



# Full wwPDB X-ray Structure Validation Report ⓘ

May 19, 2020 – 02:28 pm BST

PDB ID : 2GHO  
Title : Recombinant *Thermus aquaticus* RNA polymerase for Structural Studies  
Authors : Lamour, V.; Darst, S.A.  
Deposited on : 2006-03-27  
Resolution : 5.00 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](mailto: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.

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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 : 2.11  
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) : 2.11

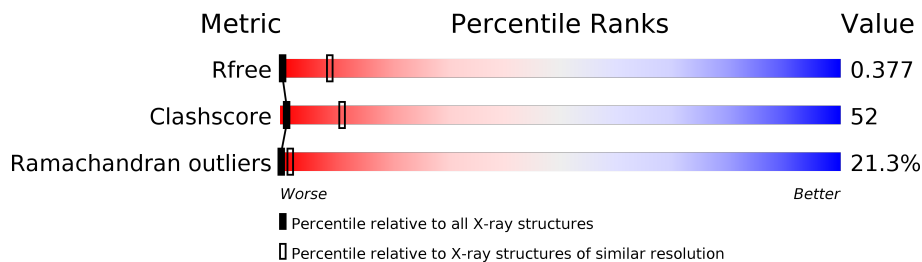
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 5.00 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	1140 (6.20-3.80)
Clashscore	141614	1000 (6.16-3.82)
Ramachandran outliers	138981	1146 (6.20-3.80)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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  $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	314	
1	B	314	
2	C	1119	
3	D	1233	

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 11060 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 DNA-directed RNA polymerase subunit alpha.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
1	A	230	920	460	230	230	0	0	0
1	B	225	900	450	225	225	0	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
2	C	1114	4456	2228	1114	1114	0	0	0

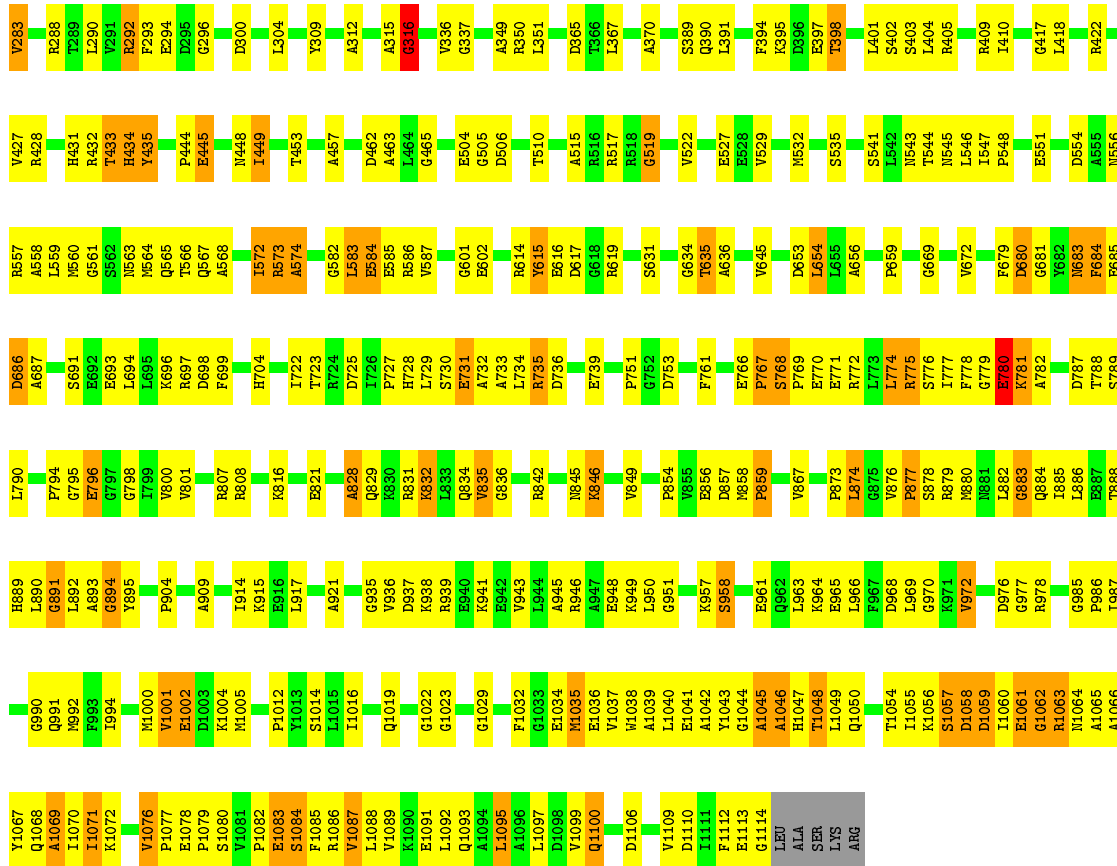
- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta',DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	D	1196	4784	2392	1196	1196	0	0	0

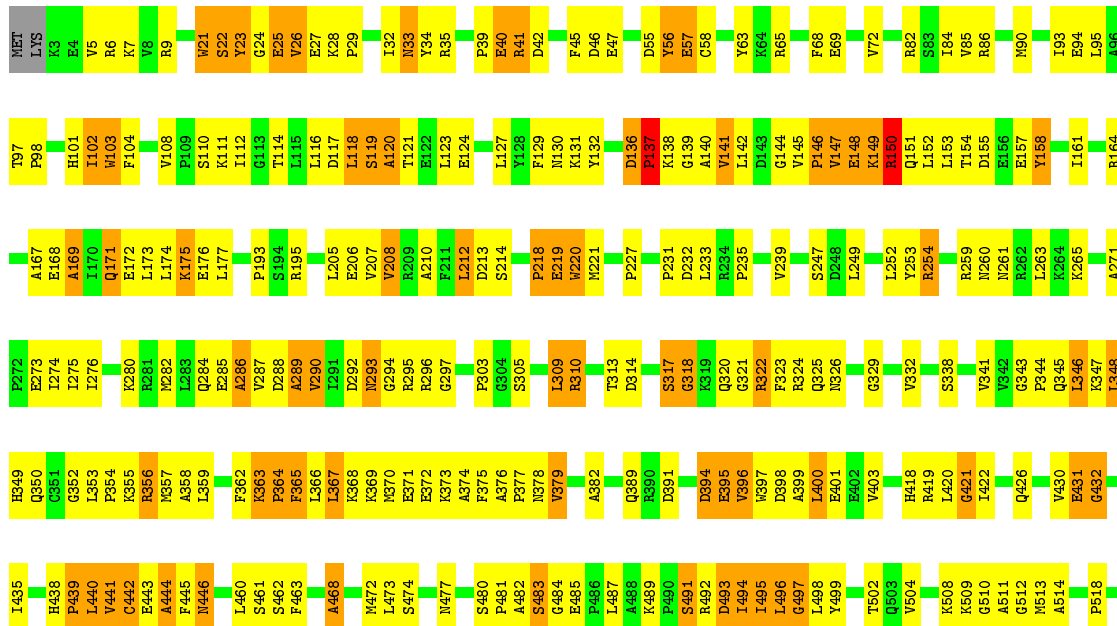
There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
D	159	GLY	-	linker	UNP Q9KWU6
D	160	GLY	-	linker	UNP Q9KWU6





• Molecule 3: DNA-directed RNA polymerase subunit beta',DNA-directed RNA polymerase subunit beta'



V1446	L1447	T1448	E1449	A1450	A1451	I1452	A1453	G1454	K1455	L1459	L1462	K1463	E1464	N1465	V1466	I1467	L1468	G1469	L1470	L1471	L1472	I1473	A1474	G1475	T1476	G1477	Q1489	E1501	ALA	VAL	GLU	ALA	ALA	LYS	GLU	LYS	GLU	ALA	ALA	PRO	ARG	ARG	ARG	PRO	VAL	ARG	ARG	GLU	GLN	PRO	GLY	LYS	GLY	LEU
V1259	I1260	E1261	L1262	F1263	A1264	A1265	R1266	R1267	P1268	K1269	A1270	K1271	A1272	I1277	D1278	G1279	E1287	S1296	K1307	V1313	D1315	G1316	D1317	V1318	V1319	E1320	A1321	G1322	R1327	G1328	P1332	H1333	Q1334	L1335	L1336	E1337	A1338	K1339	P1341	E1342	A1343	V1344	E1345	R1346	Y1347	L1348	V1349	D1350	I1352					
Q1353	L1363	H1364	D1365	K1366	H1367	I1368	E1369	I1370	V1371	V1372	R1373	Q1374	M1375	L1376	K1377	Y1378	D1386	L1390	E1391	L1395	E1396	K1397	V1398	D1399	V1400	E1401	R1406	E1410	V1413	P1414	V1415	G1423	V1424	T1425	K1426	S1427	A1428	L1429	W1434	L1435	S1436	A1438	S1439	F1440	Q1441	M1442	T1443	T1444	H1445					
A887	E888	A889	G890	P800	L901	T902	C903	R906	Y907	G908	C913	Y914	G915	Y916	D917	L918	S919	N920	Y924	A929	V930	G931	V932	V933	A934	A935	E936	S937	I938	P941	G942	T943	D944	T949	PHE	HIS	THR	GLY	GLY	VAL	VAL	ALA	VAL	GLY	THR	ASP	ILE	T1253	Q1254	G1255	R1258			
L522	A523	A524	Y525	E526	R527	G528	E529	V530	A531	L532	N533	A534	P535	I536	V537	V538	L620	A539	S544	V545	G546	R547	L548	D556	E557	A558	L559	L560	A561	V562	A563	H564	G565	L566	L567	D568	L569	Q570	L578	G579	R580	E583	T584	G587	L590	F591	A592	R593	I594	V595	G596	E597	A598	V599
G600	D601	E602	A605	Q606	E607	Q610	M611	A612	D613	V613	E616	K617	N618	S619	L620	A621	D622	L623	V624	Y625	Q626	A627	F628	L629	G632	M633	L634	K635	T636	A637	R638	L639	L640	D641	A642	L643	K644	Y645	Y646	F648	T649	L650	S651	T652	G655	G659	I660	D661	D662	G670	E674			
L680	Q681	Q682	G690	I702	Q703	L704	T713	Q714	A715	F716	F717	V720	Y724	F725	F726	Y625	F728	L729	A627	Y730	V731	M732	A733	Q734	S735	G736	A737	Q742	Q743	I744	R745	Q746	L747	M750	K756	E760	G773	S651	L774	T775	V776	L777	E778	L877	Y779	F780	S783	H784	R787					
G790	A791	T792	A794	A798	D799	S800	G801	Y802	L803	T804	K805	N806	L807	V808	D809	V810	A811	H812	E813	I814	V815	D820	C821	G822	N825	K845	R846	S847	D848	I849	E850	G851	L853	Y854	R860	E861	A864	L865	G866	E870	S876	L877	I878	D879	V880	H881	F882	L883						
A887	E888	A889	G890	P800	L901	T902	C903	R906	Y907	G908	C913	Y914	G915	Y916	D917	L918	S919	N920	Y924	A929	V930	G931	V932	V933	A934	A935	E936	S937	I938	P941	G942	T943	D944	T949	PHE	HIS	THR	GLY	GLY	VAL	VAL	ALA	VAL	GLY	THR	ASP	ILE	T1253	Q1254	G1255	R1258			

## 4 Data and refinement statistics

Property	Value	Source
Space group	P 41 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	202.80Å 202.80Å 326.80Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	25.00 – 5.00 24.99 – 4.10	Depositor EDS
% Data completeness (in resolution range)	87.1 (25.00-5.00) 80.7 (24.99-4.10)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.08	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.05 (at 4.10Å)	Xtrriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.336 , 0.337 0.383 , 0.377	Depositor DCC
$R_{free}$ test set	3069 reflections (7.06%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	138.4	Xtrriage
Anisotropy	0.324	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.04 , -9.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.79	EDS
Total number of atoms	11060	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	193.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.59% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

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

## 5 Model quality 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	0.35	0/919	0.77	0/1147
1	B	0.40	0/899	0.78	0/1122
2	C	0.55	7/4455 (0.2%)	0.93	9/5567 (0.2%)
3	D	0.56	8/4782 (0.2%)	1.03	22/5974 (0.4%)
All	All	0.53	15/11055 (0.1%)	0.95	31/13810 (0.2%)

All (15) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	704	HIS	C-N	11.46	1.60	1.34
3	D	943	THR	C-N	-9.94	1.11	1.34
2	C	828	ALA	C-N	7.47	1.51	1.34
3	D	137	PRO	N-CA	-7.25	1.34	1.47
3	D	1435	LEU	C-N	-6.64	1.18	1.34
2	C	1057	SER	C-N	6.22	1.48	1.34
3	D	139	GLY	N-CA	-6.19	1.36	1.46
2	C	141	HIS	C-N	5.86	1.47	1.34
2	C	768	SER	N-CA	5.76	1.57	1.46
2	C	769	PRO	N-CA	5.71	1.56	1.47
3	D	138	LYS	N-CA	-5.69	1.34	1.46
2	C	130	ASN	C-N	-5.45	1.23	1.33
3	D	138	LYS	C-N	-5.20	1.23	1.33
3	D	142	LEU	N-CA	5.19	1.56	1.46
3	D	138	LYS	CA-C	-5.16	1.39	1.52

All (31) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	137	PRO	CA-C-N	-15.02	84.17	117.20
3	D	137	PRO	O-C-N	10.21	139.04	122.70
2	C	781	LYS	C-N-CA	-9.35	98.32	121.70
3	D	140	ALA	C-N-CA	9.26	144.84	121.70
3	D	151	GLN	CA-C-N	-9.15	97.06	117.20

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	D	141	VAL	N-CA-C	9.04	135.41	111.00
2	C	772	ARG	CA-C-N	-7.93	99.74	117.20
3	D	943	THR	O-C-N	-7.68	110.40	122.70
3	D	137	PRO	C-N-CA	7.40	140.20	121.70
3	D	1459	LEU	O-C-N	-6.88	111.69	122.70
2	C	780	GLU	N-CA-C	-6.88	92.44	111.00
3	D	137	PRO	CA-C-O	6.88	136.70	120.20
3	D	150	ARG	C-N-CA	-6.77	104.78	121.70
3	D	1319	VAL	N-CA-C	6.59	128.79	111.00
3	D	1313	VAL	N-CA-C	-6.54	93.35	111.00
2	C	316	GLY	N-CA-C	6.52	129.40	113.10
3	D	151	GLN	O-C-N	6.04	132.36	122.70
3	D	1321	ALA	N-CA-C	6.04	127.30	111.00
3	D	943	THR	C-N-CA	6.02	136.75	121.70
3	D	138	LYS	C-N-CA	-5.98	109.75	122.30
2	C	772	ARG	O-C-N	5.97	132.25	122.70
3	D	147	VAL	C-N-CA	5.93	136.54	121.70
3	D	446	ASN	N-CA-C	-5.82	95.30	111.00
2	C	828	ALA	O-C-N	-5.78	113.46	122.70
3	D	322	ARG	O-C-N	-5.66	113.65	122.70
2	C	1076	VAL	N-CA-C	5.59	126.09	111.00
3	D	138	LYS	CA-C-N	-5.46	105.29	116.20
3	D	1314	LYS	N-CA-C	5.42	125.64	111.00
2	C	224	GLU	N-CA-C	-5.24	96.85	111.00
3	D	1279	GLY	N-CA-C	5.19	126.08	113.10
2	C	220	GLY	N-CA-C	-5.04	100.51	113.10

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	920	0	246	39	0
1	B	900	0	242	34	0
2	C	4456	0	1247	227	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
3	D	4784	0	1309	435	0
All	All	11060	0	3044	732	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 52.

All (732) 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)
3:D:145:VAL:O	3:D:146:PRO:O	1.56	1.19
2:C:775:ARG:O	2:C:778:PHE:N	1.88	1.05
3:D:1438:ALA:O	3:D:1440:PHE:N	1.98	0.94
2:C:775:ARG:O	2:C:779:GLY:N	2.00	0.94
3:D:917:ASP:C	3:D:919:SER:H	1.68	0.87
3:D:918:LEU:C	3:D:920:MET:H	1.76	0.86
2:C:554:ASP:N	2:C:880:MET:O	2.09	0.84
3:D:101:HIS:O	3:D:103:TRP:N	2.11	0.84
3:D:1423:GLY:O	3:D:1425:THR:N	2.14	0.81
2:C:52:PHE:C	2:C:54:ILE:H	1.84	0.81
3:D:798:ALA:O	3:D:800:SER:N	2.13	0.80
2:C:74:GLY:HA3	2:C:93:PRO:O	1.80	0.80
3:D:145:VAL:C	3:D:146:PRO:O	2.19	0.80
3:D:22:SER:O	3:D:24:GLY:N	2.12	0.80
2:C:1039:ALA:O	2:C:1042:ALA:N	2.14	0.80
3:D:218:PRO:O	3:D:220:TRP:N	2.14	0.79
3:D:650:LEU:C	3:D:652:THR:H	1.86	0.79
3:D:420:LEU:O	3:D:422:ILE:N	2.15	0.79
3:D:801:GLY:O	3:D:804:THR:N	2.17	0.78
3:D:1270:ALA:O	3:D:1272:ALA:N	2.17	0.78
2:C:734:LEU:O	2:C:736:ASP:N	2.18	0.77
3:D:887:ALA:C	3:D:890:GLY:H	1.90	0.75
2:C:18:LEU:O	2:C:20:GLU:N	2.20	0.74
3:D:917:ASP:C	3:D:919:SER:N	2.39	0.74
3:D:461:SER:C	3:D:463:PHE:N	2.39	0.73
3:D:401:GLU:C	3:D:403:VAL:H	1.89	0.73
2:C:257:LEU:O	2:C:259:GLY:N	2.21	0.73
3:D:26:VAL:C	3:D:28:LYS:H	1.92	0.73
3:D:900:PRO:O	3:D:902:THR:N	2.21	0.73
3:D:887:ALA:O	3:D:890:GLY:N	2.22	0.72
3:D:212:LEU:O	3:D:214:SER:N	2.21	0.72
3:D:318:GLY:C	3:D:321:GLY:H	1.93	0.72

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:312:ALA:O	2:C:316:GLY:HA3	1.90	0.71
3:D:1376:LEU:O	3:D:1378:TYR:N	2.23	0.71
2:C:349:ALA:C	2:C:351:LEU:H	1.93	0.71
3:D:84:ILE:O	3:D:86:ARG:N	2.24	0.71
3:D:420:LEU:C	3:D:422:ILE:H	1.93	0.71
3:D:468:ALA:O	3:D:472:MET:N	2.20	0.71
2:C:18:LEU:C	2:C:20:GLU:H	1.95	0.70
3:D:119:SER:O	3:D:121:THR:N	2.24	0.70
2:C:679:PHE:O	2:C:681:GLY:N	2.25	0.70
3:D:650:LEU:O	3:D:652:THR:N	2.24	0.70
1:A:89:PHE:O	1:A:91:ASP:N	2.25	0.69
3:D:495:ILE:O	3:D:496:LEU:C	2.30	0.69
3:D:622:ASP:O	3:D:623:LEU:C	2.30	0.69
3:D:394:ASP:O	3:D:396:VAL:N	2.26	0.69
3:D:418:HIS:O	3:D:421:GLY:N	2.25	0.68
3:D:401:GLU:C	3:D:403:VAL:N	2.47	0.68
2:C:566:THR:C	2:C:568:ALA:H	1.96	0.68
3:D:145:VAL:O	3:D:146:PRO:C	2.29	0.68
3:D:321:GLY:O	3:D:323:PHE:N	2.27	0.68
2:C:774:LEU:O	2:C:776:SER:N	2.27	0.68
3:D:930:VAL:O	3:D:931:GLY:C	2.30	0.68
2:C:52:PHE:O	2:C:54:ILE:N	2.27	0.67
3:D:918:LEU:C	3:D:920:MET:N	2.48	0.67
2:C:775:ARG:C	2:C:778:PHE:H	1.97	0.67
3:D:1372:VAL:O	3:D:1375:MET:N	2.25	0.67
1:B:37:GLY:O	1:B:40:LEU:N	2.27	0.67
2:C:1093:GLN:C	2:C:1095:LEU:H	1.98	0.67
3:D:431:GLU:O	3:D:432:GLY:O	2.13	0.67
3:D:626:GLN:O	3:D:629:LEU:N	2.28	0.67
1:A:121:GLU:O	1:A:123:MET:N	2.28	0.66
3:D:231:PRO:C	3:D:233:LEU:H	1.99	0.66
3:D:487:LEU:C	3:D:489:LYS:H	1.98	0.66
2:C:1039:ALA:O	2:C:1040:LEU:C	2.35	0.66
3:D:526:GLU:O	3:D:529:GLU:N	2.23	0.66
2:C:254:LEU:C	2:C:256:TYR:H	1.99	0.66
2:C:795:GLY:O	2:C:796:GLU:O	2.14	0.65
3:D:605:ALA:O	3:D:607:GLU:N	2.29	0.65
3:D:1443:THR:O	3:D:1444:THR:C	2.34	0.65
2:C:1043:TYR:C	2:C:1045:ALA:H	1.99	0.65
3:D:399:ALA:O	3:D:401:GLU:N	2.29	0.65
2:C:1014:SER:N	2:C:1019:GLN:O	2.20	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:439:PRO:O	3:D:441:VAL:N	2.29	0.65
2:C:267:TYR:O	2:C:273:GLY:HA3	1.97	0.65
3:D:847:SER:O	3:D:848:ASP:C	2.36	0.65
3:D:167:ALA:O	3:D:168:GLU:C	2.35	0.64
3:D:112:ILE:C	3:D:114:THR:H	2.01	0.64
3:D:641:ASP:O	3:D:644:LYS:N	2.29	0.64
3:D:639:LEU:O	3:D:640:LEU:C	2.35	0.64
3:D:642:ALA:O	3:D:643:LEU:C	2.36	0.64
1:B:112:GLY:C	1:B:114:PHE:H	2.01	0.64
3:D:397:TRP:O	3:D:398:ASP:C	2.35	0.64
3:D:1427:SER:O	3:D:1429:LEU:N	2.31	0.64
1:B:172:SER:O	1:B:174:VAL:N	2.31	0.64
2:C:774:LEU:O	2:C:777:ILE:N	2.25	0.63
3:D:1434:TRP:O	3:D:1437:ALA:N	2.31	0.63
3:D:546:GLY:O	3:D:548:LEU:N	2.32	0.63
3:D:309:LEU:O	3:D:310:ARG:O	2.17	0.63
3:D:934:ALA:O	3:D:935:ALA:C	2.36	0.63
3:D:1423:GLY:O	3:D:1424:VAL:C	2.37	0.63
3:D:801:GLY:O	3:D:803:LEU:N	2.31	0.63
1:A:75:VAL:O	1:A:79:ILE:N	2.28	0.63
2:C:877:PRO:O	2:C:879:ARG:O	2.16	0.63
3:D:157:GLU:O	3:D:158:TYR:O	2.17	0.63
3:D:363:LYS:O	3:D:364:PRO:O	2.16	0.63
3:D:364:PRO:O	3:D:366:LEU:N	2.32	0.63
3:D:932:VAL:O	3:D:933:VAL:C	2.37	0.63
3:D:1262:LEU:O	3:D:1263:PHE:C	2.37	0.62
2:C:52:PHE:C	2:C:54:ILE:N	2.50	0.62
3:D:702:ILE:C	3:D:704:LEU:H	2.01	0.62
3:D:929:ALA:O	3:D:930:VAL:C	2.37	0.62
2:C:1047:HIS:O	2:C:1049:LEU:N	2.32	0.62
3:D:730:TYR:O	3:D:731:VAL:C	2.37	0.62
3:D:461:SER:C	3:D:463:PHE:H	2.01	0.62
1:A:110:ARG:O	1:A:112:GLY:N	2.32	0.62
2:C:1001:VAL:O	2:C:1004:LYS:N	2.33	0.62
2:C:16:PRO:C	2:C:18:LEU:H	2.03	0.62
2:C:948:GLU:O	2:C:951:GLY:N	2.21	0.62
2:C:543:ASN:C	2:C:545:ASN:H	2.03	0.62
2:C:582:GLY:O	2:C:584:GLU:N	2.32	0.62
3:D:420:LEU:C	3:D:422:ILE:N	2.53	0.62
3:D:495:ILE:O	3:D:497:GLY:N	2.32	0.61
3:D:1262:LEU:O	3:D:1265:ALA:N	2.32	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1316:GLY:O	3:D:1317:ASP:O	2.19	0.61
3:D:643:LEU:O	3:D:644:LYS:C	2.38	0.61
3:D:620:LEU:O	3:D:621:LYS:C	2.38	0.61
3:D:63:TYR:C	3:D:65:ARG:H	2.03	0.61
2:C:1000:MET:O	2:C:1002:GLU:N	2.33	0.61
3:D:45:PHE:O	3:D:46:ASP:C	2.39	0.61
2:C:504:GLU:O	2:C:506:ASP:N	2.34	0.61
3:D:623:LEU:O	3:D:627:ALA:N	2.34	0.61
2:C:1058:ASP:O	2:C:1060:ILE:N	2.34	0.61
3:D:1427:SER:O	3:D:1428:ALA:C	2.38	0.61
3:D:650:LEU:C	3:D:652:THR:N	2.54	0.61
3:D:659:GLY:O	3:D:661:ASP:N	2.34	0.60
3:D:935:ALA:O	3:D:936:GLU:C	2.40	0.60
3:D:620:LEU:O	3:D:623:LEU:N	2.34	0.60
3:D:1261:GLU:O	3:D:1265:ALA:N	2.33	0.60
3:D:801:GLY:O	3:D:802:TYR:C	2.40	0.60
3:D:324:ARG:O	3:D:326:ASN:N	2.34	0.60
2:C:349:ALA:O	2:C:351:LEU:N	2.34	0.60
2:C:845:ASN:O	2:C:846:LYS:C	2.38	0.60
2:C:1032:PHE:O	3:D:329:GLY:HA2	2.02	0.60
2:C:1034:GLU:O	2:C:1035:MET:C	2.38	0.60
3:D:592:ALA:O	3:D:595:VAL:N	2.35	0.59
3:D:900:PRO:C	3:D:902:THR:N	2.55	0.59
1:A:74:ASP:O	1:A:75:VAL:C	2.41	0.59
3:D:289:ALA:O	3:D:293:ASN:N	2.35	0.59
3:D:508:LYS:O	3:D:510:GLY:N	2.32	0.59
3:D:853:LEU:O	3:D:854:TYR:C	2.40	0.59
3:D:171:GLN:O	3:D:173:LEU:N	2.36	0.59
3:D:1335:LEU:O	3:D:1336:LEU:C	2.41	0.59
3:D:511:ALA:O	3:D:513:MET:N	2.36	0.59
3:D:641:ASP:O	3:D:642:ALA:C	2.41	0.59
3:D:373:LYS:O	3:D:375:PHE:N	2.36	0.59
2:C:1038:TRP:O	2:C:1042:ALA:N	2.35	0.59
2:C:798:GLY:HA3	2:C:828:ALA:O	2.02	0.59
3:D:637:ALA:O	3:D:640:LEU:N	2.35	0.59
3:D:1426:LYS:O	3:D:1427:SER:O	2.20	0.59
3:D:583:GLU:O	3:D:584:THR:O	2.21	0.59
2:C:561:GLY:HA3	2:C:842:ARG:O	2.03	0.58
3:D:355:LYS:O	3:D:356:ARG:C	2.41	0.58
3:D:362:PHE:O	3:D:363:LYS:C	2.41	0.58
2:C:683:ASN:O	2:C:687:ALA:N	2.33	0.58

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:171:GLN:C	3:D:173:LEU:N	2.55	0.58
3:D:876:SER:O	3:D:879:ASP:N	2.36	0.58
3:D:941:PRO:C	3:D:943:THR:N	2.55	0.58
1:A:44:LEU:O	1:A:46:SER:N	2.35	0.58
3:D:1466:VAL:O	3:D:1469:GLY:N	2.36	0.58
3:D:622:ASP:O	3:D:626:GLN:N	2.33	0.58
2:C:1054:THR:C	2:C:1056:LYS:H	2.07	0.58
2:C:563:ASN:C	2:C:565:GLN:H	2.06	0.58
3:D:219:GLU:O	3:D:221:MET:N	2.36	0.58
3:D:40:GLU:O	3:D:41:ARG:C	2.42	0.58
3:D:849:ILE:O	3:D:852:GLY:N	2.36	0.58
2:C:1045:ALA:O	2:C:1046:ALA:C	2.42	0.58
3:D:596:GLY:O	3:D:599:VAL:N	2.32	0.58
3:D:26:VAL:C	3:D:28:LYS:N	2.57	0.58
3:D:916:TYR:O	3:D:918:LEU:N	2.37	0.57
2:C:775:ARG:O	2:C:778:PHE:CA	2.51	0.57
3:D:730:TYR:O	3:D:732:MET:N	2.37	0.57
2:C:1093:GLN:C	2:C:1095:LEU:N	2.58	0.57
3:D:231:PRO:O	3:D:233:LEU:N	2.37	0.57
3:D:877:LEU:O	3:D:878:GLU:C	2.42	0.57
2:C:858:MET:O	2:C:859:PRO:C	2.42	0.57
3:D:1471:LEU:O	3:D:1472:ILE:O	2.23	0.57
1:B:224:TYR:C	1:B:226:ALA:H	2.08	0.57
2:C:1066:ALA:O	2:C:1067:TYR:C	2.42	0.57
2:C:410:ILE:N	2:C:453:THR:O	2.37	0.57
3:D:205:LEU:O	3:D:208:VAL:N	2.37	0.57
2:C:563:ASN:O	2:C:565:GLN:N	2.28	0.57
2:C:723:THR:C	2:C:725:ASP:H	2.08	0.57
3:D:357:MET:O	3:D:359:LEU:N	2.38	0.57
3:D:860:ARG:O	3:D:861:GLU:O	2.22	0.57
1:B:37:GLY:O	1:B:38:ASN:C	2.43	0.56
2:C:1041:GLU:O	2:C:1042:ALA:C	2.43	0.56
3:D:401:GLU:O	3:D:403:VAL:N	2.38	0.56
3:D:55:ASP:O	3:D:57:GLU:N	2.38	0.56
1:A:208:LEU:O	1:A:211:LEU:N	2.39	0.56
3:D:1344:VAL:O	3:D:1345:GLU:C	2.43	0.56
3:D:1450:ALA:O	3:D:1451:ALA:C	2.43	0.56
3:D:620:LEU:O	3:D:624:VAL:N	2.38	0.56
3:D:647:GLY:O	3:D:651:SER:N	2.22	0.56
2:C:1047:HIS:C	2:C:1049:LEU:N	2.58	0.56
2:C:292:ARG:O	2:C:294:GLU:N	2.38	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:25:GLU:O	3:D:27:GLU:N	2.34	0.56
1:A:74:ASP:O	1:A:77:GLU:N	2.39	0.56
1:B:209:GLU:O	1:B:210:ALA:C	2.42	0.56
3:D:635:LYS:O	3:D:636:THR:C	2.42	0.56
2:C:941:LYS:O	2:C:945:ALA:N	2.36	0.56
3:D:441:VAL:O	3:D:443:GLU:N	2.39	0.56
3:D:493:ASP:O	3:D:494:ILE:C	2.44	0.56
1:A:171:PHE:O	1:A:172:SER:C	2.44	0.56
3:D:119:SER:O	3:D:121:THR:O	2.24	0.56
3:D:396:VAL:O	3:D:399:ALA:N	2.38	0.56
3:D:805:ARG:O	3:D:806:LYS:C	2.43	0.56
1:A:208:LEU:O	1:A:209:GLU:C	2.44	0.56
2:C:431:HIS:O	2:C:433:THR:N	2.39	0.56
2:C:558:ALA:O	2:C:561:GLY:N	2.38	0.56
2:C:882:LEU:O	2:C:884:GLN:N	2.38	0.56
3:D:1390:LEU:O	3:D:1391:GLU:C	2.43	0.56
3:D:623:LEU:O	3:D:624:VAL:C	2.44	0.56
1:A:209:GLU:O	1:A:210:ALA:C	2.45	0.56
2:C:1093:GLN:O	2:C:1095:LEU:N	2.30	0.56
1:A:74:ASP:O	1:A:76:VAL:N	2.39	0.56
2:C:527:GLU:C	2:C:529:VAL:H	2.09	0.56
3:D:102:ILE:C	3:D:104:PHE:H	2.09	0.55
3:D:499:TYR:O	3:D:502:THR:N	2.29	0.55
3:D:743:GLN:O	3:D:744:ILE:C	2.45	0.55
3:D:876:SER:O	3:D:877:LEU:C	2.44	0.55
3:D:1365:ASP:O	3:D:1366:LYS:C	2.44	0.55
3:D:441:VAL:O	3:D:442:CYS:C	2.44	0.55
1:A:218:LEU:O	1:A:219:LYS:C	2.44	0.55
2:C:561:GLY:O	2:C:563:ASN:O	2.24	0.55
2:C:882:LEU:O	2:C:885:ILE:N	2.36	0.55
3:D:371:GLU:C	3:D:373:LYS:H	2.08	0.55
3:D:1395:LEU:O	3:D:1398:TRP:N	2.39	0.55
3:D:1466:VAL:C	3:D:1468:LEU:N	2.57	0.55
3:D:171:GLN:C	3:D:173:LEU:H	2.09	0.55
2:C:1070:ILE:O	2:C:1072:LYS:N	2.40	0.55
2:C:82:GLU:O	2:C:84:ARG:N	2.39	0.55
3:D:1425:THR:O	3:D:1426:LYS:C	2.44	0.55
3:D:284:GLN:O	3:D:286:ALA:N	2.40	0.55
3:D:637:ALA:O	3:D:638:ARG:C	2.44	0.55
3:D:174:LEU:O	3:D:175:LYS:C	2.46	0.55
3:D:626:GLN:O	3:D:627:ALA:C	2.44	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:648:PHE:O	3:D:649:THR:C	2.44	0.55
2:C:966:LEU:O	2:C:969:LEU:N	2.40	0.55
3:D:1350:ASP:O	3:D:1351:GLU:C	2.45	0.55
2:C:891:GLY:O	2:C:892:LEU:C	2.45	0.55
3:D:102:ILE:O	3:D:104:PHE:N	2.40	0.55
3:D:1342:GLU:O	3:D:1345:GLU:N	2.40	0.55
3:D:259:ARG:O	3:D:261:ASN:N	2.40	0.55
3:D:645:TYR:O	3:D:648:PHE:N	2.40	0.55
2:C:1054:THR:O	2:C:1056:LYS:N	2.41	0.54
3:D:1349:VAL:O	3:D:1350:ASP:C	2.45	0.54
3:D:592:ALA:O	3:D:593:ARG:C	2.46	0.54
3:D:932:VAL:O	3:D:935:ALA:N	2.40	0.54
3:D:799:ASP:O	3:D:800:SER:C	2.46	0.54
3:D:292:ASP:O	3:D:293:ASN:C	2.46	0.54
3:D:1341:PRO:O	3:D:1342:GLU:C	2.45	0.54
2:C:1047:HIS:O	2:C:1050:GLN:N	2.40	0.54
1:B:112:GLY:O	1:B:114:PHE:N	2.41	0.54
2:C:948:GLU:C	2:C:950:LEU:N	2.59	0.54
3:D:364:PRO:O	3:D:367:LEU:N	2.39	0.54
3:D:129:PHE:O	3:D:131:LYS:N	2.41	0.54
3:D:252:LEU:C	3:D:254:ARG:N	2.57	0.54
3:D:367:LEU:O	3:D:370:MET:N	2.40	0.54
2:C:543:ASN:C	2:C:545:ASN:N	2.60	0.54
2:C:556:ASN:C	2:C:558:ALA:H	2.10	0.54
3:D:564:HIS:O	3:D:566:LEU:N	2.40	0.54
3:D:1447:LEU:O	3:D:1448:THR:C	2.46	0.53
3:D:275:ILE:O	3:D:276:ILE:C	2.47	0.53
3:D:941:PRO:O	3:D:943:THR:N	2.40	0.53
1:A:209:GLU:O	1:A:212:ASN:N	2.41	0.53
3:D:348:LEU:O	3:D:350:GLN:N	2.41	0.53
3:D:743:GLN:O	3:D:745:ARG:N	2.41	0.53
3:D:792:ASP:O	3:D:794:ALA:N	2.42	0.53
3:D:815:VAL:H	3:D:908:GLY:HA2	1.72	0.53
3:D:742:GLN:O	3:D:743:GLN:C	2.46	0.53
3:D:933:VAL:O	3:D:934:ALA:C	2.46	0.53
2:C:876:VAL:O	2:C:879:ARG:O	2.26	0.53
3:D:1266:ARG:O	3:D:1268:PRO:N	2.42	0.53
3:D:559:LEU:O	3:D:561:ALA:N	2.42	0.53
3:D:318:GLY:CA	3:D:321:GLY:H	2.21	0.53
2:C:517:ARG:O	2:C:519:GLY:N	2.42	0.53
3:D:1448:THR:O	3:D:1449:GLU:C	2.47	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:33:ASN:O	3:D:35:ARG:N	2.42	0.53
3:D:702:ILE:C	3:D:704:LEU:N	2.61	0.53
2:C:82:GLU:C	2:C:84:ARG:H	2.09	0.53
3:D:811:ALA:O	3:D:931:GLY:HA3	2.09	0.53
1:B:34:VAL:O	1:B:35:THR:C	2.47	0.53
2:C:731:GLU:C	2:C:733:ALA:N	2.61	0.53
2:C:968:ASP:C	2:C:970:GLY:H	2.11	0.53
3:D:1399:ASP:C	3:D:1401:GLU:H	2.12	0.53
3:D:205:LEU:O	3:D:207:VAL:N	2.42	0.53
2:C:1047:HIS:O	2:C:1048:THR:C	2.45	0.52
2:C:13:ILE:O	2:C:14:PRO:O	2.27	0.52
2:C:680:ASP:O	2:C:681:GLY:C	2.47	0.52
2:C:775:ARG:C	2:C:777:ILE:N	2.59	0.52
2:C:1088:LEU:O	2:C:1089:VAL:C	2.47	0.52
2:C:1068:GLN:O	2:C:1071:ILE:N	2.43	0.52
3:D:121:THR:C	3:D:123:LEU:H	2.12	0.52
3:D:118:LEU:O	3:D:119:SER:C	2.48	0.52
2:C:1070:ILE:C	2:C:1072:LYS:N	2.61	0.52
2:C:433:THR:O	2:C:435:TYR:N	2.43	0.52
3:D:1371:VAL:O	3:D:1372:VAL:C	2.47	0.52
3:D:633:MET:O	3:D:634:GLU:C	2.48	0.52
2:C:18:LEU:C	2:C:20:GLU:N	2.59	0.52
2:C:551:GLU:O	3:D:773:GLY:HA2	2.10	0.52
2:C:74:GLY:CA	2:C:93:PRO:O	2.57	0.52
3:D:1425:THR:O	3:D:1427:SER:N	2.43	0.52
3:D:397:TRP:O	3:D:400:LEU:N	2.43	0.52
1:A:156:HIS:O	1:A:157:GLY:O	2.28	0.52
3:D:1462:LEU:C	3:D:1464:GLU:N	2.63	0.52
3:D:805:ARG:O	3:D:808:VAL:N	2.43	0.52
2:C:1000:MET:O	2:C:1001:VAL:C	2.48	0.52
2:C:751:PRO:C	2:C:753:ASP:H	2.13	0.52
2:C:780:GLU:O	2:C:782:ALA:N	2.43	0.52
3:D:1466:VAL:O	3:D:1467:ILE:C	2.48	0.52
3:D:287:VAL:O	3:D:288:ASP:C	2.48	0.52
3:D:524:ALA:O	3:D:525:TYR:C	2.46	0.52
1:B:37:GLY:O	1:B:39:PRO:N	2.43	0.52
2:C:349:ALA:C	2:C:351:LEU:N	2.62	0.52
2:C:684:PHE:O	2:C:686:ASP:N	2.37	0.52
2:C:82:GLU:C	2:C:84:ARG:N	2.63	0.52
3:D:546:GLY:C	3:D:548:LEU:N	2.62	0.52
2:C:634:GLY:O	2:C:635:THR:C	2.48	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1336:LEU:O	3:D:1337:GLU:C	2.48	0.51
3:D:728:PRO:O	3:D:729:LEU:C	2.48	0.51
1:A:164:ALA:O	1:A:165:ILE:C	2.48	0.51
2:C:16:PRO:O	2:C:18:LEU:N	2.42	0.51
2:C:566:THR:C	2:C:568:ALA:N	2.64	0.51
2:C:1062:GLY:O	2:C:1066:ALA:N	2.38	0.51
3:D:729:LEU:O	3:D:730:TYR:C	2.48	0.51
2:C:948:GLU:O	2:C:950:LEU:N	2.44	0.51
3:D:136:ASP:O	3:D:137:PRO:O	2.29	0.51
3:D:736:GLY:O	3:D:737:ALA:C	2.47	0.51
3:D:745:ARG:O	3:D:747:LEU:N	2.44	0.51
2:C:582:GLY:C	2:C:584:GLU:N	2.64	0.51
3:D:379:VAL:O	3:D:382:ALA:N	2.42	0.51
3:D:474:SER:O	3:D:477:ASN:O	2.28	0.51
2:C:563:ASN:C	2:C:565:GLN:N	2.64	0.51
1:B:225:PHE:O	1:B:226:ALA:O	2.29	0.51
3:D:1367:HIS:O	3:D:1368:ILE:C	2.49	0.51
3:D:371:GLU:C	3:D:373:LYS:N	2.64	0.51
3:D:399:ALA:O	3:D:400:LEU:C	2.49	0.51
3:D:597:GLU:O	3:D:600:GLY:N	2.44	0.51
3:D:792:ASP:C	3:D:794:ALA:N	2.61	0.51
3:D:916:TYR:H	3:D:924:VAL:H	1.58	0.51
2:C:964:LYS:O	2:C:965:GLU:C	2.49	0.51
3:D:364:PRO:O	3:D:365:PHE:C	2.48	0.51
3:D:366:LEU:O	3:D:367:LEU:C	2.49	0.51
3:D:929:ALA:O	3:D:932:VAL:N	2.44	0.51
3:D:124:GLU:O	3:D:127:LEU:N	2.36	0.51
3:D:444:ALA:C	3:D:446:ASN:H	2.14	0.51
3:D:637:ALA:O	3:D:639:LEU:N	2.43	0.51
2:C:1037:VAL:O	2:C:1041:GLU:N	2.30	0.50
3:D:231:PRO:C	3:D:233:LEU:N	2.65	0.50
3:D:396:VAL:O	3:D:397:TRP:C	2.50	0.50
2:C:582:GLY:O	2:C:583:LEU:C	2.50	0.50
3:D:617:LYS:O	3:D:618:ASN:C	2.49	0.50
3:D:491:SER:O	3:D:493:ASP:N	2.44	0.50
2:C:1044:GLY:C	2:C:1046:ALA:H	2.14	0.50
3:D:148:GLU:O	3:D:150:ARG:N	2.44	0.50
2:C:834:GLN:O	2:C:835:VAL:C	2.49	0.50
2:C:888:THR:O	2:C:990:GLY:HA3	2.11	0.50
3:D:259:ARG:C	3:D:261:ASN:H	2.14	0.50
3:D:318:GLY:O	3:D:321:GLY:N	2.44	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:559:LEU:C	3:D:561:ALA:N	2.62	0.50
1:A:127:LEU:O	1:A:128:HIS:C	2.50	0.50
2:C:402:SER:O	2:C:403:SER:C	2.50	0.50
3:D:440:LEU:O	3:D:441:VAL:C	2.50	0.50
3:D:461:SER:O	3:D:463:PHE:N	2.43	0.50
3:D:777:LEU:O	3:D:780:PHE:N	2.45	0.50
3:D:397:TRP:O	3:D:399:ALA:N	2.45	0.50
3:D:849:ILE:O	3:D:850:GLU:C	2.48	0.50
1:B:152:PRO:C	1:B:154:GLU:H	2.15	0.50
3:D:590:LEU:O	3:D:591:PHE:C	2.49	0.50
3:D:715:ALA:C	3:D:717:PHE:N	2.64	0.50
3:D:483:SER:O	3:D:485:GLU:N	2.45	0.50
3:D:916:TYR:N	3:D:924:VAL:H	2.10	0.50
2:C:1060:ILE:O	2:C:1061:GLU:C	2.51	0.49
3:D:439:PRO:O	3:D:440:LEU:C	2.51	0.49
3:D:632:GLY:O	3:D:633:MET:C	2.51	0.49
3:D:1348:LEU:O	3:D:1349:VAL:C	2.51	0.49
3:D:1449:GLU:O	3:D:1450:ALA:C	2.49	0.49
2:C:515:ALA:O	2:C:522:VAL:O	2.30	0.49
2:C:653:ASP:O	2:C:654:LEU:C	2.51	0.49
2:C:556:ASN:O	2:C:558:ALA:N	2.46	0.49
2:C:697:ARG:O	2:C:698:ASP:C	2.51	0.49
3:D:219:GLU:C	3:D:221:MET:N	2.65	0.49
3:D:557:GLU:O	3:D:558:ALA:C	2.51	0.49
3:D:730:TYR:O	3:D:733:ALA:N	2.45	0.49
3:D:811:ALA:C	3:D:813:GLU:H	2.14	0.49
1:A:219:LYS:O	1:A:222:LEU:N	2.45	0.49
1:B:116:PRO:O	1:B:117:SER:O	2.31	0.49
2:C:389:SER:O	2:C:391:LEU:N	2.46	0.49
2:C:572:ILE:C	2:C:574:ALA:H	2.15	0.49
2:C:766:GLU:O	2:C:767:PRO:O	2.29	0.49
3:D:1336:LEU:O	3:D:1339:LYS:N	2.46	0.49
3:D:1466:VAL:O	3:D:1468:LEU:N	2.45	0.49
3:D:418:HIS:O	3:D:419:ARG:C	2.51	0.49
2:C:1088:LEU:O	2:C:1091:GLU:N	2.46	0.49
2:C:543:ASN:O	2:C:545:ASN:N	2.45	0.49
2:C:694:LEU:O	2:C:698:ASP:N	2.45	0.49
2:C:1043:TYR:C	2:C:1045:ALA:N	2.66	0.49
3:D:154:THR:O	3:D:157:GLU:N	2.44	0.49
3:D:808:VAL:O	3:D:810:VAL:N	2.46	0.49
3:D:487:LEU:C	3:D:489:LYS:N	2.65	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:254:LEU:C	2:C:256:TYR:N	2.67	0.49
2:C:282:GLY:O	2:C:283:VAL:O	2.31	0.49
2:C:572:ILE:O	2:C:574:ALA:N	2.37	0.49
2:C:89:THR:O	2:C:90:TYR:C	2.50	0.48
2:C:92:ALA:O	2:C:93:PRO:C	2.51	0.48
3:D:813:GLU:O	3:D:814:ILE:C	2.51	0.48
2:C:831:ARG:O	2:C:832:LYS:O	2.31	0.48
3:D:480:SER:O	3:D:481:PRO:C	2.51	0.48
1:B:41:ARG:C	1:B:43:ILE:H	2.16	0.48
2:C:1035:MET:O	2:C:1036:GLU:C	2.50	0.48
2:C:731:GLU:O	2:C:733:ALA:N	2.46	0.48
3:D:399:ALA:C	3:D:401:GLU:N	2.65	0.48
3:D:811:ALA:C	3:D:813:GLU:N	2.66	0.48
3:D:880:VAL:O	3:D:881:HIS:C	2.52	0.48
2:C:1044:GLY:O	2:C:1046:ALA:N	2.42	0.48
3:D:934:ALA:O	3:D:935:ALA:O	2.31	0.48
2:C:787:ASP:O	2:C:789:SER:N	2.46	0.48
2:C:831:ARG:O	2:C:832:LYS:C	2.52	0.48
3:D:569:LEU:O	3:D:587:GLY:N	2.42	0.48
3:D:1434:TRP:O	3:D:1435:LEU:C	2.51	0.48
3:D:1444:THR:O	3:D:1445:HIS:C	2.52	0.48
3:D:642:ALA:O	3:D:646:TYR:N	2.45	0.48
2:C:462:ASP:O	2:C:463:ALA:C	2.51	0.48
3:D:480:SER:C	3:D:482:ALA:N	2.65	0.48
3:D:493:ASP:C	3:D:495:ILE:N	2.62	0.48
3:D:680:LEU:C	3:D:682:GLN:H	2.17	0.48
3:D:84:ILE:C	3:D:86:ARG:H	2.17	0.48
2:C:448:ASN:O	2:C:449:ILE:C	2.51	0.48
3:D:1347:TYR:O	3:D:1348:LEU:C	2.52	0.48
1:B:105:GLY:HA2	1:B:135:GLY:HA2	1.96	0.48
3:D:1445:HIS:O	3:D:1446:VAL:C	2.51	0.48
3:D:461:SER:O	3:D:462:SER:C	2.50	0.48
2:C:1066:ALA:O	2:C:1069:ALA:N	2.47	0.48
2:C:1083:GLU:O	2:C:1085:PHE:N	2.47	0.48
2:C:775:ARG:O	2:C:778:PHE:C	2.52	0.48
3:D:1424:VAL:O	3:D:1425:THR:O	2.32	0.48
3:D:592:ALA:O	3:D:596:GLY:N	2.46	0.48
2:C:1043:TYR:O	2:C:1045:ALA:N	2.45	0.47
3:D:605:ALA:C	3:D:607:GLU:N	2.66	0.47
2:C:168:ARG:O	2:C:264:PRO:O	2.32	0.47
2:C:775:ARG:C	2:C:778:PHE:N	2.59	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:948:GLU:C	2:C:950:LEU:H	2.16	0.47
3:D:792:ASP:C	3:D:794:ALA:H	2.17	0.47
3:D:900:PRO:C	3:D:902:THR:H	2.15	0.47
1:B:114:PHE:O	1:B:115:THR:C	2.52	0.47
2:C:961:GLU:C	2:C:963:LEU:N	2.66	0.47
3:D:1369:GLU:O	3:D:1370:ILE:C	2.52	0.47
3:D:557:GLU:O	3:D:560:LEU:N	2.47	0.47
2:C:135:VAL:O	2:C:137:VAL:N	2.47	0.47
3:D:1462:LEU:O	3:D:1464:GLU:N	2.47	0.47
2:C:1064:ASN:O	2:C:1065:ALA:C	2.52	0.47
3:D:318:GLY:HA2	3:D:321:GLY:H	1.79	0.47
3:D:430:VAL:O	3:D:431:GLU:O	2.32	0.47
1:B:152:PRO:C	1:B:154:GLU:N	2.67	0.47
3:D:112:ILE:C	3:D:114:THR:N	2.68	0.47
3:D:605:ALA:O	3:D:606:GLN:C	2.52	0.47
3:D:680:LEU:C	3:D:682:GLN:N	2.68	0.47
3:D:371:GLU:O	3:D:373:LYS:N	2.48	0.47
3:D:56:TYR:O	3:D:57:GLU:O	2.33	0.47
3:D:596:GLY:O	3:D:597:GLU:C	2.53	0.47
3:D:787:ARG:C	3:D:790:GLY:H	2.18	0.47
2:C:448:ASN:O	2:C:449:ILE:O	2.33	0.47
3:D:21:TRP:C	3:D:23:TYR:H	2.17	0.47
3:D:431:GLU:C	3:D:432:GLY:O	2.53	0.47
3:D:642:ALA:O	3:D:645:TYR:N	2.47	0.47
3:D:648:PHE:O	3:D:651:SER:N	2.48	0.47
3:D:783:SER:O	3:D:784:HIS:C	2.50	0.47
2:C:545:ASN:O	2:C:547:ILE:N	2.47	0.47
2:C:614:ARG:O	2:C:615:TYR:O	2.33	0.47
3:D:21:TRP:O	3:D:23:TYR:N	2.48	0.47
3:D:318:GLY:C	3:D:320:GLN:N	2.66	0.47
3:D:368:LYS:O	3:D:369:LYS:C	2.52	0.47
3:D:557:GLU:O	3:D:559:LEU:N	2.48	0.47
3:D:715:ALA:C	3:D:717:PHE:H	2.18	0.47
1:A:229:GLU:O	1:A:230:ALA:C	2.53	0.46
2:C:891:GLY:O	2:C:893:ALA:N	2.48	0.46
3:D:773:GLY:O	3:D:774:LEU:C	2.53	0.46
3:D:900:PRO:O	3:D:901:LEU:C	2.53	0.46
1:A:219:LYS:O	1:A:220:GLU:C	2.52	0.46
2:C:1062:GLY:O	2:C:1065:ALA:N	2.48	0.46
3:D:347:LYS:O	3:D:348:LEU:C	2.53	0.46
3:D:805:ARG:O	3:D:807:LEU:N	2.48	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1261:GLU:O	3:D:1265:ALA:CA	2.63	0.46
2:C:836:GLY:N	2:C:849:VAL:O	2.49	0.46
3:D:1434:TRP:O	3:D:1438:ALA:N	2.45	0.46
3:D:635:LYS:O	3:D:637:ALA:N	2.49	0.46
3:D:736:GLY:O	3:D:737:ALA:O	2.34	0.46
3:D:941:PRO:O	3:D:942:GLY:C	2.52	0.46
3:D:1258:ARG:O	3:D:1259:VAL:C	2.54	0.46
3:D:1369:GLU:O	3:D:1372:VAL:N	2.48	0.46
3:D:559:LEU:O	3:D:560:LEU:C	2.52	0.46
2:C:733:ALA:O	2:C:734:LEU:C	2.52	0.46
3:D:593:ARG:O	3:D:594:ILE:C	2.53	0.46
2:C:1100:GLN:N	3:D:9:ARG:O	2.49	0.46
2:C:601:GLY:HA3	2:C:615:TYR:CA	2.46	0.46
3:D:887:ALA:C	3:D:890:GLY:N	2.65	0.46
1:B:112:GLY:C	1:B:114:PHE:N	2.66	0.46
2:C:730:SER:O	2:C:733:ALA:N	2.36	0.46
3:D:148:GLU:O	3:D:149:LYS:C	2.54	0.46
2:C:13:ILE:C	2:C:14:PRO:O	2.54	0.45
3:D:45:PHE:O	3:D:47:GLU:N	2.49	0.45
3:D:745:ARG:O	3:D:746:GLN:C	2.54	0.45
3:D:906:ARG:O	3:D:908:GLY:N	2.44	0.45
1:B:172:SER:O	1:B:173:PRO:C	2.54	0.45
3:D:1451:ALA:O	3:D:1452:ILE:C	2.54	0.45
2:C:917:LEU:O	2:C:921:ALA:N	2.49	0.45
1:A:110:ARG:O	1:A:111:ALA:C	2.55	0.45
2:C:1086:ARG:O	2:C:1087:VAL:C	2.55	0.45
3:D:628:PHE:O	3:D:629:LEU:C	2.55	0.45
2:C:972:VAL:O	2:C:987:ILE:N	2.43	0.45
3:D:625:TYR:O	3:D:626:GLN:C	2.54	0.45
3:D:702:ILE:O	3:D:704:LEU:N	2.50	0.45
3:D:777:LEU:O	3:D:779:TYR:N	2.50	0.45
2:C:545:ASN:C	2:C:547:ILE:N	2.69	0.45
2:C:669:GLY:HA3	2:C:994:ILE:O	2.16	0.45
2:C:727:PRO:C	2:C:729:LEU:H	2.20	0.45
3:D:63:TYR:C	3:D:65:ARG:N	2.69	0.45
3:D:807:LEU:O	3:D:808:VAL:C	2.54	0.45
2:C:976:ASP:O	2:C:978:ARG:N	2.50	0.45
3:D:284:GLN:C	3:D:286:ALA:N	2.69	0.45
3:D:641:ASP:O	3:D:643:LEU:N	2.49	0.45
1:B:211:LEU:O	1:B:212:ASN:C	2.55	0.45
2:C:566:THR:O	2:C:568:ALA:N	2.49	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:117:ASP:O	3:D:118:LEU:C	2.54	0.45
3:D:1260:ILE:O	3:D:1261:GLU:C	2.54	0.45
3:D:1399:ASP:C	3:D:1401:GLU:N	2.70	0.45
3:D:263:LEU:C	3:D:265:LYS:N	2.70	0.45
3:D:394:ASP:O	3:D:395:GLU:C	2.55	0.45
3:D:493:ASP:O	3:D:495:ILE:N	2.50	0.45
3:D:820:ASP:C	3:D:822:GLY:N	2.69	0.45
1:A:34:VAL:C	1:A:36:LEU:N	2.68	0.45
2:C:733:ALA:C	2:C:735:ARG:N	2.69	0.45
2:C:1041:GLU:O	2:C:1043:TYR:O	2.35	0.44
3:D:1369:GLU:O	3:D:1371:VAL:N	2.50	0.44
3:D:1446:VAL:O	3:D:1447:LEU:C	2.55	0.44
2:C:397:GLU:O	2:C:398:THR:C	2.55	0.44
2:C:401:LEU:O	2:C:404:LEU:N	2.49	0.44
3:D:114:THR:C	3:D:116:LEU:N	2.71	0.44
3:D:259:ARG:C	3:D:261:ASN:N	2.71	0.44
1:A:26:GLU:O	1:A:193:ASP:O	2.35	0.44
1:B:83:LYS:C	1:B:85:LEU:N	2.70	0.44
3:D:1345:GLU:O	3:D:1346:ARG:C	2.55	0.44
3:D:317:SER:O	3:D:318:GLY:C	2.56	0.44
3:D:438:HIS:O	3:D:439:PRO:O	2.35	0.44
1:A:217:ILE:O	1:A:218:LEU:C	2.54	0.44
1:B:105:GLY:HA2	1:B:136:GLY:H	1.82	0.44
2:C:672:VAL:O	2:C:992:MET:N	2.46	0.44
3:D:1462:LEU:O	3:D:1463:LYS:C	2.55	0.44
3:D:535:PRO:O	3:D:536:ILE:C	2.56	0.44
3:D:913:CYS:O	3:D:915:GLY:N	2.51	0.44
2:C:1034:GLU:O	2:C:1037:VAL:N	2.50	0.44
2:C:564:MET:C	2:C:566:THR:N	2.69	0.44
3:D:850:GLU:O	3:D:854:TYR:N	2.40	0.44
3:D:889:ALA:O	3:D:890:GLY:O	2.34	0.44
1:B:219:LYS:O	1:B:220:GLU:C	2.56	0.44
2:C:694:LEU:O	2:C:699:PHE:N	2.47	0.44
3:D:546:GLY:C	3:D:548:LEU:H	2.20	0.44
1:B:105:GLY:HA2	1:B:135:GLY:CA	2.47	0.44
1:B:32:PHE:O	1:B:33:GLY:C	2.55	0.44
2:C:427:VAL:O	2:C:428:ARG:C	2.55	0.44
3:D:1437:ALA:O	3:D:1438:ALA:O	2.35	0.44
2:C:1054:THR:C	2:C:1056:LYS:N	2.71	0.44
3:D:1440:PHE:O	3:D:1441:GLN:C	2.56	0.44
3:D:473:LEU:O	3:D:474:SER:C	2.56	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:715:ALA:O	3:D:717:PHE:N	2.51	0.44
3:D:729:LEU:O	3:D:730:TYR:O	2.36	0.44
3:D:864:ALA:O	3:D:866:GLY:N	2.51	0.44
1:A:122:ILE:O	1:A:123:MET:C	2.56	0.43
1:A:109:VAL:N	1:A:130:ALA:O	2.44	0.43
2:C:684:PHE:C	2:C:686:ASP:H	2.20	0.43
3:D:314:ASP:O	3:D:317:SER:N	2.51	0.43
3:D:850:GLU:C	3:D:852:GLY:H	2.20	0.43
2:C:1070:ILE:C	2:C:1072:LYS:H	2.21	0.43
2:C:401:LEU:O	2:C:402:SER:C	2.56	0.43
2:C:691:SER:C	2:C:693:GLU:N	2.71	0.43
3:D:22:SER:O	3:D:90:MET:O	2.36	0.43
3:D:659:GLY:O	3:D:660:ILE:C	2.56	0.43
2:C:731:GLU:O	2:C:732:ALA:C	2.55	0.43
1:A:202:ASP:O	1:A:204:SER:N	2.52	0.43
2:C:583:LEU:O	2:C:586:ARG:N	2.52	0.43
2:C:845:ASN:O	2:C:846:LYS:O	2.37	0.43
3:D:627:ALA:O	3:D:628:PHE:C	2.57	0.43
2:C:891:GLY:HA3	2:C:991:GLN:H	1.84	0.43
3:D:670:GLN:O	3:D:674:GLU:N	2.50	0.43
3:D:941:PRO:C	3:D:943:THR:H	2.21	0.43
1:A:44:LEU:C	1:A:46:SER:H	2.22	0.43
1:B:211:LEU:O	1:B:214:ALA:N	2.51	0.43
2:C:1092:LEU:O	2:C:1095:LEU:N	2.52	0.43
3:D:112:ILE:O	3:D:114:THR:N	2.50	0.43
3:D:119:SER:O	3:D:120:ALA:C	2.57	0.43
3:D:544:SER:O	3:D:547:ARG:N	2.52	0.43
2:C:1112:PHE:O	2:C:1114:GLY:N	2.52	0.43
2:C:229:MET:O	2:C:230:ARG:O	2.37	0.43
3:D:444:ALA:O	3:D:446:ASN:N	2.51	0.43
1:A:34:VAL:C	1:A:36:LEU:H	2.22	0.43
2:C:404:LEU:O	2:C:405:ARG:C	2.54	0.43
3:D:1474:ALA:O	3:D:1477:GLY:N	2.48	0.43
3:D:289:ALA:O	3:D:290:VAL:C	2.57	0.43
3:D:362:PHE:O	3:D:364:PRO:N	2.52	0.43
3:D:341:VAL:N	3:D:435:ILE:O	2.51	0.43
3:D:624:VAL:O	3:D:625:TYR:C	2.56	0.43
2:C:545:ASN:C	2:C:547:ILE:H	2.21	0.43
2:C:891:GLY:O	2:C:894:GLY:N	2.52	0.43
1:A:104:GLU:O	1:A:105:GLY:C	2.57	0.42
3:D:444:ALA:C	3:D:446:ASN:N	2.70	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:645:TYR:O	3:D:646:TYR:C	2.57	0.42
2:C:1037:VAL:O	2:C:1038:TRP:C	2.55	0.42
3:D:1351:GLU:O	3:D:1352:ILE:C	2.56	0.42
3:D:167:ALA:C	3:D:169:ALA:N	2.71	0.42
3:D:175:LYS:O	3:D:177:LEU:N	2.53	0.42
3:D:557:GLU:C	3:D:559:LEU:N	2.72	0.42
3:D:724:TYR:C	3:D:726:PHE:H	2.21	0.42
3:D:526:GLU:C	3:D:528:GLY:N	2.73	0.42
2:C:1040:LEU:O	2:C:1043:TYR:O	2.37	0.42
2:C:914:ILE:O	2:C:915:LYS:C	2.57	0.42
2:C:775:ARG:C	2:C:777:ILE:H	2.21	0.42
3:D:101:HIS:O	3:D:102:ILE:C	2.58	0.42
3:D:252:LEU:O	3:D:253:TYR:C	2.57	0.42
3:D:917:ASP:O	3:D:919:SER:N	2.51	0.42
1:A:164:ALA:O	1:A:166:PRO:N	2.52	0.42
1:A:76:VAL:O	1:A:77:GLU:C	2.56	0.42
1:A:82:LEU:O	1:A:83:LYS:C	2.58	0.42
2:C:1058:ASP:O	2:C:1059:ASP:C	2.58	0.42
2:C:276:LYS:C	2:C:278:GLU:H	2.23	0.42
2:C:365:ASP:C	2:C:367:LEU:H	2.22	0.42
3:D:252:LEU:O	3:D:254:ARG:N	2.52	0.42
1:B:224:TYR:C	1:B:226:ALA:N	2.71	0.42
2:C:1082:PRO:O	2:C:1083:GLU:O	2.38	0.42
3:D:247:SER:C	3:D:249:LEU:H	2.23	0.42
3:D:756:LYS:N	3:D:760:GLU:O	2.36	0.42
3:D:811:ALA:O	3:D:813:GLU:N	2.52	0.42
3:D:93:ILE:O	3:D:95:LEU:N	2.52	0.42
2:C:16:PRO:C	2:C:18:LEU:N	2.71	0.42
2:C:233:GLU:C	2:C:235:MET:H	2.22	0.42
2:C:943:VAL:O	2:C:946:ARG:N	2.50	0.42
3:D:102:ILE:C	3:D:104:PHE:N	2.72	0.42
3:D:1262:LEU:O	3:D:1264:GLU:N	2.51	0.42
3:D:568:ASP:O	3:D:570:GLN:N	2.41	0.42
3:D:717:PHE:O	3:D:720:PHE:N	2.53	0.42
3:D:814:ILE:CA	3:D:908:GLY:HA2	2.50	0.42
1:A:206:THR:O	1:A:207:PRO:C	2.58	0.42
2:C:259:GLY:O	2:C:260:LEU:O	2.37	0.42
3:D:1372:VAL:O	3:D:1373:ARG:C	2.58	0.42
3:D:616:GLU:O	3:D:617:LYS:O	2.38	0.42
3:D:640:LEU:O	3:D:641:ASP:O	2.37	0.42
3:D:845:LYS:O	3:D:846:ARG:C	2.57	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:1342:GLU:O	3:D:1343:ALA:C	2.58	0.42
3:D:1344:VAL:O	3:D:1347:TYR:N	2.52	0.42
3:D:208:VAL:C	3:D:210:ALA:N	2.72	0.42
3:D:378:ASN:O	3:D:379:VAL:C	2.59	0.42
3:D:528:GLY:O	3:D:532:LEU:O	2.38	0.42
3:D:610:GLN:O	3:D:612:ASP:N	2.53	0.42
1:A:75:VAL:O	1:A:76:VAL:C	2.58	0.41
2:C:696:LYS:C	2:C:698:ASP:H	2.23	0.41
2:C:731:GLU:C	2:C:733:ALA:H	2.21	0.41
3:D:1395:LEU:O	3:D:1396:GLU:C	2.58	0.41
3:D:522:LEU:C	3:D:524:ALA:N	2.72	0.41
2:C:556:ASN:C	2:C:558:ALA:N	2.73	0.41
2:C:873:PRO:O	2:C:874:LEU:C	2.59	0.41
3:D:1366:LYS:O	3:D:1367:HIS:C	2.57	0.41
3:D:286:ALA:O	3:D:287:VAL:C	2.58	0.41
3:D:343:GLY:O	3:D:344:PRO:C	2.58	0.41
3:D:480:SER:O	3:D:482:ALA:N	2.53	0.41
3:D:806:LYS:O	3:D:807:LEU:C	2.58	0.41
1:A:34:VAL:O	1:A:36:LEU:N	2.54	0.41
1:B:128:HIS:O	1:B:130:ALA:N	2.53	0.41
1:B:215:VAL:O	1:B:219:LYS:N	2.41	0.41
2:C:583:LEU:O	2:C:585:GLU:N	2.53	0.41
2:C:957:LYS:O	2:C:958:SER:O	2.39	0.41
3:D:84:ILE:C	3:D:86:ARG:N	2.70	0.41
2:C:434:HIS:O	2:C:435:TYR:C	2.57	0.41
2:C:730:SER:O	2:C:732:ALA:N	2.53	0.41
2:C:937:ASP:O	2:C:938:LYS:C	2.59	0.41
3:D:354:PRO:O	3:D:355:LYS:C	2.58	0.41
1:B:207:PRO:O	1:B:208:LEU:C	2.59	0.41
2:C:56:GLU:O	2:C:57:GLY:C	2.59	0.41
2:C:963:LEU:O	2:C:966:LEU:N	2.54	0.41
3:D:1472:ILE:C	3:D:1474:ALA:H	2.24	0.41
3:D:808:VAL:O	3:D:809:ASP:C	2.57	0.41
2:C:1070:ILE:O	2:C:1071:ILE:C	2.59	0.41
3:D:1347:TYR:O	3:D:1348:LEU:O	2.38	0.41
3:D:1428:ALA:O	3:D:1429:LEU:C	2.58	0.41
3:D:347:LYS:O	3:D:348:LEU:O	2.38	0.41
3:D:659:GLY:O	3:D:662:ASP:N	2.41	0.41
1:B:104:GLU:O	1:B:136:GLY:O	2.39	0.41
2:C:1062:GLY:O	2:C:1063:ARG:C	2.58	0.41
2:C:889:HIS:O	2:C:890:LEU:C	2.59	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:313:THR:O	3:D:314:ASP:C	2.59	0.41
1:B:215:VAL:O	1:B:216:ALA:C	2.59	0.41
2:C:444:PRO:O	2:C:445:GLU:C	2.59	0.41
2:C:586:ARG:O	2:C:587:VAL:C	2.57	0.41
3:D:25:GLU:C	3:D:27:GLU:H	2.19	0.41
3:D:345:GLN:O	3:D:346:LEU:C	2.59	0.41
3:D:529:GLU:C	3:D:531:ALA:H	2.23	0.41
3:D:878:GLU:O	3:D:879:ASP:C	2.59	0.41
3:D:882:PHE:O	3:D:883:LEU:C	2.57	0.41
3:D:933:VAL:O	3:D:934:ALA:O	2.39	0.41
2:C:985:GLY:O	2:C:986:PRO:C	2.58	0.41
3:D:1349:VAL:O	3:D:1352:ILE:N	2.54	0.41
3:D:847:SER:O	3:D:850:GLU:N	2.54	0.41
1:A:224:TYR:C	1:A:226:ALA:H	2.24	0.41
2:C:938:LYS:O	2:C:939:ARG:C	2.60	0.41
3:D:804:THR:O	3:D:805:ARG:O	2.39	0.41
3:D:93:ILE:O	3:D:94:GLU:C	2.59	0.41
2:C:883:GLY:O	2:C:886:LEU:N	2.53	0.41
3:D:1350:ASP:O	3:D:1353:GLN:N	2.54	0.41
3:D:460:LEU:O	3:D:461:SER:C	2.59	0.41
3:D:493:ASP:O	3:D:496:LEU:N	2.55	0.41
3:D:546:GLY:O	3:D:547:ARG:C	2.60	0.41
2:C:558:ALA:O	2:C:559:LEU:C	2.59	0.40
2:C:943:VAL:C	2:C:945:ALA:N	2.72	0.40
3:D:280:LYS:C	3:D:282:MET:N	2.75	0.40
3:D:559:LEU:O	3:D:562:VAL:N	2.54	0.40
2:C:560:MET:O	2:C:563:ASN:O	2.40	0.40
3:D:219:GLU:C	3:D:221:MET:H	2.23	0.40
3:D:889:ALA:O	3:D:890:GLY:C	2.59	0.40
1:A:171:PHE:O	1:A:173:PRO:N	2.55	0.40
1:A:40:LEU:O	1:A:41:ARG:C	2.60	0.40
1:B:58:ILE:O	1:B:59:GLU:C	2.59	0.40
1:B:83:LYS:O	1:B:84:GLU:C	2.60	0.40
2:C:1083:GLU:O	2:C:1084:SER:C	2.60	0.40
2:C:15:LEU:O	2:C:16:PRO:O	2.39	0.40
2:C:854:PRO:C	2:C:856:GLU:H	2.25	0.40
3:D:1453:ALA:O	3:D:1454:GLY:C	2.59	0.40
3:D:645:TYR:O	3:D:647:GLY:N	2.54	0.40
1:B:219:LYS:O	1:B:222:LEU:N	2.50	0.40
2:C:573:ARG:O	2:C:574:ALA:O	2.39	0.40
2:C:696:LYS:C	2:C:698:ASP:N	2.75	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:D:497:GLY:O	3:D:499:TYR:N	2.54	0.40
3:D:845:LYS:O	3:D:846:ARG:O	2.38	0.40
3:D:397:TRP:C	3:D:399:ALA:N	2.73	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	228/314 (73%)	138 (60%)	48 (21%)	42 (18%)	0	2
1	B	223/314 (71%)	133 (60%)	58 (26%)	32 (14%)	0	4
2	C	1112/1119 (99%)	640 (58%)	275 (25%)	197 (18%)	0	3
3	D	1192/1233 (97%)	536 (45%)	339 (28%)	317 (27%)	0	0
All	All	2755/2980 (92%)	1447 (52%)	720 (26%)	588 (21%)	0	2

All (588) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	7	LYS
1	A	45	LEU
1	A	59	GLU
1	A	74	ASP
1	A	75	VAL
1	A	90	LEU
1	A	94	MET
1	A	111	ALA
1	A	118	ALA
1	A	138	LEU
1	A	188	GLN
1	A	191	ASP

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
1	A	198	ARG
1	A	203	GLY
1	A	226	ALA
1	A	230	ALA
1	B	36	LEU
1	B	38	ASN
1	B	63	HIS
1	B	113	ASP
1	B	116	PRO
1	B	117	SER
1	B	133	GLU
1	B	173	PRO
1	B	226	ALA
2	C	19	THR
2	C	42	VAL
2	C	55	GLU
2	C	61	LYS
2	C	63	GLY
2	C	111	ASP
2	C	124	ASP
2	C	132	ALA
2	C	183	THR
2	C	230	ARG
2	C	258	PHE
2	C	260	LEU
2	C	261	LEU
2	C	264	PRO
2	C	266	ARG
2	C	283	VAL
2	C	293	PHE
2	C	300	ASP
2	C	309	TYR
2	C	315	ALA
2	C	316	GLY
2	C	394	PHE
2	C	395	LYS
2	C	422	ARG
2	C	434	HIS
2	C	449	ILE
2	C	510	THR
2	C	574	ALA
2	C	615	TYR

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	C	619	ARG
2	C	635	THR
2	C	636	ALA
2	C	656	ALA
2	C	680	ASP
2	C	686	ASP
2	C	731	GLU
2	C	735	ARG
2	C	767	PRO
2	C	768	SER
2	C	770	GLU
2	C	775	ARG
2	C	780	GLU
2	C	788	THR
2	C	790	LEU
2	C	796	GLU
2	C	800	VAL
2	C	801	VAL
2	C	816	LYS
2	C	832	LYS
2	C	972	VAL
2	C	1001	VAL
2	C	1045	ALA
2	C	1046	ALA
2	C	1055	ILE
2	C	1059	ASP
2	C	1069	ALA
2	C	1076	VAL
2	C	1077	PRO
2	C	1078	GLU
2	C	1083	GLU
2	C	1084	SER
2	C	1095	LEU
2	C	1113	GLU
3	D	23	TYR
3	D	25	GLU
3	D	29	PRO
3	D	32	ILE
3	D	34	TYR
3	D	40	GLU
3	D	41	ARG
3	D	57	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	82	ARG
3	D	85	VAL
3	D	102	ILE
3	D	103	TRP
3	D	120	ALA
3	D	130	ASN
3	D	137	PRO
3	D	146	PRO
3	D	147	VAL
3	D	149	LYS
3	D	158	TYR
3	D	164	ARG
3	D	208	VAL
3	D	212	LEU
3	D	219	GLU
3	D	232	ASP
3	D	239	VAL
3	D	254	ARG
3	D	295	ARG
3	D	310	ARG
3	D	322	ARG
3	D	325	GLN
3	D	348	LEU
3	D	349	HIS
3	D	356	ARG
3	D	358	ALA
3	D	364	PRO
3	D	365	PHE
3	D	367	LEU
3	D	374	ALA
3	D	379	VAL
3	D	395	GLU
3	D	396	VAL
3	D	421	GLY
3	D	426	GLN
3	D	431	GLU
3	D	439	PRO
3	D	440	LEU
3	D	442	CYS
3	D	444	ALA
3	D	468	ALA
3	D	492	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	493	ASP
3	D	495	ILE
3	D	496	LEU
3	D	504	VAL
3	D	514	ALA
3	D	532	LEU
3	D	533	ASN
3	D	536	ILE
3	D	584	THR
3	D	606	GLN
3	D	611	MET
3	D	613	VAL
3	D	617	LYS
3	D	619	SER
3	D	624	VAL
3	D	641	ASP
3	D	645	TYR
3	D	648	PHE
3	D	651	SER
3	D	655	GLY
3	D	660	ILE
3	D	713	THR
3	D	730	TYR
3	D	731	VAL
3	D	737	ALA
3	D	742	GLN
3	D	743	GLN
3	D	799	ASP
3	D	800	SER
3	D	802	TYR
3	D	805	ARG
3	D	808	VAL
3	D	846	ARG
3	D	861	GLU
3	D	865	LEU
3	D	890	GLY
3	D	901	LEU
3	D	903	CYS
3	D	917	ASP
3	D	933	VAL
3	D	936	GLU
3	D	943	THR

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	1255	GLY
3	D	1262	LEU
3	D	1271	LYS
3	D	1296	SER
3	D	1313	VAL
3	D	1314	LYS
3	D	1317	ASP
3	D	1327	ARG
3	D	1335	LEU
3	D	1336	LEU
3	D	1339	LYS
3	D	1348	LEU
3	D	1349	VAL
3	D	1377	LYS
3	D	1424	VAL
3	D	1425	THR
3	D	1427	SER
3	D	1428	ALA
3	D	1438	ALA
3	D	1439	SER
3	D	1441	GLN
3	D	1448	THR
3	D	1450	ALA
3	D	1452	ILE
3	D	1472	ILE
1	A	73	GLU
1	A	105	GLY
1	A	122	ILE
1	A	128	HIS
1	A	152	PRO
1	A	157	GLY
1	A	166	PRO
1	A	199	ILE
1	A	232	LEU
1	B	30	ARG
1	B	37	GLY
1	B	42	ARG
1	B	60	ASP
1	B	105	GLY
1	B	119	ASP
1	B	129	ILE
1	B	204	SER

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	C	7	GLY
2	C	11	GLU
2	C	14	PRO
2	C	18	LEU
2	C	38	LYS
2	C	41	ASN
2	C	66	LEU
2	C	83	CYS
2	C	90	TYR
2	C	148	PHE
2	C	288	ARG
2	C	290	LEU
2	C	336	VAL
2	C	337	GLY
2	C	350	ARG
2	C	390	GLN
2	C	409	ARG
2	C	432	ARG
2	C	433	THR
2	C	435	TYR
2	C	445	GLU
2	C	457	ALA
2	C	465	GLY
2	C	505	GLY
2	C	541	SER
2	C	557	ARG
2	C	572	ILE
2	C	573	ARG
2	C	583	LEU
2	C	584	GLU
2	C	602	GLU
2	C	616	GLU
2	C	654	LEU
2	C	659	PRO
2	C	684	PHE
2	C	685	GLU
2	C	722	ILE
2	C	771	GLU
2	C	774	LEU
2	C	808	ARG
2	C	821	GLU
2	C	867	VAL

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	C	874	LEU
2	C	877	PRO
2	C	883	GLY
2	C	909	ALA
2	C	936	VAL
2	C	977	GLY
2	C	1016	ILE
2	C	1022	GLY
2	C	1048	THR
2	C	1057	SER
2	C	1080	SER
3	D	5	VAL
3	D	26	VAL
3	D	33	ASN
3	D	39	PRO
3	D	58	CYS
3	D	68	PHE
3	D	97	THR
3	D	111	LYS
3	D	136	ASP
3	D	148	GLU
3	D	150	ARG
3	D	155	ASP
3	D	195	ARG
3	D	206	GLU
3	D	213	ASP
3	D	218	PRO
3	D	220	TRP
3	D	235	PRO
3	D	260	ASN
3	D	285	GLU
3	D	293	ASN
3	D	294	GLY
3	D	305	SER
3	D	309	LEU
3	D	318	GLY
3	D	338	SER
3	D	352	GLY
3	D	400	LEU
3	D	432	GLY
3	D	441	VAL
3	D	484	GLY

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	497	GLY
3	D	512	GLY
3	D	538	VAL
3	D	539	ALA
3	D	547	ARG
3	D	565	GLY
3	D	592	ALA
3	D	596	GLY
3	D	607	GLU
3	D	626	GLN
3	D	637	ALA
3	D	728	PRO
3	D	729	LEU
3	D	735	SER
3	D	744	ILE
3	D	778	GLU
3	D	798	ALA
3	D	807	LEU
3	D	814	ILE
3	D	848	ASP
3	D	849	ILE
3	D	870	GLU
3	D	907	TYR
3	D	915	GLY
3	D	930	VAL
3	D	934	ALA
3	D	935	ALA
3	D	938	ILE
3	D	944	GLN
3	D	1265	ALA
3	D	1322	GLY
3	D	1328	GLY
3	D	1332	PRO
3	D	1337	GLU
3	D	1363	LEU
3	D	1367	HIS
3	D	1370	ILE
3	D	1371	VAL
3	D	1372	VAL
3	D	1391	GLU
3	D	1444	THR
3	D	1446	VAL

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	1455	LYS
3	D	1464	GLU
3	D	1465	ASN
3	D	1475	GLY
3	D	1489	GLN
1	A	15	THR
1	A	44	LEU
1	A	204	SER
1	A	209	GLU
1	A	234	PRO
1	B	32	PHE
1	B	61	VAL
1	B	75	VAL
1	B	96	SER
1	B	157	GLY
1	B	193	ASP
2	C	16	PRO
2	C	54	ILE
2	C	58	ASP
2	C	64	LEU
2	C	112	GLU
2	C	144	PRO
2	C	168	ARG
2	C	209	ARG
2	C	271	GLU
2	C	281	LEU
2	C	304	LEU
2	C	370	ALA
2	C	398	THR
2	C	532	MET
2	C	567	GLN
2	C	617	ASP
2	C	683	ASN
2	C	728	HIS
2	C	739	GLU
2	C	781	LYS
2	C	794	PRO
2	C	846	LYS
2	C	857	ASP
2	C	859	PRO
2	C	1058	ASP
2	C	1061	GLU

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
2	C	1063	ARG
2	C	1087	VAL
2	C	1110	ASP
3	D	6	ARG
3	D	7	LYS
3	D	22	SER
3	D	56	TYR
3	D	72	VAL
3	D	108	VAL
3	D	132	TYR
3	D	152	LEU
3	D	153	LEU
3	D	169	ALA
3	D	172	GLU
3	D	175	LYS
3	D	227	PRO
3	D	273	GLU
3	D	332	VAL
3	D	353	LEU
3	D	377	PRO
3	D	391	ASP
3	D	483	SER
3	D	491	SER
3	D	498	LEU
3	D	509	LYS
3	D	556	ASP
3	D	597	GLU
3	D	602	GLU
3	D	605	ALA
3	D	634	GLU
3	D	638	ARG
3	D	642	ALA
3	D	646	TYR
3	D	732	MET
3	D	746	GLN
3	D	793	THR
3	D	806	LYS
3	D	809	ASP
3	D	847	SER
3	D	1277	ILE
3	D	1287	GLU
3	D	1333	HIS

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	1343	ALA
3	D	1366	LYS
3	D	1369	GLU
3	D	1373	ARG
3	D	1406	ARG
3	D	1413	VAL
3	D	1451	ALA
1	A	26	GLU
1	A	126	ASP
1	A	139	TYR
1	A	171	PHE
1	A	223	ASN
1	B	5	LYS
1	B	138	LEU
2	C	39	ARG
2	C	76	PRO
2	C	223	ASP
2	C	224	GLU
2	C	519	GLY
2	C	829	GLN
2	C	878	SER
2	C	891	GLY
2	C	958	SER
2	C	1002	GLU
2	C	1079	PRO
2	C	1099	VAL
3	D	21	TRP
3	D	42	ASP
3	D	69	GLU
3	D	119	SER
3	D	161	ILE
3	D	171	GLN
3	D	193	PRO
3	D	271	ALA
3	D	290	VAL
3	D	296	ARG
3	D	297	GLY
3	D	363	LYS
3	D	372	GLU
3	D	376	ALA
3	D	394	ASP
3	D	580	ARG

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	629	LEU
3	D	636	THR
3	D	639	LEU
3	D	644	LYS
3	D	670	GLN
3	D	724	TYR
3	D	745	ARG
3	D	750	MET
3	D	794	ALA
3	D	804	THR
3	D	810	VAL
3	D	852	GLY
3	D	914	TYR
3	D	1267	ARG
3	D	1307	LYS
3	D	1334	GLN
3	D	1395	LEU
3	D	1410	GLU
3	D	1426	LYS
1	A	165	ILE
1	A	172	SER
1	B	6	LEU
1	B	26	GLU
1	B	35	THR
2	C	91	GLN
2	C	93	PRO
2	C	105	THR
2	C	181	VAL
2	C	220	GLY
2	C	418	LEU
2	C	544	THR
2	C	546	LEU
2	C	895	TYR
2	C	904	PRO
2	C	949	LYS
2	C	1005	MET
2	C	1012	PRO
2	C	1035	MET
2	C	1097	LEU
2	C	1100	GLN
2	C	1106	ASP
2	C	1109	VAL

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>
3	D	110	SER
3	D	141	VAL
3	D	176	GLU
3	D	286	ALA
3	D	289	ALA
3	D	303	PRO
3	D	317	SER
3	D	346	LEU
3	D	389	GLN
3	D	445	PHE
3	D	557	GLU
3	D	558	ALA
3	D	578	LEU
3	D	621	LYS
3	D	627	ALA
3	D	690	GLY
3	D	703	GLN
3	D	825	ASN
3	D	931	GLY
3	D	1272	ALA
3	D	1350	ASP
3	D	1386	ASP
3	D	1449	GLU
1	A	16	GLN
1	A	217	ILE
1	B	227	ASN
2	C	65	VAL
2	C	152	PRO
2	C	292	ARG
2	C	631	SER
2	C	761	PHE
2	C	807	ARG
2	C	835	VAL
2	C	935	GLY
2	C	1062	GLY
2	C	1071	ILE
3	D	98	PRO
3	D	118	LEU
3	D	144	GLY
3	D	494	ILE
3	D	932	VAL
3	D	1263	PHE

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Mol	Chain	Res	Type
3	D	1268	PRO
3	D	1345	GLU
1	A	76	VAL
1	B	115	THR
1	B	135	GLY
2	C	9	ILE
2	C	52	PHE
2	C	417	GLY
2	C	535	SER
2	C	548	PRO
3	D	562	VAL
3	D	1415	VAL
1	A	228	PRO
2	C	1029	GLY
3	D	274	ILE
3	D	518	PRO
3	D	776	VAL
3	D	900	PRO
1	A	49	PRO
1	B	215	VAL
2	C	296	GLY
2	C	1023	GLY
3	D	595	VAL
3	D	725	PRO
2	C	125	GLY
2	C	136	ILE
2	C	894	GLY
3	D	594	ILE
2	C	645	VAL
3	D	1259	VAL

### 5.3.2 Protein sidechains [i](#)

There are no protein residues with a non-rotameric sidechain to report in this entry.

### 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](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
3	D	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	D	1435:LEU	C	1436:SER	N	1.18
1	D	943:THR	C	944:GLN	N	1.11

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.