WORLDWIDE PDB

PROTEIN DATA BANK

Full wwPDB X-ray Structure Validation Report ⓘ

Dec 12, 2023 – 05:19 pm GMT

PDB ID	:	3ZZU
Title	:	Crystal structure of Staphylococcus aureus elongation factor G with mutations M16I and F88L
Authors	:	Koripella, R.K.; Chen, Y.; Selmer, M.; Sanyal, S.
Deposited on	:	2011-09-05
Resolution	:	2.98 Å(reported)

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

|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

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 2.98 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.
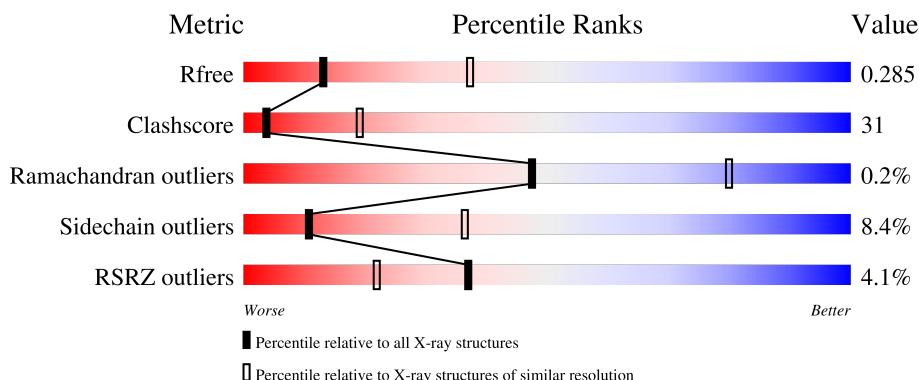
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2754 (3.00-2.96)
Clashscore	141614	3103 (3.00-2.96)
Ramachandran outliers	138981	2993 (3.00-2.96)
Sidechain outliers	138945	2996 (3.00-2.96)
RSRZ outliers	127900	2644 (3.00-2.96)

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

Mol	Chain	Length	Quality of chain
1	A	693	3% / 49% 39% 5% 6%
1	B	693	5% / 49% 41% · 6%
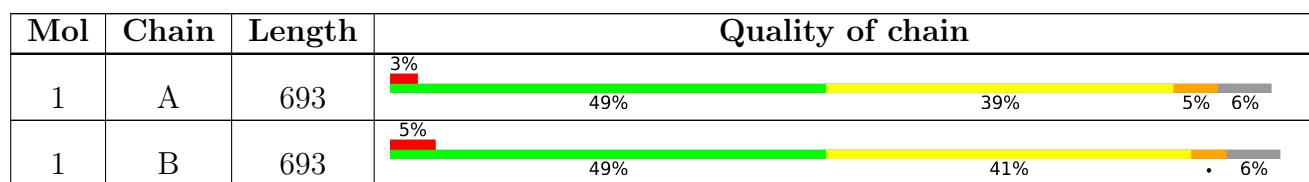
2 Entry composition ⓘ

There are 2 unique types of molecules in this entry. The entry contains 10039 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 ELONGATION FACTOR G.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	649	Total 5018	C 3151	N 841	O 1000	S 26	0	0	1
1	B	649	Total 5018	C 3151	N 841	O 1000	S 26	0	0	1

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	16	ILE	MET	engineered mutation	UNP P68790
A	88	LEU	PHE	engineered mutation	UNP P68790
B	16	ILE	MET	engineered mutation	UNP P68790
B	88	LEU	PHE	engineered mutation	UNP P68790

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	2	Total 2	O 2	0	0
2	B	1	Total 1	O 1	0	0

3 Residue-property plots ⓘ

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

- Molecule 1: ELONGATION FACTOR G

- Molecule 1: ELONGATION FACTOR G
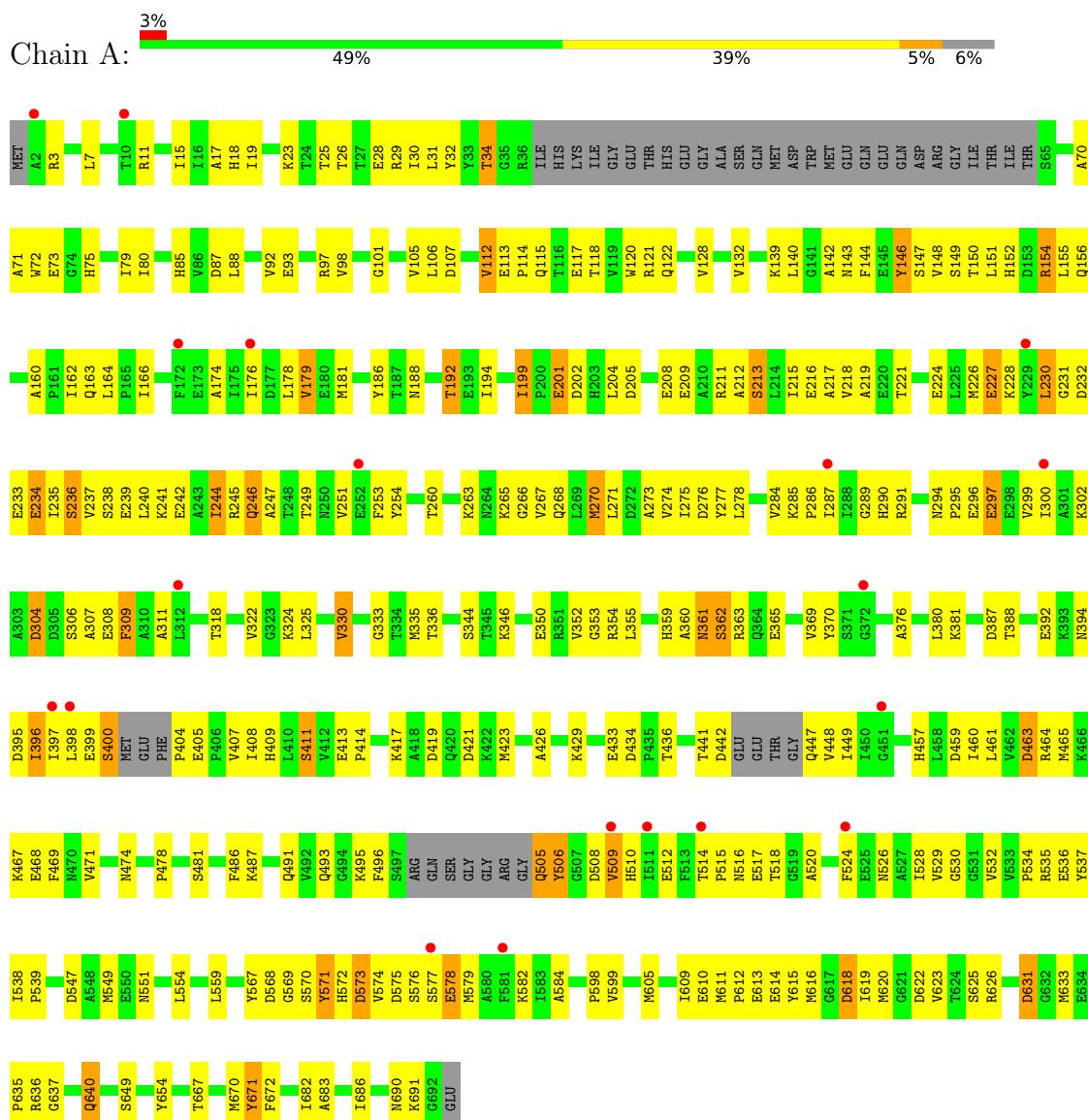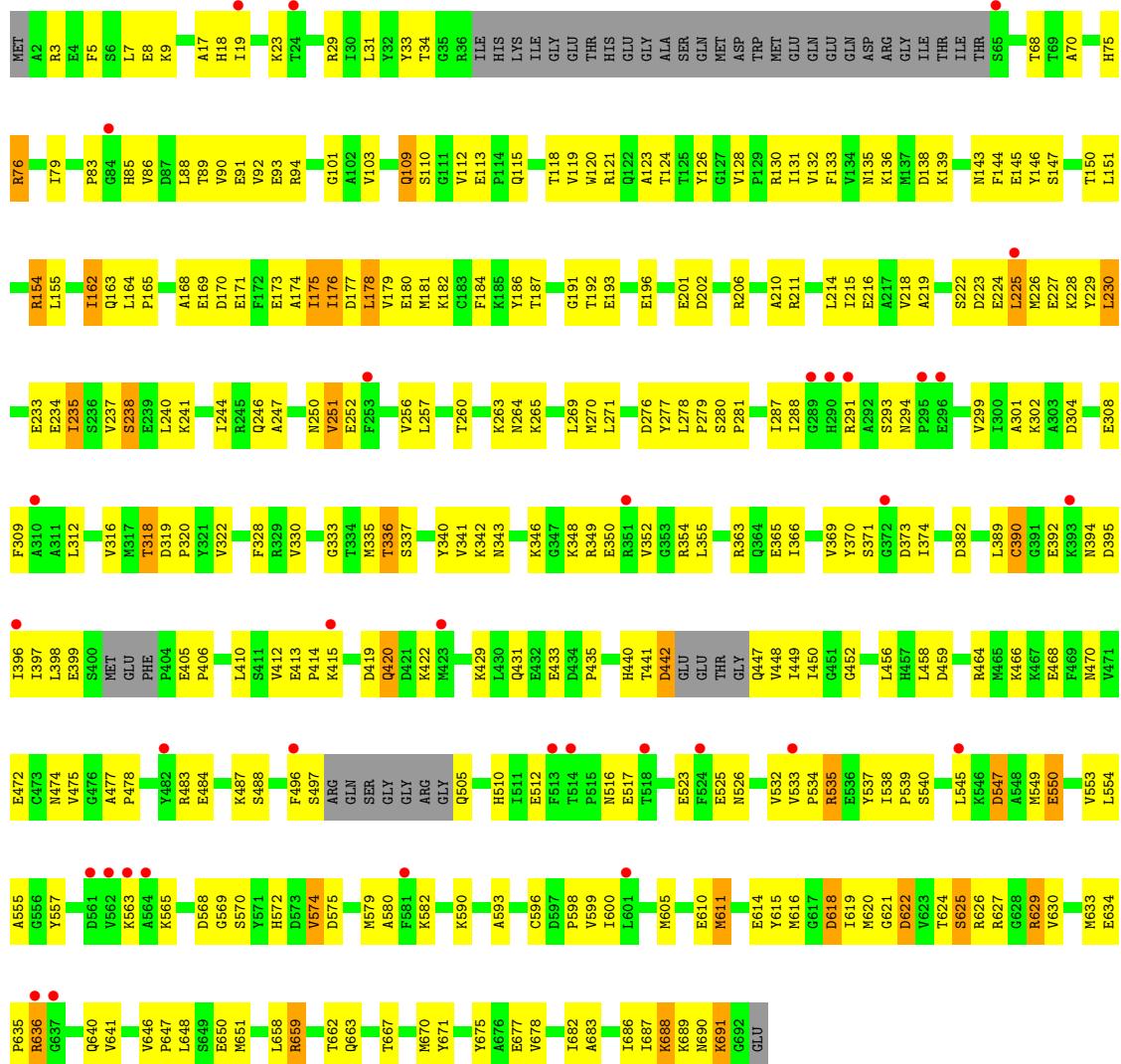
4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants	65.20Å　125.52Å　106.90Å	Depositor
a, b, c, α, β, γ	90.00°　108.21°　90.00°	
Resolution (Å)	47.15　–　2.98	Depositor
	47.15　–　2.98	EDS
% Data completeness	93.3 (47.15-2.98)	Depositor
(in resolution range)	93.3 (47.15-2.98)	EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.06 (at 2.96Å)	Xtriage
Refinement program	PHENIX (PHENIX.REFINE)	Depositor
R, R_{free}	0.237　,　0.294	Depositor
	0.229　,　0.285	DCC
R_{free} test set	1483 reflections (4.75%)	wwPDB-VP
Wilson B-factor (Å^2)	94.5	Xtriage
Anisotropy	0.135	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 73.8	EDS
L-test for twinning[2]	$< |L| > = 0.48, < L^2 > = 0.31$	Xtriage
Estimated twinning fraction	0.035 for h,-k,-h-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	10039	wwPDB-VP
Average B, all atoms (Å^2)	115.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.95% of the height of the origin peak. No significant pseudotranslation is detected.*

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[1]Intensities estimated from amplitudes.
[2]Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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	0.28	1/5103 (0.0%)	0.50	0/6901
1	B	0.27	1/5103 (0.0%)	0.49	0/6901
All	All	0.27	2/10206 (0.0%)	0.50	0/13802

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	691	LYS	C-N	-5.26	1.23	1.33
1	B	691	LYS	C-N	-5.17	1.23	1.33

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	5018	0	4936	310	0
1	B	5018	0	4936	311	0
2	A	2	0	0	0	0
2	B	1	0	0	0	0
All	All	10039	0	9872	620	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 31.

All (620) 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:B:610:GLU:OE2	1:B:636:ARG:NH1	1.78	1.14
1:B:33:TYR:OH	1:B:264:ASN:ND2	1.81	1.12
1:B:178:LEU:C	1:B:211:ARG:HH12	1.60	1.03
1:A:30:ILE:O	1:A:34:THR:OG1	1.76	1.03
1:A:179:VAL:HG21	1:A:241:LYS:HD3	1.02	1.02
1:B:18:HIS:CD2	1:B:19:ILE:H	1.76	1.02
1:B:113:GLU:OE1	1:B:115:GLN:N	1.93	1.01
1:B:659:ARG:HH11	1:B:659:ARG:HG3	1.20	1.00
1:B:222:SER:HB3	1:B:225:LEU:HD21	1.42	1.00
1:A:216:GLU:O	1:A:219:ALA:N	1.94	0.99
1:A:300:ILE:HG12	1:A:302:LYS:HD2	1.41	0.99
1:A:534:PRO:HD3	1:A:571:TYR:CD2	1.98	0.98
1:A:199:ILE:HD12	1:A:199:ILE:H	1.27	0.95
1:A:304:ASP:OD1	1:A:307:ALA:N	2.00	0.94
1:A:179:VAL:CG2	1:A:241:LYS:HD3	1.97	0.92
1:B:178:LEU:O	1:B:211:ARG:NH1	2.03	0.90
1:A:622:ASP:OD1	1:A:626:ARG:NH1	2.04	0.89
1:B:109:GLN:HG3	1:B:110:SER:N	1.86	0.89
1:B:33:TYR:HH	1:B:264:ASN:ND2	1.69	0.89
1:A:417:LYS:NZ	1:A:421:ASP:OD1	2.05	0.89
1:B:230:LEU:HD23	1:B:230:LEU:H	1.38	0.89
1:A:534:PRO:HD3	1:A:571:TYR:HD2	1.32	0.88
1:A:117:GLU:OE2	1:A:154:ARG:NH2	2.07	0.87
1:A:572:HIS:HD2	1:A:573:ASP:H	1.21	0.87
1:A:241:LYS:NZ	1:A:277:TYR:OH	2.06	0.87
1:A:409:HIS:HD2	1:A:481:SER:HB3	1.38	0.87
1:B:611:MET:SD	1:B:619:ILE:HG13	2.16	0.86
1:B:659:ARG:O	1:B:663:GLN:N	2.09	0.85
1:A:394:ASN:OD1	1:A:395:ASP:N	2.11	0.84
1:B:658:LEU:O	1:B:662:THR:HG22	1.77	0.84
1:B:90:VAL:HG23	1:B:91:GLU:H	1.42	0.83
1:B:342:LYS:NZ	1:B:394:ASN:O	2.11	0.83
1:B:164:LEU:HB2	1:B:176:ILE:HD11	1.61	0.83
1:B:112:VAL:HG21	1:B:155:LEU:HD11	1.61	0.83
1:A:392:GLU:OE1	1:A:392:GLU:N	2.12	0.82
1:A:287:ILE:HD13	1:A:398:LEU:HD23	1.61	0.82
1:A:413:GLU:HB3	1:A:474:ASN:HB2	1.60	0.82
1:B:633:MET:HE3	1:B:640:GLN:HG2	1.59	0.81
1:A:300:ILE:CG1	1:A:302:LYS:HD2	2.10	0.81
1:A:179:VAL:HG21	1:A:241:LYS:CD	1.99	0.81
1:B:534:PRO:HG2	1:B:537:TYR:HD2	1.46	0.80

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:115:GLN:O	1:B:118:THR:OG1	1.99	0.80
1:A:495:LYS:HD3	1:A:508:ASP:HB2	1.64	0.80
1:A:286:PRO:HB3	1:A:302:LYS:HG3	1.64	0.79
1:B:488:SER:HB2	1:B:596:CYS:HA	1.63	0.79
1:A:268:GLN:OE1	1:A:268:GLN:N	2.15	0.78
1:A:686:ILE:O	1:A:690:ASN:ND2	2.16	0.78
1:B:651:MET:HG2	1:B:670:MET:CE	2.13	0.78
1:B:180:GLU:HG2	1:B:182:LYS:HE3	1.66	0.78
1:B:659:ARG:HG3	1:B:659:ARG:NH1	1.88	0.78
1:B:191:GLY:HA3	1:B:264:ASN:HD22	1.47	0.77
1:A:683:ALA:HA	1:A:686:ILE:HD12	1.65	0.77
1:B:219:ALA:HA	1:B:225:LEU:HD12	1.66	0.77
1:A:508:ASP:OD2	1:A:570:SER:N	2.18	0.77
1:A:166:ILE:HD12	1:A:174:ALA:HB3	1.66	0.76
1:A:308:GLU:OE1	1:A:394:ASN:HB2	1.85	0.76
1:A:260:THR:HG22	1:A:263:LYS:H	1.50	0.76
1:B:18:HIS:HD2	1:B:19:ILE:H	1.27	0.76
1:B:688:LYS:O	1:B:691:LYS:HG2	1.84	0.76
1:B:83:PRO:HG2	1:B:92:VAL:HG23	1.67	0.76
1:B:178:LEU:C	1:B:211:ARG:NH1	2.38	0.76
1:A:493:GLN:OE1	1:A:510:HIS:NE2	2.19	0.75
1:A:547:ASP:O	1:A:551:ASN:ND2	2.19	0.75
1:B:154:ARG:HD3	1:B:636:ARG:NH2	2.02	0.74
1:B:464:ARG:O	1:B:468:GLU:HB3	1.87	0.74
1:B:626:ARG:NH1	1:B:650:GLU:O	2.20	0.74
1:B:510:HIS:HB2	1:B:568:ASP:HB3	1.69	0.74
1:B:164:LEU:H	1:B:176:ILE:CD1	1.99	0.74
1:B:523:GLU:HB2	1:B:563:LYS:HE2	1.69	0.74
1:A:241:LYS:O	1:A:244:ILE:HG13	1.86	0.74
1:A:619:ILE:O	1:A:622:ASP:HB3	1.86	0.74
1:A:209:GLU:O	1:A:213:SER:OG	2.06	0.73
1:B:224:GLU:HG3	1:B:225:LEU:H	1.54	0.73
1:B:109:GLN:HG3	1:B:110:SER:H	1.52	0.72
1:B:124:THR:HG23	1:B:130:ARG:HH12	1.53	0.72
1:A:612:PRO:HG2	1:A:615:TYR:CD2	2.24	0.72
1:B:180:GLU:CG	1:B:182:LYS:HE3	2.20	0.72
1:A:335:MET:HE2	1:A:352:VAL:HG21	1.70	0.71
1:A:538:ILE:CG2	1:A:539:PRO:HD3	2.20	0.71
1:B:17:ALA:HB3	1:B:23:LYS:HD2	1.72	0.71
1:B:18:HIS:CD2	1:B:19:ILE:N	2.55	0.71
1:B:144:PHE:CD2	1:B:165:PRO:HD3	2.25	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:572:HIS:CD2	1:A:573:ASP:H	2.06	0.71
1:B:226:MET:O	1:B:230:LEU:HD21	1.91	0.71
1:A:239:GLU:HA	1:A:242:GLU:OE1	1.90	0.71
1:A:505:GLN:O	1:A:505:GLN:HG2	1.91	0.71
1:A:612:PRO:HG2	1:A:615:TYR:HD2	1.56	0.71
1:A:274:VAL:HG13	1:A:278:LEU:HD12	1.72	0.70
1:A:572:HIS:NE2	1:A:574:VAL:HG12	2.06	0.70
1:A:361:ASN:O	1:A:362:SER:HB3	1.91	0.70
1:B:163:GLN:CD	1:B:175:ILE:HD11	2.11	0.70
1:B:419:ASP:HA	1:B:422:LYS:HE2	1.73	0.70
1:A:535:ARG:O	1:A:538:ILE:HG22	1.92	0.70
1:A:529:VAL:HG13	1:A:530:GLY:H	1.56	0.70
1:A:411:SER:HA	1:A:449:ILE:HD13	1.75	0.69
1:B:278:LEU:HB3	1:B:279:PRO:HD2	1.73	0.69
1:B:224:GLU:HG3	1:B:225:LEU:HD23	1.73	0.69
1:B:373:ASP:OD1	1:B:374:ILE:N	2.25	0.69
1:B:414:PRO:HG3	1:B:420:GLN:HG3	1.74	0.69
1:A:311:ALA:HB2	1:A:330:VAL:HG12	1.74	0.69
1:B:302:LYS:HE3	1:B:304:ASP:HB2	1.75	0.69
1:A:409:HIS:CD2	1:A:481:SER:HB3	2.26	0.69
1:A:276:ASP:HB3	1:A:277:TYR:CE1	2.29	0.68
1:A:304:ASP:OD1	1:A:306:SER:N	2.26	0.68
1:A:350:GLU:HG2	1:A:380:LEU:HG	1.74	0.68
1:B:8:GLU:OE1	1:B:8:GLU:N	2.21	0.68
1:A:578:GLU:OE2	1:A:579:MET:HG2	1.94	0.67
1:A:633:MET:SD	1:A:640:GLN:HG2	2.34	0.67
1:B:223:ASP:O	1:B:226:MET:HG2	1.94	0.67
1:A:3:ARG:HB3	1:A:370:TYR:CD2	2.29	0.67
1:B:260:THR:CG2	1:B:263:LYS:HB2	2.25	0.67
1:A:354:ARG:HD2	1:A:365:GLU:OE1	1.93	0.67
1:B:227:GLU:O	1:B:230:LEU:HG	1.93	0.67
1:B:433:GLU:OE1	1:B:464:ARG:NH2	2.25	0.67
1:B:176:ILE:H	1:B:176:ILE:HD12	1.59	0.67
1:A:218:VAL:O	1:A:221:THR:OG1	2.11	0.67
1:B:688:LYS:HA	1:B:691:LYS:HG2	1.77	0.67
1:B:319:ASP:OD1	1:B:320:PRO:HD2	1.95	0.66
1:B:162:ILE:HG13	1:B:163:GLN:HG3	1.77	0.66
1:A:201:GLU:CD	1:A:201:GLU:H	1.96	0.66
1:A:505:GLN:N	1:A:575:ASP:HB3	2.12	0.65
1:B:133:PHE:HD2	1:B:270:MET:HG3	1.61	0.65
1:A:181:MET:HG2	1:A:211:ARG:HH11	1.61	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:97:ARG:NH2	1:A:287:ILE:HD11	2.12	0.65
1:B:535:ARG:HG2	1:B:535:ARG:HH11	1.61	0.65
1:A:414:PRO:HG3	1:A:423:MET:CE	2.27	0.65
1:A:516:ASN:OD1	1:A:517:GLU:N	2.27	0.65
1:B:441:THR:O	1:B:442:ASP:HB3	1.95	0.65
1:A:117:GLU:HB3	1:A:155:LEU:HD11	1.79	0.65
1:A:309:PHE:HA	1:A:333:GLY:HA3	1.78	0.65
1:B:651:MET:HG2	1:B:670:MET:HE1	1.77	0.65
1:A:505:GLN:N	1:A:505:GLN:HE21	1.95	0.64
1:B:346:LYS:HG3	1:B:348:LYS:NZ	2.12	0.64
1:B:447:GLN:OE1	1:B:447:GLN:N	2.30	0.64
1:B:228:LYS:HE2	1:B:233:GLU:O	1.97	0.64
1:B:553:VAL:HG23	1:B:554:LEU:H	1.63	0.64
1:B:234:GLU:HA	1:B:234:GLU:OE1	1.98	0.64
1:A:188:ASN:ND2	1:A:192:THR:O	2.30	0.64
1:B:257:LEU:HD22	1:B:270:MET:HA	1.80	0.64
1:B:316:VAL:HG23	1:B:433:GLU:HG2	1.79	0.64
1:A:15:ILE:HD11	1:A:30:ILE:HD12	1.79	0.64
1:A:156:GLN:NE2	1:A:637:GLY:HA3	2.12	0.64
1:B:211:ARG:O	1:B:214:LEU:HB3	1.98	0.64
1:B:341:VAL:HG12	1:B:342:LYS:N	2.13	0.63
1:B:83:PRO:HG3	1:B:91:GLU:HB3	1.79	0.63
1:B:151:LEU:HA	1:B:155:LEU:HD13	1.80	0.63
1:B:346:LYS:HE2	1:B:348:LYS:HZ1	1.62	0.63
1:A:572:HIS:CD2	1:A:573:ASP:N	2.66	0.63
1:A:622:ASP:O	1:A:625:SER:OG	2.09	0.63
1:B:659:ARG:HH11	1:B:659:ARG:CG	2.01	0.63
1:A:234:GLU:OE1	1:A:234:GLU:HA	1.98	0.63
1:A:284:VAL:HG22	1:A:285:LYS:N	2.14	0.63
1:A:572:HIS:HD2	1:A:573:ASP:N	1.92	0.62
1:B:346:LYS:HG3	1:B:348:LYS:HZ3	1.63	0.62
1:B:90:VAL:HG23	1:B:91:GLU:N	2.13	0.62
1:A:434:ASP:OD1	1:A:436:THR:OG1	2.16	0.62
1:B:237:VAL:O	1:B:240:LEU:N	2.31	0.62
1:A:228:LYS:HA	1:A:233:GLU:HG3	1.82	0.62
1:A:244:ILE:CD1	1:A:277:TYR:CE1	2.83	0.62
1:B:179:VAL:HA	1:B:211:ARG:HH22	1.64	0.62
1:A:361:ASN:OD1	1:A:361:ASN:N	2.30	0.61
1:A:73:GLU:O	1:A:75:HIS:ND1	2.29	0.61
1:A:612:PRO:HB2	1:A:614:GLU:CD	2.20	0.61
1:A:291:ARG:HG3	1:A:297:GLU:HG3	1.82	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:297:GLU:OE1	1:A:297:GLU:N	2.19	0.61
1:A:164:LEU:HD11	1:A:178:LEU:HD11	1.82	0.61
1:A:414:PRO:HG3	1:A:423:MET:HE1	1.82	0.61
1:B:88:LEU:HD13	1:B:91:GLU:OE1	2.01	0.61
1:A:622:ASP:CG	1:A:626:ARG:HH12	2.04	0.61
1:A:318:THR:OG1	1:A:429:LYS:NZ	2.30	0.60
1:B:341:VAL:HG12	1:B:342:LYS:H	1.66	0.60
1:A:297:GLU:H	1:A:297:GLU:CD	2.03	0.60
1:B:335:MET:HG2	1:B:336:THR:N	2.15	0.60
1:B:201:GLU:HG2	1:B:202:ASP:N	2.15	0.60
1:B:276:ASP:HB3	1:B:277:TYR:CD1	2.37	0.60
1:B:620:MET:CE	1:B:630:VAL:HG21	2.32	0.60
1:A:26:THR:O	1:A:30:ILE:HG13	2.01	0.60
1:A:216:GLU:HA	1:A:219:ALA:HB3	1.83	0.60
1:B:291:ARG:HB3	1:B:395:ASP:OD2	2.02	0.60
1:B:276:ASP:HB3	1:B:277:TYR:CE1	2.36	0.60
1:A:201:GLU:N	1:A:201:GLU:OE1	2.35	0.60
1:B:144:PHE:HD2	1:B:165:PRO:CD	2.15	0.60
1:B:614:GLU:HG2	1:B:615:TYR:CD1	2.36	0.60
1:A:487:LYS:HD2	1:A:599:VAL:HG11	1.83	0.60
1:A:284:VAL:HG22	1:A:285:LYS:H	1.67	0.59
1:A:538:ILE:HG23	1:A:539:PRO:HD3	1.84	0.59
1:A:201:GLU:CD	1:A:201:GLU:N	2.55	0.59
1:A:491:GLN:HG2	1:A:512:GLU:HG3	1.85	0.59
1:B:211:ARG:O	1:B:215:ILE:HG13	2.02	0.59
1:B:85:HIS:O	1:B:88:LEU:HD12	2.02	0.59
1:B:171:GLU:O	1:B:173:GLU:HG3	2.02	0.59
1:A:3:ARG:HB3	1:A:370:TYR:CE2	2.37	0.59
1:B:224:GLU:HG3	1:B:225:LEU:N	2.18	0.59
1:B:237:VAL:HG23	1:B:238:SER:H	1.67	0.59
1:B:633:MET:CE	1:B:640:GLN:HG2	2.32	0.59
1:A:574:VAL:HG13	1:A:575:ASP:N	2.16	0.59
1:A:28:GLU:HG3	1:A:29:ARG:N	2.17	0.59
1:A:508:ASP:OD1	1:A:509:VAL:N	2.36	0.58
1:B:553:VAL:HG23	1:B:554:LEU:N	2.18	0.58
1:A:179:VAL:HG11	1:A:241:LYS:HZ3	1.67	0.58
1:B:164:LEU:H	1:B:176:ILE:HD12	1.68	0.58
1:B:222:SER:HB3	1:B:225:LEU:CD2	2.24	0.58
1:A:106:LEU:HD11	1:A:151:LEU:HD11	1.84	0.58
1:B:7:LEU:HD22	1:B:281:PRO:HG2	1.86	0.58
1:B:534:PRO:HG2	1:B:537:TYR:CD2	2.33	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:147:SER:O	1:A:150:THR:OG1	2.22	0.57
1:A:88:LEU:O	1:A:92:VAL:HG23	2.05	0.57
1:A:107:ASP:OD2	1:A:139:LYS:NZ	2.38	0.57
1:A:244:ILE:O	1:A:247:ALA:N	2.38	0.57
1:A:17:ALA:HB2	1:A:105:VAL:HB	1.87	0.57
1:A:631:ASP:HA	1:B:635:PRO:HD3	1.87	0.57
1:A:251:VAL:HG22	1:A:251:VAL:O	2.04	0.57
1:A:144:PHE:O	1:A:148:VAL:HG23	2.05	0.57
1:B:574:VAL:HG22	1:B:575:ASP:N	2.20	0.57
1:B:120:TRP:CG	1:B:155:LEU:HD23	2.39	0.57
1:B:419:ASP:OD1	1:B:472:GLU:OE1	2.21	0.57
1:A:622:ASP:CG	1:A:626:ARG:NH1	2.57	0.56
1:B:164:LEU:CB	1:B:176:ILE:HD11	2.33	0.56
1:A:300:ILE:HG12	1:A:302:LYS:CD	2.28	0.56
1:A:146:TYR:CD1	1:A:146:TYR:C	2.76	0.56
1:B:94:ARG:HG3	1:B:399:GLU:OE2	2.05	0.56
1:B:132:VAL:HB	1:B:256:VAL:HG22	1.86	0.56
1:B:343:ASN:N	1:B:348:LYS:O	2.34	0.56
1:B:447:GLN:O	1:B:447:GLN:HG2	2.05	0.56
1:A:538:ILE:HG22	1:A:539:PRO:HD3	1.87	0.56
1:A:682:ILE:HG22	1:A:686:ILE:HD11	1.88	0.56
1:A:266:GLY:H	1:A:268:GLN:HE22	1.53	0.56
1:B:176:ILE:HG22	1:B:182:LYS:O	2.05	0.56
1:B:337:SER:HA	1:B:352:VAL:HG12	1.88	0.56
1:B:487:LYS:HE2	1:B:599:VAL:CG1	2.35	0.56
1:B:555:ALA:CB	1:B:557:TYR:HD2	2.19	0.56
1:A:686:ILE:HG22	1:A:690:ASN:HD21	1.71	0.56
1:A:199:ILE:H	1:A:199:ILE:CD1	2.03	0.56
1:B:342:LYS:HD3	1:B:392:GLU:HA	1.88	0.56
1:A:115:GLN:H	1:A:115:GLN:CD	2.08	0.56
1:A:204:LEU:O	1:A:208:GLU:HG2	2.06	0.56
1:B:646:VAL:HG11	1:B:651:MET:HE1	1.88	0.56
1:A:408:ILE:HD11	1:A:478:PRO:HB3	1.87	0.55
1:B:222:SER:CB	1:B:225:LEU:HD21	2.25	0.55
1:A:11:ARG:NH2	1:A:275:ILE:O	2.28	0.55
1:B:319:ASP:HB3	1:B:322:VAL:HG22	1.88	0.55
1:B:441:THR:HG23	1:B:442:ASP:N	2.21	0.55
1:B:143:ASN:ND2	1:B:146:TYR:HB2	2.21	0.55
1:B:177:ASP:O	1:B:181:MET:N	2.40	0.55
1:B:342:LYS:HA	1:B:349:ARG:HA	1.87	0.55
1:B:512:GLU:OE2	1:B:565:LYS:HD2	2.07	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:260:THR:HG21	1:A:263:LYS:HG2	1.88	0.55
1:B:144:PHE:CD2	1:B:165:PRO:CD	2.88	0.55
1:B:250:ASN:HB2	1:B:252:GLU:HG2	1.89	0.55
1:B:431:GLN:NE2	1:B:435:PRO:HA	2.22	0.55
1:B:538:ILE:N	1:B:539:PRO:HD2	2.22	0.55
1:A:143:ASN:HB3	1:A:146:TYR:HB3	1.88	0.54
1:A:188:ASN:HD21	1:A:192:THR:C	2.08	0.54
1:A:620:MET:O	1:A:623:VAL:N	2.40	0.54
1:B:178:LEU:O	1:B:181:MET:N	2.40	0.54
1:A:117:GLU:O	1:A:121:ARG:HG3	2.08	0.54
1:B:260:THR:HG23	1:B:263:LYS:HB2	1.89	0.54
1:B:688:LYS:CG	1:B:689:LYS:N	2.71	0.54
1:A:529:VAL:HG13	1:A:530:GLY:N	2.20	0.54
1:B:164:LEU:N	1:B:176:ILE:CD1	2.70	0.54
1:A:164:LEU:CD1	1:A:178:LEU:HD21	2.37	0.54
1:A:227:GLU:HA	1:A:230:LEU:HD11	1.89	0.54
1:B:237:VAL:O	1:B:240:LEU:HB3	2.08	0.54
1:A:120:TRP:CD2	1:A:155:LEU:HD23	2.43	0.54
1:B:89:THR:O	1:B:93:GLU:HB2	2.07	0.54
1:A:276:ASP:CB	1:A:277:TYR:CE1	2.90	0.54
1:B:349:ARG:NH1	1:B:392:GLU:OE1	2.41	0.54
1:B:535:ARG:HH11	1:B:535:ARG:CG	2.21	0.54
1:B:247:ALA:HA	1:B:252:GLU:HG3	1.90	0.53
1:A:289:GLY:O	1:A:299:VAL:N	2.28	0.53
1:B:3:ARG:HD2	1:B:370:TYR:CD2	2.43	0.53
1:B:547:ASP:O	1:B:550:GLU:N	2.41	0.53
1:A:636:ARG:HG2	1:A:636:ARG:O	2.08	0.53
1:A:186:TYR:CE2	1:A:265:LYS:HA	2.43	0.53
1:A:346:LYS:NZ	1:A:387:ASP:OD2	2.34	0.53
1:B:615:TYR:CD2	1:B:662:THR:HA	2.44	0.53
1:A:212:ALA:O	1:A:215:ILE:HG12	2.09	0.53
1:A:335:MET:HE3	1:A:336:THR:O	2.09	0.53
1:A:362:SER:O	1:A:363:ARG:HG3	2.09	0.53
1:A:635:PRO:HB3	1:A:640:GLN:NE2	2.24	0.53
1:B:31:LEU:HD23	1:B:79:ILE:HD12	1.91	0.53
1:B:138:ASP:HA	1:B:169:GLU:O	2.08	0.53
1:A:537:TYR:OH	1:A:577:SER:HA	2.09	0.53
1:B:120:TRP:CD1	1:B:155:LEU:HD23	2.43	0.53
1:B:629:ARG:HG3	1:B:630:VAL:N	2.24	0.52
1:A:330:VAL:HG21	1:A:370:TYR:O	2.08	0.52
1:A:322:VAL:HG13	1:A:354:ARG:NH2	2.25	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:516:ASN:OD1	1:B:517:GLU:N	2.42	0.52
1:B:545:LEU:O	1:B:549:MET:HG3	2.10	0.52
1:A:419:ASP:HB3	1:A:471:VAL:HG13	1.91	0.52
1:A:290:HIS:HA	1:A:297:GLU:O	2.09	0.52
1:A:505:GLN:N	1:A:505:GLN:NE2	2.57	0.52
1:B:101:GLY:HA2	1:B:128:VAL:HG13	1.91	0.52
1:B:222:SER:HB3	1:B:225:LEU:HD11	1.91	0.52
1:A:216:GLU:OE1	1:A:216:GLU:N	2.33	0.52
1:A:505:GLN:O	1:A:505:GLN:CG	2.57	0.52
1:B:687:ILE:C	1:B:691:LYS:HZ2	2.14	0.52
1:B:103:VAL:HG22	1:B:131:ILE:HG12	1.92	0.52
1:B:525:GLU:CD	1:B:565:LYS:HE2	2.31	0.52
1:B:535:ARG:HB2	1:B:535:ARG:CZ	2.39	0.52
1:A:231:GLY:O	1:A:232:ASP:HB3	2.10	0.52
1:A:620:MET:C	1:A:622:ASP:N	2.63	0.52
1:A:325:LEU:HD22	1:A:376:ALA:HB1	1.91	0.51
1:B:225:LEU:O	1:B:228:LYS:N	2.43	0.51
1:B:488:SER:HB2	1:B:596:CYS:CA	2.38	0.51
1:A:622:ASP:OD2	1:A:654:TYR:HE1	1.92	0.51
1:B:31:LEU:HD22	1:B:68:THR:HG21	1.92	0.51
1:B:618:ASP:OD1	1:B:618:ASP:N	2.38	0.51
1:A:284:VAL:CG2	1:A:285:LYS:H	2.23	0.51
1:A:404:PRO:O	1:A:405:GLU:HB2	2.10	0.51
1:B:572:HIS:CE1	1:B:574:VAL:HG13	2.45	0.51
1:A:106:LEU:HD22	1:A:112:VAL:HA	1.93	0.51
1:A:236:SER:HB3	1:A:239:GLU:HG2	1.91	0.51
1:A:609:ILE:HG22	1:A:610:GLU:N	2.26	0.51
1:B:440:HIS:O	1:B:448:VAL:HG23	2.10	0.51
1:B:620:MET:HE3	1:B:630:VAL:HG21	1.92	0.51
1:B:163:GLN:O	1:B:164:LEU:HD12	2.10	0.51
1:A:18:HIS:CG	1:A:19:ILE:H	2.28	0.51
1:A:352:VAL:CG1	1:A:355:LEU:HD21	2.41	0.51
1:A:117:GLU:OE2	1:A:154:ARG:CZ	2.58	0.51
1:A:304:ASP:OD1	1:A:304:ASP:C	2.48	0.51
1:B:86:VAL:HG12	1:B:86:VAL:O	2.11	0.51
1:A:294:ASN:O	1:A:297:GLU:OE1	2.29	0.51
1:A:496:PHE:O	1:A:506:TYR:HA	2.11	0.51
1:A:294:ASN:O	1:A:297:GLU:CD	2.50	0.51
1:A:463:ASP:O	1:A:467:LYS:HD2	2.11	0.50
1:A:31:LEU:HD23	1:A:79:ILE:HD12	1.92	0.50
1:A:244:ILE:HD13	1:A:277:TYR:CE1	2.45	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:246:GLN:NE2	1:A:246:GLN:HA	2.26	0.50
1:B:101:GLY:HA2	1:B:128:VAL:CG1	2.42	0.50
1:B:688:LYS:HA	1:B:691:LYS:CG	2.40	0.50
1:A:18:HIS:O	1:A:23:LYS:HB2	2.12	0.50
1:A:181:MET:HG2	1:A:211:ARG:NH1	2.24	0.50
1:A:626:ARG:HG3	1:A:626:ARG:HH11	1.76	0.50
1:B:555:ALA:HB3	1:B:557:TYR:HD2	1.76	0.50
1:A:605:MET:HB3	1:A:670:MET:HG3	1.93	0.50
1:A:270:MET:O	1:A:273:ALA:HB3	2.12	0.50
1:A:352:VAL:HG12	1:A:353:GLY:O	2.12	0.50
1:B:308:GLU:OE2	1:B:394:ASN:ND2	2.45	0.50
1:B:554:LEU:HD23	1:B:600:ILE:HG13	1.92	0.50
1:A:120:TRP:CG	1:A:155:LEU:HD23	2.47	0.50
1:A:18:HIS:CG	1:A:19:ILE:N	2.80	0.49
1:B:112:VAL:HG11	1:B:155:LEU:CD1	2.42	0.49
1:B:138:ASP:O	1:B:139:LYS:HB2	2.12	0.49
1:A:460:ILE:HA	1:A:463:ASP:HB3	1.95	0.49
1:A:224:GLU:O	1:A:228:LYS:HG3	2.13	0.49
1:B:343:ASN:HA	1:B:389:LEU:HD23	1.95	0.49
1:A:114:PRO:O	1:A:118:THR:HG23	2.13	0.49
1:B:550:GLU:N	1:B:550:GLU:OE1	2.46	0.49
1:A:227:GLU:C	1:A:227:GLU:OE1	2.51	0.49
1:A:671:TYR:N	1:A:671:TYR:CD1	2.81	0.49
1:B:662:THR:O	1:B:663:GLN:HB2	2.12	0.49
1:B:191:GLY:CA	1:B:264:ASN:HD22	2.23	0.49
1:A:226:MET:O	1:A:230:LEU:HG	2.12	0.48
1:A:284:VAL:CG2	1:A:285:LYS:N	2.76	0.48
1:A:294:ASN:O	1:A:297:GLU:OE2	2.31	0.48
1:B:523:GLU:CB	1:B:563:LYS:HE2	2.42	0.48
1:A:426:ALA:HB2	1:A:469:PHE:CD2	2.47	0.48
1:A:463:ASP:OD2	1:A:467:LYS:NZ	2.32	0.48
1:A:268:GLN:H	1:A:268:GLN:CD	2.10	0.48
1:A:532:VAL:HG12	1:A:570:SER:HA	1.96	0.48
1:A:574:VAL:CG1	1:A:575:ASP:N	2.76	0.48
1:B:413:GLU:HB3	1:B:474:ASN:OD1	2.13	0.48
1:B:441:THR:HG23	1:B:442:ASP:H	1.78	0.48
1:B:677:GLU:HG2	1:B:678:VAL:H	1.79	0.48
1:A:532:VAL:HG11	1:A:569:GLY:O	2.13	0.48
1:A:286:PRO:CG	1:A:300:ILE:HD11	2.44	0.48
1:B:164:LEU:HD11	1:B:210:ALA:HB1	1.94	0.48
1:B:621:GLY:O	1:B:625:SER:OG	2.31	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:633:MET:HE3	1:B:640:GLN:CG	2.39	0.48
1:B:651:MET:HG2	1:B:670:MET:HE3	1.93	0.48
1:B:119:VAL:O	1:B:123:ALA:N	2.44	0.48
1:B:683:ALA:O	1:B:687:ILE:HG13	2.14	0.48
1:A:407:VAL:HG11	1:A:672:PHE:CD1	2.49	0.48
1:B:505:GLN:O	1:B:505:GLN:HG2	2.13	0.48
1:B:688:LYS:CA	1:B:691:LYS:HG2	2.43	0.48
1:A:532:VAL:CG1	1:A:569:GLY:O	2.62	0.48
1:B:452:GLY:HA3	1:B:458:LEU:HD21	1.96	0.48
1:B:174:ALA:HB1	1:B:184:PHE:O	2.14	0.48
1:A:194:ILE:HG13	1:A:194:ILE:O	2.14	0.47
1:A:457:HIS:O	1:A:460:ILE:HG13	2.13	0.47
1:B:413:GLU:O	1:B:474:ASN:OD1	2.32	0.47
1:A:205:ASP:O	1:A:209:GLU:OE1	2.32	0.47
1:A:433:GLU:OE1	1:A:464:ARG:NH1	2.46	0.47
1:A:618:ASP:OD1	1:A:618:ASP:N	2.47	0.47
1:B:168:ALA:O	1:B:171:GLU:N	2.46	0.47
1:B:186:TYR:CD2	1:B:265:LYS:HG2	2.49	0.47
1:B:337:SER:HA	1:B:352:VAL:CG1	2.44	0.47
1:A:572:HIS:CE1	1:A:574:VAL:HG12	2.49	0.47
1:B:121:ARG:HA	1:B:124:THR:OG1	2.14	0.47
1:B:146:TYR:O	1:B:150:THR:HG23	2.14	0.47
1:B:214:LEU:O	1:B:218:VAL:HG23	2.15	0.47
1:A:3:ARG:HH22	1:A:7:LEU:HD23	1.79	0.47
1:A:613:GLU:HB2	1:A:616:MET:HE2	1.96	0.47
1:A:324:LYS:CE	1:A:380:LEU:O	2.61	0.47
1:A:468:GLU:CD	1:A:469:PHE:HE1	2.18	0.47
1:A:509:VAL:HG22	1:A:584:ALA:HB1	1.96	0.47
1:B:7:LEU:HD22	1:B:281:PRO:CG	2.44	0.47
1:A:101:GLY:HA2	1:A:128:VAL:HG13	1.96	0.47
1:A:146:TYR:O	1:A:149:SER:N	2.45	0.47
1:A:163:GLN:HA	1:A:176:ILE:O	2.15	0.47
1:A:251:VAL:HG23	1:A:254:TYR:CE1	2.50	0.47
1:B:240:LEU:O	1:B:244:ILE:HG13	2.15	0.47
1:B:241:LYS:HA	1:B:244:ILE:HD12	1.97	0.47
1:A:34:THR:HG22	1:A:71:ALA:O	2.15	0.47
1:A:85:HIS:HE1	1:A:87:ASP:CG	2.18	0.47
1:A:549:MET:HB3	1:A:559:LEU:HB3	1.96	0.47
1:B:83:PRO:HG3	1:B:91:GLU:CB	2.44	0.47
1:B:309:PHE:O	1:B:390:CYS:HA	2.14	0.47
1:B:450:ILE:HG13	1:B:450:ILE:O	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:237:VAL:HG23	1:B:238:SER:N	2.30	0.46
1:A:426:ALA:HB2	1:A:469:PHE:HD2	1.80	0.46
1:A:538:ILE:HG23	1:A:539:PRO:CD	2.45	0.46
1:B:484:GLU:OE2	1:B:555:ALA:HB3	2.15	0.46
1:B:677:GLU:HG2	1:B:678:VAL:N	2.30	0.46
1:A:25:THR:O	1:A:29:ARG:HG2	2.14	0.46
1:A:554:LEU:HD22	1:A:598:PRO:HB2	1.98	0.46
1:B:287:ILE:HG22	1:B:301:ALA:HB3	1.98	0.46
1:A:146:TYR:O	1:A:149:SER:OG	2.26	0.46
1:B:405:GLU:HG3	1:B:406:PRO:HD2	1.96	0.46
1:A:487:LYS:CD	1:A:599:VAL:HG11	2.46	0.46
1:B:34:THR:HB	1:B:70:ALA:HB1	1.98	0.46
1:B:112:VAL:HG11	1:B:155:LEU:HD11	1.97	0.46
1:A:216:GLU:O	1:A:217:ALA:C	2.54	0.46
1:A:149:SER:O	1:A:152:HIS:HB2	2.15	0.46
1:A:201:GLU:O	1:A:204:LEU:HB2	2.16	0.46
1:B:202:ASP:N	1:B:202:ASP:OD1	2.41	0.46
1:A:330:VAL:HG21	1:A:369:VAL:CG1	2.46	0.46
1:A:396:ILE:HG12	1:A:397:ILE:N	2.31	0.46
1:B:154:ARG:HB3	1:B:155:LEU:HD12	1.96	0.46
1:B:397:ILE:HG22	1:B:398:LEU:N	2.31	0.46
1:B:278:LEU:HB3	1:B:279:PRO:CD	2.42	0.46
1:B:626:ARG:O	1:B:627:ARG:HB2	2.15	0.46
1:B:688:LYS:C	1:B:690:ASN:N	2.70	0.46
1:A:113:GLU:HB3	1:A:114:PRO:HD2	1.98	0.46
1:A:423:MET:SD	1:A:465:MET:HE1	2.55	0.45
1:B:477:ALA:HA	1:B:478:PRO:HD3	1.75	0.45
1:A:85:HIS:CE1	1:A:87:ASP:CG	2.89	0.45
1:A:205:ASP:O	1:A:208:GLU:N	2.49	0.45
1:B:540:SER:O	1:B:582:LYS:HG3	2.15	0.45
1:A:230:LEU:HG	1:A:230:LEU:H	1.52	0.45
1:A:291:ARG:HG2	1:A:299:VAL:HG21	1.97	0.45
1:B:179:VAL:CA	1:B:211:ARG:HH22	2.28	0.45
1:B:343:ASN:HA	1:B:389:LEU:CD2	2.46	0.45
1:A:517:GLU:HB3	1:A:520:ALA:HB2	1.99	0.45
1:B:3:ARG:HH12	1:B:7:LEU:N	2.15	0.45
1:B:154:ARG:HD3	1:B:636:ARG:CZ	2.46	0.45
1:B:230:LEU:H	1:B:230:LEU:CD2	2.08	0.45
1:B:235:ILE:HD13	1:B:235:ILE:N	2.31	0.45
1:B:496:PHE:CD1	1:B:497:SER:N	2.84	0.45
1:B:633:MET:O	1:B:634:GLU:HB3	2.15	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:15:ILE:CD1	1:A:30:ILE:HD12	2.46	0.45
1:B:651:MET:HE2	1:B:651:MET:HA	1.98	0.45
1:B:17:ALA:HB1	1:B:23:LYS:HB2	1.99	0.45
1:B:18:HIS:CD2	1:B:19:ILE:HG22	2.52	0.45
1:B:225:LEU:O	1:B:226:MET:C	2.53	0.45
1:B:318:THR:O	1:B:318:THR:HG22	2.17	0.45
1:A:296:GLU:N	1:A:297:GLU:OE1	2.49	0.45
1:B:112:VAL:HG12	1:B:150:THR:OG1	2.17	0.45
1:A:201:GLU:HA	1:A:204:LEU:HD12	1.99	0.45
1:A:201:GLU:HA	1:A:204:LEU:HG	1.98	0.45
1:A:244:ILE:HG13	1:A:245:ARG:H	1.80	0.45
1:B:175:ILE:HG12	1:B:176:ILE:N	2.32	0.45
1:B:187:THR:HG23	1:B:193:GLU:O	2.16	0.45
1:A:238:SER:OG	1:A:239:GLU:N	2.50	0.44
1:A:335:MET:CE	1:A:352:VAL:HG21	2.43	0.44
1:B:308:GLU:O	1:B:333:GLY:HA3	2.17	0.44
1:B:593:ALA:O	1:B:598:PRO:HD3	2.17	0.44
1:A:93:GLU:O	1:A:97:ARG:HG3	2.17	0.44
1:A:230:LEU:C	1:A:232:ASP:N	2.70	0.44
1:A:277:TYR:CD1	1:A:277:TYR:N	2.82	0.44
1:A:506:TYR:HD1	1:A:576:SER:OG	1.99	0.44
1:B:682:ILE:O	1:B:686:ILE:HG13	2.16	0.44
1:A:146:TYR:C	1:A:146:TYR:HD1	2.19	0.44
1:A:160:ALA:N	1:A:253:PHE:HE1	2.16	0.44
1:B:182:LYS:HD3	1:B:196:GLU:OE2	2.17	0.44
1:A:34:THR:HB	1:A:70:ALA:HB1	2.00	0.44
1:A:388:THR:CG2	1:A:398:LEU:HD13	2.46	0.44
1:A:417:LYS:HD2	1:A:417:LYS:HA	1.77	0.44
1:A:508:ASP:O	1:A:509:VAL:HG13	2.18	0.44
1:B:396:ILE:C	1:B:397:ILE:HG12	2.37	0.44
1:B:410:LEU:O	1:B:410:LEU:HD12	2.18	0.44
1:B:526:ASN:OD1	1:B:538:ILE:HD13	2.18	0.44
1:B:659:ARG:O	1:B:662:THR:N	2.44	0.44
1:A:118:THR:O	1:A:122:GLN:HG3	2.16	0.44
1:A:179:VAL:HG11	1:A:241:LYS:NZ	2.32	0.44
1:A:201:GLU:OE1	1:A:202:ASP:OD1	2.36	0.44
1:B:662:THR:C	1:B:663:GLN:OE1	2.56	0.44
1:A:276:ASP:CB	1:A:277:TYR:CD1	3.01	0.44
1:A:276:ASP:C	1:A:277:TYR:CD1	2.90	0.44
1:A:359:HIS:HB2	1:A:362:SER:OG	2.16	0.44
1:A:469:PHE:CD1	1:A:469:PHE:N	2.85	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:324:LYS:NZ	1:A:380:LEU:O	2.50	0.44
1:B:175:ILE:HD13	1:B:269:LEU:HD12	1.99	0.44
1:B:223:ASP:HA	1:B:226:MET:CE	2.48	0.44
1:A:572:HIS:CD2	1:A:574:VAL:H	2.35	0.44
1:B:17:ALA:HB3	1:B:23:LYS:CD	2.43	0.44
1:B:93:GLU:HG2	1:B:126:TYR:OH	2.18	0.44
1:A:549:MET:CE	1:A:559:LEU:HD23	2.48	0.44
1:B:178:LEU:O	1:B:179:VAL:C	2.56	0.44
1:B:456:LEU:O	1:B:459:ASP:N	2.51	0.44
1:A:236:SER:CB	1:A:239:GLU:HG2	2.48	0.43
1:A:72:TRP:O	1:A:75:HIS:HB2	2.18	0.43
1:B:341:VAL:CG1	1:B:342:LYS:N	2.80	0.43
1:B:5:PHE:CD2	1:B:76:ARG:HB2	2.53	0.43
1:B:341:VAL:CG1	1:B:342:LYS:H	2.31	0.43
1:B:410:LEU:HG	1:B:458:LEU:HD13	2.00	0.43
1:B:533:VAL:HA	1:B:534:PRO:HD2	1.88	0.43
1:A:309:PHE:CD1	1:A:309:PHE:C	2.91	0.43
1:B:251:VAL:HG12	1:B:251:VAL:O	2.17	0.43
1:B:260:THR:HG21	1:B:263:LYS:HB2	1.96	0.43
1:B:333:GLY:N	1:B:371:SER:OG	2.51	0.43
1:A:308:GLU:CD	1:A:394:ASN:HB2	2.39	0.43
1:A:571:TYR:CD1	1:A:571:TYR:C	2.92	0.43
1:B:135:ASN:OD1	1:B:136:LYS:N	2.49	0.43
1:B:555:ALA:CB	1:B:557:TYR:CD2	2.99	0.43
1:A:113:GLU:HB3	1:A:114:PRO:CD	2.48	0.43
1:A:267:VAL:O	1:A:270:MET:HG3	2.18	0.43
1:B:370:TYR:N	1:B:370:TYR:CD1	2.86	0.43
1:A:115:GLN:OE1	1:A:115:GLN:N	2.31	0.43
1:A:202:ASP:OD1	1:A:202:ASP:N	2.51	0.43
1:A:491:GLN:CG	1:A:512:GLU:HG3	2.48	0.43
1:B:244:ILE:HG13	1:B:244:ILE:H	1.60	0.43
1:A:112:VAL:HG13	1:A:150:THR:CB	2.49	0.43
1:A:505:GLN:N	1:A:575:ASP:CB	2.80	0.43
1:B:9:LYS:HD2	1:B:75:HIS:CD2	2.54	0.43
1:B:415:LYS:HZ2	1:B:474:ASN:N	2.16	0.43
1:B:574:VAL:CG2	1:B:575:ASP:N	2.81	0.43
1:A:241:LYS:O	1:A:244:ILE:CG1	2.64	0.43
1:A:574:VAL:CG1	1:A:575:ASP:H	2.32	0.43
1:B:646:VAL:HG12	1:B:647:PRO:HD2	2.00	0.43
1:A:140:LEU:O	1:A:142:ALA:N	2.52	0.43
1:A:241:LYS:HA	1:A:241:LYS:HD2	1.78	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:270:MET:HG3	1:A:271:LEU:N	2.33	0.42
1:A:510:HIS:HB3	1:A:567:TYR:CE1	2.53	0.42
1:A:579:MET:O	1:A:582:LYS:HB2	2.19	0.42
1:B:355:LEU:HB3	1:B:366:ILE:HG13	2.01	0.42
1:A:201:GLU:OE1	1:A:202:ASP:N	2.46	0.42
1:A:615:TYR:HB3	1:A:618:ASP:OD2	2.18	0.42
1:B:405:GLU:CG	1:B:406:PRO:HD2	2.49	0.42
1:B:412:VAL:HG13	1:B:412:VAL:O	2.18	0.42
1:B:448:VAL:HG22	1:B:449:ILE:N	2.34	0.42
1:B:590:LYS:O	1:B:593:ALA:N	2.52	0.42
1:A:156:GLN:HE21	1:A:637:GLY:HA3	1.84	0.42
1:A:290:HIS:HB2	1:A:295:PRO:HA	2.01	0.42
1:A:441:THR:O	1:A:441:THR:HG22	2.19	0.42
1:B:633:MET:HG2	1:B:634:GLU:N	2.35	0.42
1:A:17:ALA:CB	1:A:105:VAL:HB	2.47	0.42
1:B:9:LYS:HA	1:B:75:HIS:CD2	2.55	0.42
1:A:469:PHE:N	1:A:469:PHE:HD1	2.16	0.42
1:A:567:TYR:HD1	1:A:568:ASP:HB2	1.83	0.42
1:B:163:GLN:OE1	1:B:175:ILE:HD11	2.19	0.42
1:A:369:VAL:O	1:A:369:VAL:HG12	2.18	0.42
1:A:461:LEU:HD23	1:A:461:LEU:HA	1.83	0.42
1:B:128:VAL:O	1:B:130:ARG:NH2	2.49	0.42
1:B:145:GLU:OE1	1:B:145:GLU:HA	2.20	0.42
1:A:112:VAL:HG13	1:A:150:THR:HB	2.02	0.42
1:A:614:GLU:OE1	1:A:614:GLU:N	2.48	0.42
1:B:180:GLU:HG3	1:B:182:LYS:HG3	2.01	0.42
1:B:216:GLU:HG3	1:B:229:TYR:CE2	2.55	0.42
1:B:429:LYS:HD3	1:B:429:LYS:HA	1.75	0.42
1:B:90:VAL:CG2	1:B:91:GLU:H	2.20	0.42
1:B:330:VAL:HG22	1:B:373:ASP:O	2.19	0.42
1:B:590:LYS:HD2	1:B:590:LYS:N	2.34	0.42
1:A:132:VAL:HG21	1:A:151:LEU:HD21	2.02	0.42
1:A:245:ARG:O	1:A:249:THR:OG1	2.25	0.42
1:A:486:PHE:O	1:A:515:PRO:HB3	2.20	0.42
1:A:524:PHE:HE1	1:A:526:ASN:HB2	1.85	0.42
1:B:133:PHE:CD2	1:B:270:MET:HG3	2.48	0.42
1:A:441:THR:O	1:A:442:ASP:C	2.58	0.41
1:B:312:LEU:O	1:B:328:PHE:HA	2.20	0.41
1:B:350:GLU:OE1	1:B:382:ASP:HB2	2.20	0.41
1:B:535:ARG:CG	1:B:535:ARG:NH1	2.80	0.41
1:B:579:MET:HG3	1:B:580:ALA:N	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:235:ILE:HG23	1:A:239:GLU:OE2	2.21	0.41
1:A:237:VAL:O	1:A:240:LEU:HB3	2.20	0.41
1:B:164:LEU:HB2	1:B:176:ILE:CD1	2.42	0.41
1:B:354:ARG:HE	1:B:365:GLU:CD	2.23	0.41
1:B:555:ALA:HB1	1:B:557:TYR:CD2	2.54	0.41
1:A:120:TRP:CD1	1:A:120:TRP:C	2.93	0.41
1:A:309:PHE:CA	1:A:333:GLY:HA3	2.48	0.41
1:B:670:MET:HE2	1:B:670:MET:HB2	1.74	0.41
1:A:162:ILE:HG13	1:A:163:GLN:HG3	2.02	0.41
1:B:164:LEU:HD11	1:B:210:ALA:CB	2.51	0.41
1:B:299:VAL:O	1:B:299:VAL:HG13	2.21	0.41
1:A:524:PHE:CD1	1:A:524:PHE:C	2.93	0.41
1:A:549:MET:HE3	1:A:559:LEU:HD23	2.02	0.41
1:B:278:LEU:CB	1:B:279:PRO:HD2	2.47	0.41
1:B:340:TYR:CD2	1:B:349:ARG:NH2	2.82	0.41
1:B:523:GLU:HB2	1:B:563:LYS:CE	2.44	0.41
1:A:528:ILE:HD11	1:A:568:ASP:N	2.35	0.41
1:B:103:VAL:HG22	1:B:131:ILE:CG1	2.51	0.41
1:B:340:TYR:HB3	1:B:392:GLU:OE2	2.21	0.41
1:B:605:MET:SD	1:B:648:LEU:HD13	2.60	0.41
1:A:32:TYR:CD1	1:A:32:TYR:C	2.94	0.41
1:A:201:GLU:HA	1:A:204:LEU:CD1	2.50	0.41
1:A:381:LYS:HB2	1:A:381:LYS:HE3	1.90	0.41
1:A:408:ILE:HD11	1:A:478:PRO:CB	2.50	0.41
1:B:483:ARG:HG3	1:B:675:TYR:CE1	2.56	0.41
1:B:554:LEU:HD13	1:B:598:PRO:HG2	2.02	0.41
1:A:268:GLN:N	1:A:268:GLN:CD	2.73	0.41
1:B:410:LEU:HD21	1:B:458:LEU:HB3	2.03	0.41
1:A:112:VAL:HG13	1:A:150:THR:OG1	2.20	0.40
1:B:569:GLY:O	1:B:570:SER:HB3	2.21	0.40
1:B:670:MET:O	1:B:671:TYR:HD1	2.05	0.40
1:B:619:ILE:O	1:B:622:ASP:HB3	2.21	0.40
1:B:17:ALA:CB	1:B:23:LYS:HB2	2.51	0.40
1:B:330:VAL:HG23	1:B:330:VAL:O	2.21	0.40
1:B:466:LYS:O	1:B:470:ASN:HA	2.21	0.40
1:B:620:MET:HE1	1:B:630:VAL:HG21	2.03	0.40
1:A:80:ILE:HG12	1:A:98:VAL:CG1	2.52	0.40
1:A:140:LEU:C	1:A:142:ALA:N	2.74	0.40
1:A:414:PRO:HG3	1:A:423:MET:HE2	2.01	0.40
1:B:138:ASP:OD2	1:B:263:LYS:HG3	2.21	0.40
1:B:512:GLU:HG2	1:B:565:LYS:HB3	2.03	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:399:GLU:CG	1:A:400:SER:N	2.85	0.40
1:B:147:SER:O	1:B:150:THR:OG1	2.21	0.40
1:B:219:ALA:HA	1:B:225:LEU:CD1	2.43	0.40
1:B:487:LYS:HE2	1:B:599:VAL:HG13	2.03	0.40
1:B:688:LYS:HA	1:B:691:LYS:NZ	2.36	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	639/693 (92%)	593 (93%)	44 (7%)	2 (0%)	41	74
1	B	639/693 (92%)	580 (91%)	58 (9%)	1 (0%)	47	80
All	All	1278/1386 (92%)	1173 (92%)	102 (8%)	3 (0%)	47	80

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	362	SER
1	A	360	ALA
1	B	251	VAL

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	543/579 (94%)	498 (92%)	45 (8%)	11	37
1	B	543/579 (94%)	497 (92%)	46 (8%)	10	36
All	All	1086/1158 (94%)	995 (92%)	91 (8%)	11	36

All (91) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	34	THR
1	A	112	VAL
1	A	146	TYR
1	A	154	ARG
1	A	179	VAL
1	A	192	THR
1	A	199	ILE
1	A	201	GLU
1	A	213	SER
1	A	227	GLU
1	A	230	LEU
1	A	234	GLU
1	A	236	SER
1	A	244	ILE
1	A	246	GLN
1	A	270	MET
1	A	297	GLU
1	A	304	ASP
1	A	309	PHE
1	A	330	VAL
1	A	344	SER
1	A	361	ASN
1	A	396	ILE
1	A	400	SER
1	A	411	SER
1	A	447	GLN
1	A	448	VAL
1	A	459	ASP
1	A	463	ASP
1	A	505	GLN
1	A	506	TYR
1	A	509	VAL
1	A	514	THR
1	A	518	THR
1	A	536	GLU

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Mol	Chain	Res	Type
1	A	571	TYR
1	A	573	ASP
1	A	578	GLU
1	A	611	MET
1	A	618	ASP
1	A	631	ASP
1	A	640	GLN
1	A	649	SER
1	A	667	THR
1	A	671	TYR
1	B	29	ARG
1	B	76	ARG
1	B	109	GLN
1	B	154	ARG
1	B	162	ILE
1	B	170	ASP
1	B	175	ILE
1	B	176	ILE
1	B	178	LEU
1	B	192	THR
1	B	206	ARG
1	B	225	LEU
1	B	230	LEU
1	B	235	ILE
1	B	238	SER
1	B	246	GLN
1	B	271	LEU
1	B	280	SER
1	B	288	ILE
1	B	293	SER
1	B	294	ASN
1	B	318	THR
1	B	336	THR
1	B	363	ARG
1	B	369	VAL
1	B	390	CYS
1	B	420	GLN
1	B	442	ASP
1	B	475	VAL
1	B	532	VAL
1	B	535	ARG
1	B	547	ASP

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Mol	Chain	Res	Type
1	B	550	GLU
1	B	574	VAL
1	B	611	MET
1	B	616	MET
1	B	618	ASP
1	B	622	ASP
1	B	624	THR
1	B	625	SER
1	B	629	ARG
1	B	636	ARG
1	B	641	VAL
1	B	659	ARG
1	B	667	THR
1	B	688	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (11) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	156	GLN
1	A	246	GLN
1	A	409	HIS
1	A	572	HIS
1	A	690	ASN
1	B	18	HIS
1	B	75	HIS
1	B	115	GLN
1	B	264	ASN
1	B	431	GLN
1	B	447	GLN

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 ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

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	649/693 (93%)	0.09	19 (2%)	51	32	55, 104, 163, 250	0
1	B	649/693 (93%)	0.31	34 (5%)	27	16	68, 115, 175, 278	0
All	All	1298/1386 (93%)	0.20	53 (4%)	37	22	55, 109, 168, 278	0

All (53) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	636	ARG	5.4
1	B	518	THR	3.9
1	B	563	LYS	3.9
1	B	310	ALA	3.8
1	B	393	LYS	3.6
1	B	290	HIS	3.6
1	A	398	LEU	3.4
1	B	296	GLU	3.4
1	B	564	ALA	3.3
1	B	581	PHE	3.2
1	B	514	THR	3.0
1	B	396	ILE	2.9
1	B	295	PRO	2.8
1	A	287	ILE	2.8
1	B	253	PHE	2.8
1	B	513	PHE	2.8
1	B	351	ARG	2.7
1	B	496	PHE	2.7
1	A	252	GLU	2.6
1	A	451	GLY	2.6
1	A	10	THR	2.6
1	B	482	TYR	2.6
1	B	423	MET	2.5
1	B	533	VAL	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	300	ILE	2.5
1	A	2	ALA	2.4
1	B	561	ASP	2.4
1	B	601	LEU	2.4
1	B	545	LEU	2.4
1	B	289	GLY	2.4
1	A	372	GLY	2.3
1	A	176	ILE	2.3
1	A	581	PHE	2.3
1	A	524	PHE	2.3
1	B	65	SER	2.3
1	B	415	LYS	2.2
1	B	524	PHE	2.2
1	A	172	PHE	2.2
1	B	562	VAL	2.2
1	B	225	LEU	2.2
1	A	509	VAL	2.2
1	B	637	GLY	2.2
1	A	312	LEU	2.1
1	A	397	ILE	2.1
1	B	84	GLY	2.1
1	A	577	SER	2.1
1	B	291	ARG	2.1
1	A	511	ILE	2.1
1	B	19	ILE	2.1
1	B	372	GLY	2.1
1	B	24	THR	2.0
1	A	229	TYR	2.0
1	A	514	THR	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 monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.