:B:244:PHE:CD2	1:B:244:PHE:N	2.89	0.41
1:C:186:LEU:O	1:C:190:ILE:HG13	2.21	0.41
1:D:153:GLU:HB3	1:D:157:ASP:OD2	2.20	0.41
1:A:378:ILE:HG21	1:A:386:MET:HE3	2.02	0.41
1:B:128:PHE:HB2	1:B:402:TYR:CE2	2.56	0.41
1:B:365:LEU:C	1:B:365:LEU:HD12	2.40	0.41
1:C:275:LEU:HD21	1:C:457:LYS:HG2	2.03	0.41
1:D:156:TYR:CZ	1:D:160:LEU:HD13	2.56	0.41
1:D:285:MET:O	1:D:286:PHE:HB2	2.21	0.41
1:D:383:LEU:N	1:D:384:PRO:HD2	2.36	0.41
1:A:370:GLU:O	1:A:374:VAL:HG23	2.19	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:104:PHE:O	1:C:108:VAL:HG23	2.21	0.41
1:C:320:TYR:CZ	1:C:324:LYS:HD2	2.56	0.41
1:D:379:LYS:HA	1:D:379:LYS:HE2	2.02	0.41
1:B:261:ARG:HB3	1:B:341:TYR:CZ	2.55	0.41
1:D:227:LEU:HD12	1:D:227:LEU:HA	1.96	0.41
1:A:56:LEU:HD11	1:D:56:LEU:HD11	2.03	0.41
1:A:219:ILE:HG12	1:A:319:ILE:HD11	2.01	0.40
1:B:114:LEU:HD23	1:B:134:TRP:CH2	2.56	0.40
1:B:168:ARG:NE	2:B:539:HOH:O	2.53	0.40
1:B:238:HIS:HD2	1:B:254:ARG:HH12	1.69	0.40
1:B:88:ARG:HE	1:B:472:PRO:CG	2.32	0.40
1:B:200:HIS:CG	1:B:201:PRO:HD2	2.56	0.40
1:C:364:LEU:O	1:C:364:LEU:HD12	2.20	0.40
1:D:103:GLU:H	1:D:103:GLU:CD	2.24	0.40
1:D:465:HIS:H	1:D:465:HIS:CD2	2.37	0.40
1:A:218:TRP:CZ3	1:A:322:VAL:HG21	2.56	0.40
1:D:265:LEU:O	1:D:269:HIS:HB2	2.21	0.40
1:D:261:ARG:HB3	1:D:341:TYR:CZ	2.56	0.40
1:D:88:ARG:HB3	1:D:88:ARG:HH11	1.84	0.40
1:D:94:ILE:O	1:D:98:ARG:HG2	2.21	0.40
1:A:313:LYS:HE3	1:A:313:LYS:HB2	1.80	0.40
1:A:460:LEU:HB3	1:A:465:HIS:CE1	2.56	0.40
1:B:100:PHE:HB3	1:B:104:PHE:HD2	1.85	0.40
1:B:350:ILE:HD12	1:B:350:ILE:N	2.36	0.40
1:B:132:GLU:CD	1:B:381:LYS:HB3	2.41	0.40
1:D:229:THR:HG22	1:D:230:ARG:HG3	2.04	0.40
1:D:27:GLN:NE2	2:D:638:HOH:O	2.53	0.40
1:D:49:ALA:O	1:D:53:LEU:HG	2.21	0.40
1:D:7:ASN:ND2	1:D:9:THR:HB	2.37	0.40
1:A:259:ASP:OD2	1:A:262:ARG:NE	2.49	0.40
1:A:38:MET:HA	1:A:39:PRO:HD2	1.93	0.40
1:C:202:LEU:HA	1:C:202:LEU:HD23	1.90	0.40
1:D:206:LYS:HG3	1:D:257:GLY:O	2.21	0.40

There are no symmetry-related clashes.

5.3 Torsion angles [i](#)

5.3.1 Protein backbone [i](#)

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	495/499 (99%)	480 (97%)	15 (3%)	0	100	100
1	B	495/499 (99%)	479 (97%)	14 (3%)	2 (0%)	34	42
1	C	495/499 (99%)	474 (96%)	21 (4%)	0	100	100
1	D	495/499 (99%)	477 (96%)	16 (3%)	2 (0%)	34	42
All	All	1980/1996 (99%)	1910 (96%)	66 (3%)	4 (0%)	47	58

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	78	ASN
1	D	153	GLU
1	B	401	LYS
1	D	195	LYS

5.3.2 Protein sidechains [i](#)

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	444/446 (100%)	408 (92%)	36 (8%)	11	15
1	B	444/446 (100%)	422 (95%)	22 (5%)	24	34
1	C	444/446 (100%)	418 (94%)	26 (6%)	19	27
1	D	444/446 (100%)	417 (94%)	27 (6%)	18	25
All	All	1776/1784 (100%)	1665 (94%)	111 (6%)	18	24

All (111) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	19	ARG
1	A	27	GLN
1	A	34	LEU
1	A	40	LYS
1	A	46	ARG
1	A	48	VAL
1	A	56	LEU
1	A	62	LEU
1	A	114	LEU
1	A	117	LYS
1	A	135	LEU
1	A	149	LEU
1	A	152	GLU
1	A	153	GLU
1	A	162	LEU
1	A	183	LEU
1	A	184	LYS
1	A	186	LEU
1	A	192	GLU
1	A	206	LYS
1	A	221	GLN
1	A	261	ARG
1	A	276	TYR
1	A	278	LEU
1	A	289	ILE
1	A	298	HIS
1	A	346	ARG
1	A	353	GLU
1	A	366	ARG
1	A	400	ARG
1	A	403	SER
1	A	407	LEU
1	A	409	ASP
1	A	429	LEU
1	A	460	LEU
1	A	462	GLU
1	B	27	GLN
1	B	30	LEU
1	B	34	LEU
1	B	43	ILE
1	B	46	ARG
1	B	56	LEU

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Mol	Chain	Res	Type
1	B	88	ARG
1	B	135	LEU
1	B	179	LEU
1	B	183	LEU
1	B	186	LEU
1	B	206	LYS
1	B	221	GLN
1	B	276	TYR
1	B	278	LEU
1	B	298	HIS
1	B	346	ARG
1	B	351	ARG
1	B	353	GLU
1	B	366	ARG
1	B	409	ASP
1	B	460	LEU
1	C	19	ARG
1	C	27	GLN
1	C	43	ILE
1	C	46	ARG
1	C	56	LEU
1	C	114	LEU
1	C	135	LEU
1	C	149	LEU
1	C	152	GLU
1	C	162	LEU
1	C	183	LEU
1	C	184	LYS
1	C	206	LYS
1	C	209	ARG
1	C	243	GLU
1	C	276	TYR
1	C	278	LEU
1	C	298	HIS
1	C	346	ARG
1	C	353	GLU
1	C	365	LEU
1	C	407	LEU
1	C	409	ASP
1	C	445	GLU
1	C	460	LEU
1	C	496	GLU

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Mol	Chain	Res	Type
1	D	6	GLN
1	D	27	GLN
1	D	30	LEU
1	D	43	ILE
1	D	46	ARG
1	D	56	LEU
1	D	88	ARG
1	D	117	LYS
1	D	126	ASP
1	D	135	LEU
1	D	149	LEU
1	D	162	LEU
1	D	179	LEU
1	D	181	LYS
1	D	183	LEU
1	D	206	LYS
1	D	209	ARG
1	D	227	LEU
1	D	276	TYR
1	D	278	LEU
1	D	298	HIS
1	D	353	GLU
1	D	365	LEU
1	D	366	ARG
1	D	407	LEU
1	D	429	LEU
1	D	460	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (35) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	6	GLN
1	A	7	ASN
1	A	12	GLN
1	A	27	GLN
1	A	200	HIS
1	A	221	GLN
1	A	360	ASN
1	A	411	HIS
1	A	414	HIS
1	B	6	GLN
1	B	7	ASN

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Mol	Chain	Res	Type
1	B	12	GLN
1	B	27	GLN
1	B	58	HIS
1	B	200	HIS
1	B	221	GLN
1	B	238	HIS
1	B	279	GLN
1	B	411	HIS
1	C	7	ASN
1	C	27	GLN
1	C	68	ASN
1	C	200	HIS
1	C	269	HIS
1	C	411	HIS
1	D	6	GLN
1	D	7	ASN
1	D	12	GLN
1	D	27	GLN
1	D	58	HIS
1	D	200	HIS
1	D	279	GLN
1	D	360	ASN
1	D	411	HIS
1	D	414	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.