



Full wwPDB X-ray Structure Validation Report ⓘ

May 13, 2020 – 10:10 am BST

PDB ID : 5XXZ
Title : Crystal structure of a serine protease from Streptococcus species
Authors : Jobichen, C.; Sivaraman, J.
Deposited on : 2017-07-05
Resolution : 3.08 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Mogul : 1.8.5 (274361), CSD as541be (2020)
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

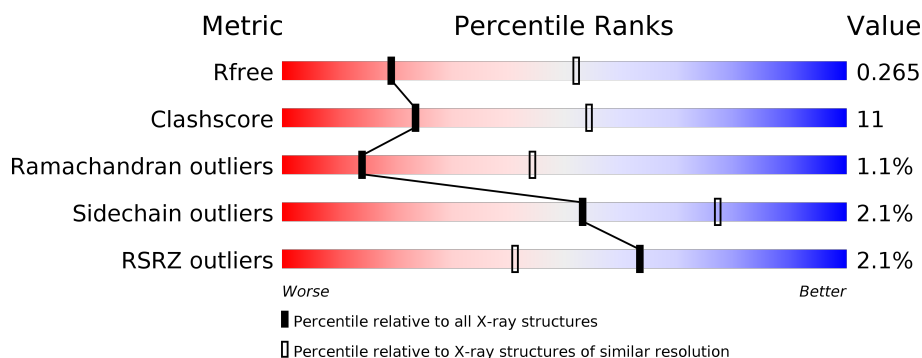
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.08 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	1447 (3.10-3.06)
Clashscore	141614	1546 (3.10-3.06)
Ramachandran outliers	138981	1487 (3.10-3.06)
Sidechain outliers	138945	1486 (3.10-3.06)
RSRZ outliers	127900	1416 (3.10-3.06)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions $\leq 5\%$. 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	1533	 2% (red), 64% (green), 22% (yellow), 13% (grey)
1	B	1533	 % (red), 64% (green), 20% (yellow), 15% (grey)

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
3	CA	A	1705	-	-	X	-

2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 19914 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.

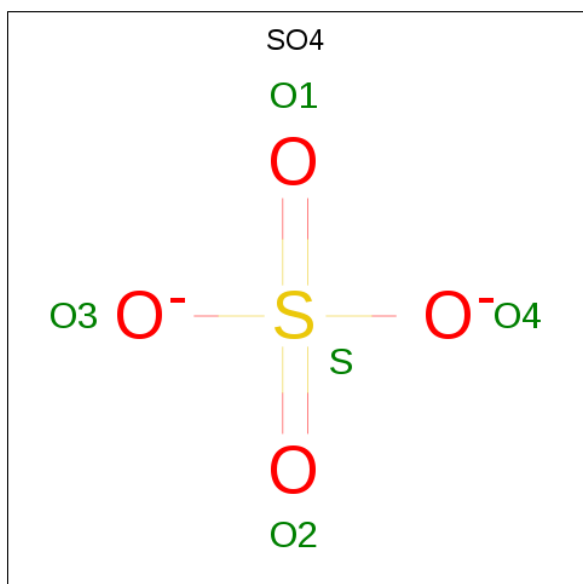
- Molecule 1 is a protein called Chemokine protease C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	Se			
1	A	1334	10007	6297	1722	1964	24	0	0	0
1	B	1310	9890	6229	1701	1936	24	0	0	0

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	279	ALA	HIS	engineered mutation	UNP Q3HV58
A	617	ALA	SER	engineered mutation	UNP Q3HV58
B	279	ALA	HIS	engineered mutation	UNP Q3HV58
B	617	ALA	SER	engineered mutation	UNP Q3HV58

- Molecule 2 is SULFATE ION (three-letter code: SO₄) (formula: O₄S).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O S 5 4 1	0	0
2	B	1	Total O S 5 4 1	0	0

- Molecule 3 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	B	3	Total Ca 3 3	0	0
3	A	4	Total Ca 4 4	0	0

LEU	S1545	Y1420	T1147
PRO	L1546	F1295	L1148
SER		D1302	K1149
THR	I1552	I1430	D1150
GLY	E1553	Y1436	N1151
GLU	GLY	ASN	L1152
LYS	ASN	THR	E1153
ASN	THR	I1444	M1154
NSE	LYS	Y1450	
GLY	VAL	E1453	T1159
LEU	ASN	A1462	G1160
LYS	THR	E1465	L1161
LEU	ARG	S1471	V1162
ARG	L1561	F1480	V1163
ILE		K1486	
VAL	E1567	M1487	L1168
VAL	L1568	R1364	A1169
LEU		V1367	V1170
LEU	R1571	I1360	
LEU	L1572	I1361	R1173
LEU	V1573	R1364	L1180
GLY	K1574	I1367	T1181
LEU	VAL	I1368	K1182
THR	GLY	I1369	M1183
THR	THR	S1370	
CYS	ASP	D1371	I1189
VAL	ALA	Y1372	D1198
ALA	SER	Y1373	F1199
PHE	SER	Y1374	V1200
SER	ASP	D1378	
ARG	ARG	M1382	M1211
LYS	THR	V1383	D1212
LYS	ASP	S1384	V1215
LYS	ASP	F1385	N1216
THR	HIS	L1521	V1217
LYS	LYS	L1522	Y1218
ASP	VAL	E1523	A1219
	NSE	Q1524	
	SER	L1525	I1229
	SER	Y1526	H1230
	LYS	V1527	
	LYS	P1528	Y1247
	ASN	K1529	R1252
	SER	A1530	V1265
	GLN	Y1531	R1268
	ALA	G1532	
	LEU	K1533	K1273
	THR	T1534	
	THR	V1535	I1281
	ALA	Q1536	
	THR	E1537	N1284
	ALA	Y1540	
	ALA		T1291
			Q1292

4 Data and refinement statistics

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	182.13Å 132.85Å 151.99Å 90.00° 100.69° 90.00°	Depositor
Resolution (Å)	19.98 – 3.08 49.78 – 3.09	Depositor EDS
% Data completeness (in resolution range)	98.7 (19.98-3.08) 93.0 (49.78-3.09)	Depositor EDS
R_{merge}	0.19	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.07 (at 3.07Å)	Xtrriage
Refinement program	PHENIX (dev_2733: ???)	Depositor
R, R_{free}	0.205 , 0.263 0.211 , 0.265	Depositor DCC
R_{free} test set	1980 reflections (3.07%)	wwPDB-VP
Wilson B-factor (Å ²)	51.1	Xtrriage
Anisotropy	0.458	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.27 , 25.7	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
F_o, F_c correlation	0.87	EDS
Total number of atoms	19914	wwPDB-VP
Average B, all atoms (Å ²)	61.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.18% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

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

5 Model quality [i](#)

5.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: CA, SO4

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	0.60	0/10170	0.76	1/13731 (0.0%)
1	B	0.60	0/10051	0.75	1/13571 (0.0%)
All	All	0.60	0/20221	0.75	2/27302 (0.0%)

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	1198	ASP	CB-CG-OD2	-5.81	113.07	118.30
1	A	1198	ASP	CB-CG-OD1	5.09	122.88	118.30

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	10007	0	9601	224	0
1	B	9890	0	9560	215	0
2	A	5	0	0	0	0
2	B	5	0	0	0	0
3	A	4	0	0	2	0
3	B	3	0	0	0	0
All	All	19914	0	19161	439	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 11.

All (439) 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:433:GLU:CA	1:B:437:ASP:CB	2.10	1.30
1:A:1496:THR:HA	1:A:1532:GLY:HA3	1.36	1.05
1:A:1190:SER:OG	3:A:1705:CA:CA	1.48	0.90
1:B:1496:THR:HA	1:B:1532:GLY:HA3	1.51	0.90
1:B:1147:THR:HG22	1:B:1148:LEU:H	1.40	0.86
1:A:546:LYS:O	1:A:550:GLN:HB2	1.76	0.85
1:A:641:LEU:HD12	1:A:642:PRO:HD2	1.65	0.78
1:B:202:TYR:HB2	1:B:315:VAL:HG12	1.63	0.78
1:A:582:TRP:HD1	1:A:583:GLY:N	1.84	0.75
1:B:1152:LEU:HD12	1:B:1180:LEU:HD23	1.69	0.75
1:A:582:TRP:HD1	1:A:583:GLY:H	1.34	0.74
1:B:1124:LEU:HD11	1:B:1133:ILE:HD11	1.68	0.74
1:A:171:VAL:HG11	1:A:177:MSE:HE2	1.70	0.73
1:A:543:GLU:OE1	1:A:543:GLU:N	2.20	0.73
1:B:987:LEU:O	1:B:1018:ARG:NH2	2.21	0.73
1:A:1511:LEU:O	1:A:1518:LEU:HA	1.87	0.73
1:B:1147:THR:HG22	1:B:1148:LEU:N	2.03	0.73
1:A:707:THR:O	1:A:709:THR:N	2.22	0.72
1:A:585:THR:HG22	1:A:587:ASP:H	1.54	0.72
1:A:1297:THR:HG22	1:A:1302:ASP:H	1.55	0.72
1:A:718:ASN:HD22	1:A:763:ALA:HA	1.55	0.71
1:A:1004:GLY:HA3	1:A:1527:VAL:HG21	1.72	0.70
1:B:1131:THR:HG23	1:B:1132:PRO:HD3	1.72	0.70
1:A:718:ASN:ND2	1:A:763:ALA:HA	2.07	0.70
1:B:587:ASP:HA	1:B:1002:VAL:HG22	1.74	0.70
1:A:145:LYS:HB3	1:A:628:LEU:HD22	1.74	0.69
1:A:949:VAL:O	1:A:1252:ARG:NH1	2.26	0.68
1:A:345:LEU:HB3	1:A:377:VAL:HG22	1.75	0.68
1:B:433:GLU:CA	1:B:437:ASP:CA	2.70	0.68
1:B:383:ARG:HG2	1:B:384:VAL:HG22	1.74	0.68
1:A:1318:VAL:HG13	1:A:1379:ARG:HG2	1.75	0.67
1:B:1107:MSE:HG3	1:B:1117:ILE:HG12	1.77	0.67
1:B:426:LEU:HD22	1:B:566:SER:HB2	1.76	0.67
1:B:145:LYS:HB3	1:B:628:LEU:HD22	1.76	0.66
1:A:510:LEU:HD12	1:A:542:HIS:CE1	2.31	0.66
1:B:1211:ASN:HB2	1:B:1268:ARG:O	1.95	0.66
1:A:790:TYR:CZ	1:A:817:LYS:HG2	2.32	0.65

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1423:ARG:HB2	1:A:1451:THR:HG23	1.77	0.65
1:A:1509:VAL:HG22	1:A:1544:VAL:HG22	1.79	0.65
1:B:193:ASN:HB3	1:B:195:LYS:H	1.61	0.65
1:B:1495:ILE:HG13	1:B:1568:LEU:HD22	1.77	0.65
1:A:120:PRO:HG2	1:A:300:ARG:HD3	1.79	0.64
1:B:920:PHE:CD1	1:B:996:VAL:HG21	2.33	0.64
1:B:1372:TYR:HB3	1:B:1388:LEU:HD23	1.79	0.64
1:A:1242:GLU:CD	1:A:1242:GLU:H	2.02	0.63
1:A:1319:ARG:NH1	1:A:1377:GLU:OE1	2.31	0.63
1:A:582:TRP:CD1	1:A:583:GLY:N	2.65	0.63
1:A:513:LEU:O	1:A:513:LEU:HD13	1.98	0.63
1:B:1534:THR:HG22	1:B:1535:VAL:H	1.64	0.63
1:A:1190:SER:HG	3:A:1705:CA:CA	1.36	0.63
1:A:1295:PHE:H	1:A:1396:LYS:HE2	1.64	0.62
1:A:1027:THR:HG23	1:A:1036:LYS:HB3	1.80	0.62
1:B:1486:LYS:NZ	1:B:1487:MSE:O	2.30	0.62
1:B:429:VAL:HG21	1:B:548:MSE:HE2	1.82	0.61
1:A:156:PRO:HB2	1:A:192:ILE:HG21	1.82	0.61
1:A:1124:LEU:N	1:A:1124:LEU:HD12	2.16	0.61
1:A:501:ILE:HG22	1:A:544:PHE:HB2	1.80	0.61
1:A:443:ALA:HB2	1:A:546:LYS:NZ	2.16	0.61
1:B:1143:GLN:OE1	1:B:1143:GLN:N	2.33	0.61
1:B:311:MSE:HE1	1:B:335:ALA:HA	1.83	0.61
1:B:1124:LEU:O	1:B:1124:LEU:HD12	2.01	0.61
1:A:1513:THR:HG22	1:A:1514:ALA:H	1.66	0.60
1:A:177:MSE:HE3	1:A:197:VAL:HB	1.83	0.60
1:B:1168:LEU:HD12	1:B:1383:VAL:HG13	1.82	0.60
1:B:1508:ARG:HB2	1:B:1545:SER:HB3	1.81	0.60
1:B:1364:ARG:H	1:B:1367:VAL:CG2	2.14	0.60
1:B:290:ASN:HA	1:B:302:LEU:HD23	1.81	0.60
1:B:458:LEU:HA	1:B:544:PHE:CD1	2.37	0.60
1:B:931:LEU:HA	1:B:997:SER:O	2.01	0.60
1:A:1077:VAL:HG11	1:A:1342:ILE:HG13	1.84	0.60
1:B:1077:VAL:HG11	1:B:1342:ILE:HG13	1.82	0.60
1:A:393:LEU:HD23	1:A:743:ARG:HG2	1.82	0.60
1:A:380:GLY:HA3	1:A:581:ASN:ND2	2.17	0.60
1:A:147:VAL:HB	1:A:628:LEU:HD11	1.84	0.60
1:B:426:LEU:HD21	1:B:568:ALA:HB2	1.83	0.60
1:B:868:THR:HG21	1:B:1115:VAL:HG11	1.84	0.60
1:A:1127:THR:HG23	1:A:1130:LYS:HD3	1.84	0.59
1:B:1147:THR:CG2	1:B:1148:LEU:H	2.12	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:342:VAL:HG23	1:B:374:SER:HB2	1.85	0.59
1:A:908:SER:HB2	1:A:910:ASN:ND2	2.16	0.59
1:A:991:TYR:CZ	1:A:1045:LEU:HD22	2.36	0.59
1:B:427:MSE:HB2	1:B:442:LYS:HE3	1.83	0.59
1:A:455:LYS:HG3	1:A:460:TYR:CE2	2.38	0.59
1:B:1102:GLY:HA2	1:B:1120:LEU:O	2.03	0.59
1:A:1183:MSE:O	1:A:1185:GLN:N	2.36	0.59
1:A:718:ASN:HB2	1:A:761:VAL:HG12	1.83	0.59
1:A:155:ASP:HB3	1:A:281:MSE:HE2	1.85	0.58
1:A:999:TYR:CE1	1:A:1007:ARG:HB2	2.38	0.58
1:B:1513:THR:HG22	1:B:1540:TYR:CE1	2.38	0.58
1:A:443:ALA:HB2	1:A:546:LYS:HZ3	1.67	0.58
1:B:150:ILE:HG12	1:B:313:MSE:HB2	1.86	0.58
1:A:590:LEU:HD13	1:A:814:VAL:HG11	1.85	0.58
1:B:1536:GLN:O	1:B:1537:GLU:HG3	2.04	0.58
1:A:162:ARG:CZ	1:A:292:LYS:HG3	2.34	0.57
1:A:870:VAL:HG12	1:A:1079:ASP:OD2	2.03	0.57
1:B:873:LYS:HD2	1:B:873:LYS:H	1.67	0.57
1:A:830:ILE:HB	1:A:858:PHE:HB2	1.86	0.57
1:A:400:GLY:O	1:A:401:LEU:HD23	2.05	0.57
1:B:737:VAL:HG11	1:B:785:GLN:HB3	1.86	0.57
1:A:754:TYR:CD2	1:A:773:MSE:HG2	2.39	0.57
1:A:936:TYR:CE2	1:A:946:PRO:HB3	2.40	0.57
1:A:1521:LEU:HG	1:A:1533:LYS:H	1.69	0.56
1:A:693:THR:HG23	1:A:697:ASN:HA	1.87	0.56
1:B:866:SER:HB2	1:B:913:ASN:O	2.04	0.56
1:B:1101:LEU:HD22	1:B:1123:HIS:HE2	1.69	0.56
1:B:1400:VAL:HG13	1:B:1480:PHE:HD2	1.69	0.56
1:A:1377:GLU:HG3	1:A:1383:VAL:HG12	1.87	0.56
1:B:383:ARG:HH21	1:B:746:LEU:HD12	1.70	0.56
1:B:1513:THR:HG22	1:B:1540:TYR:HE1	1.71	0.56
1:A:383:ARG:O	1:A:384:VAL:HG13	2.06	0.56
1:A:929:GLN:OE1	1:A:1571:ARG:NH1	2.38	0.55
1:B:202:TYR:CE1	1:B:313:MSE:HG3	2.41	0.55
1:A:707:THR:C	1:A:709:THR:H	2.09	0.55
1:B:1389:ARG:HG3	1:B:1390:ASP:N	2.22	0.55
1:A:1183:MSE:C	1:A:1185:GLN:H	2.10	0.55
1:A:353:ALA:HA	1:A:585:THR:HG23	1.88	0.55
1:A:1162:VAL:HG21	1:A:1241:ILE:HD13	1.88	0.55
1:B:1159:THR:O	1:B:1161:LEU:N	2.39	0.55
1:A:1324:TYR:CZ	1:A:1349:VAL:HG21	2.42	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:1109:GLU:HG2	1:B:1115:VAL:HG22	1.89	0.54
1:A:154:ILE:HD11	1:A:284:THR:HG21	1.90	0.54
1:B:706:ILE:HD11	1:B:792:LEU:HD12	1.88	0.54
1:B:707:THR:O	1:B:709:THR:N	2.41	0.54
1:B:1521:LEU:HG	1:B:1533:LYS:H	1.72	0.54
1:B:351:ASN:ND2	1:B:958:LYS:HE3	2.23	0.54
1:B:1022:VAL:HG12	1:B:1043:ARG:CZ	2.38	0.54
1:B:1361:ILE:HG21	1:B:1369:LEU:HD13	1.90	0.54
1:B:145:LYS:HB3	1:B:628:LEU:CD2	2.38	0.54
1:B:432:LEU:O	1:B:437:ASP:HA	2.08	0.53
1:B:955:LYS:HB3	1:B:1572:LEU:CB	2.38	0.53
1:A:202:TYR:HB2	1:A:315:VAL:HG22	1.90	0.53
1:B:1199:PHE:HB3	1:B:1247:TYR:CD2	2.43	0.53
1:A:482:VAL:HA	1:A:500:MSE:HG2	1.90	0.53
1:A:158:HIS:HB2	1:A:281:MSE:HE1	1.90	0.53
1:A:426:LEU:HD22	1:A:566:SER:HB2	1.89	0.53
1:A:1220:LYS:HD3	1:A:1260:ASP:HB2	1.90	0.53
1:B:1320:GLU:HG3	1:B:1374:TYR:CE1	2.44	0.53
1:A:585:THR:HB	1:A:589:TYR:H	1.74	0.53
1:A:631:LYS:HE2	1:A:635:GLU:OE2	2.08	0.53
1:A:501:ILE:HG23	1:A:503:LEU:H	1.73	0.52
1:A:716:VAL:O	1:A:766:LYS:HA	2.09	0.52
1:A:745:THR:OG1	1:A:747:THR:OG1	2.26	0.52
1:B:147:VAL:HB	1:B:628:LEU:HD11	1.91	0.52
1:A:381:ASN:HA	1:A:579:PHE:O	2.09	0.52
1:A:931:LEU:HA	1:A:997:SER:O	2.10	0.52
1:A:158:HIS:CE1	1:A:159:GLN:HG2	2.45	0.52
1:B:458:LEU:HA	1:B:544:PHE:HD1	1.75	0.52
1:A:1303:HIS:CE1	1:A:1360:THR:HG22	2.45	0.52
1:A:461:ASP:OD1	1:A:462:LYS:N	2.43	0.52
1:B:1219:ALA:HB2	1:B:1229:ILE:HD11	1.92	0.52
1:A:937:HIS:ND1	1:A:947:LEU:HD21	2.25	0.51
1:B:797:ARG:HA	1:B:810:ASN:HB3	1.91	0.51
1:B:1170:VAL:HG22	1:B:1385:PHE:CD2	2.46	0.51
1:A:1324:TYR:CE2	1:A:1349:VAL:HG21	2.46	0.51
1:A:471:GLU:O	1:A:473:THR:HG23	2.11	0.51
1:A:1163:THR:HB	1:A:1183:MSE:HE3	1.91	0.51
1:A:409:ARG:NH2	1:A:698:TYR:HB2	2.24	0.51
1:B:1028:PHE:O	1:B:1133:ILE:HG22	2.10	0.51
1:B:1295:PHE:O	1:B:1396:LYS:HE3	2.11	0.51
1:B:394:ALA:HB2	1:B:737:VAL:HG21	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:728:TYR:HB3	1:A:798:PHE:CD2	2.45	0.50
1:B:320:VAL:HG21	1:B:1417:ASN:HB3	1.92	0.50
1:B:402:VAL:HG22	1:B:407:THR:CG2	2.40	0.50
1:B:1020:LYS:HA	1:B:1114:ASN:HB3	1.94	0.50
1:A:1105:TYR:CE2	1:A:1119:LYS:HB2	2.46	0.50
1:B:949:VAL:HG13	1:B:1252:ARG:HH22	1.76	0.50
1:B:437:ASP:N	1:B:438:LEU:HA	2.27	0.50
1:B:706:ILE:HD11	1:B:792:LEU:HB2	1.94	0.50
1:A:1407:LEU:HD11	1:A:1414:GLN:CB	2.42	0.50
1:A:177:MSE:O	1:A:181:GLN:HG3	2.12	0.50
1:B:1199:PHE:HB3	1:B:1247:TYR:CE2	2.47	0.50
1:B:1511:LEU:O	1:B:1518:LEU:HA	2.11	0.50
1:B:290:ASN:HA	1:B:302:LEU:CD2	2.42	0.50
1:A:906:ALA:CB	1:A:1112:ALA:HB2	2.41	0.50
1:B:1183:MSE:HE1	1:B:1189:ILE:HG22	1.94	0.49
1:A:506:LYS:NZ	1:A:510:LEU:HD21	2.27	0.49
1:B:873:LYS:HD2	1:B:873:LYS:N	2.26	0.49
1:B:633:TYR:O	1:B:637:THR:HG23	2.12	0.49
1:A:690:LEU:HA	1:A:717:HIS:O	2.13	0.49
1:A:754:TYR:CG	1:A:773:MSE:HG2	2.48	0.49
1:B:864:LEU:HD12	1:B:879:GLY:C	2.33	0.49
1:B:383:ARG:O	1:B:384:VAL:HG13	2.12	0.49
1:B:830:ILE:HB	1:B:858:PHE:HB2	1.94	0.49
1:A:1188:PHE:HB2	1:A:1380:ALA:HA	1.94	0.49
1:A:771:VAL:HG12	1:A:773:MSE:HE2	1.94	0.49
1:A:1200:VAL:HG21	1:A:1281:ILE:HG12	1.95	0.49
1:A:733:LEU:HD23	1:A:750:SER:HA	1.95	0.49
1:A:887:LYS:HE2	1:A:893:PHE:CZ	2.47	0.49
1:B:311:MSE:HE2	1:B:340:ALA:HB2	1.94	0.49
1:A:1066:VAL:HG22	1:A:1077:VAL:HG12	1.94	0.48
1:A:825:VAL:HB	1:A:998:TYR:CE1	2.48	0.48
1:B:991:TYR:CZ	1:B:1045:LEU:HD22	2.48	0.48
1:B:1217:VAL:HG23	1:B:1230:TRP:HE3	1.78	0.48
1:A:1168:LEU:HD23	1:A:1383:VAL:HG11	1.95	0.48
1:B:1339:LYS:HG3	1:B:1340:ASP:N	2.28	0.48
1:B:165:ASP:O	1:B:168:THR:HG22	2.12	0.48
1:B:400:GLY:CA	1:B:583:GLY:HA3	2.44	0.48
1:A:1267:TYR:H	1:A:1275:HIS:CB	2.26	0.48
1:A:198:PHE:HB3	1:A:311:MSE:HG2	1.95	0.48
1:B:1292:GLN:HA	1:B:1391:LEU:HD23	1.95	0.48
1:A:1032:THR:O	1:A:1033:ASN:HB2	2.14	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:501:ILE:HG13	1:A:542:HIS:NE2	2.28	0.48
1:A:1327:LYS:O	1:A:1328:LYS:HG3	2.14	0.48
1:A:908:SER:HB2	1:A:910:ASN:HD22	1.79	0.48
1:A:948:TRP:HA	1:A:982:LEU:HD13	1.95	0.48
1:A:1225:LYS:HD3	1:A:1264:VAL:HG21	1.96	0.48
1:A:1111:PHE:O	1:A:1112:ALA:HB3	2.14	0.48
1:B:1057:GLU:OE2	1:B:1059:LYS:HE3	2.14	0.48
1:B:120:PRO:O	1:B:300:ARG:NH1	2.47	0.48
1:A:1161:LEU:HA	1:A:1201:ALA:O	2.14	0.47
1:A:436:ALA:C	1:A:438:LEU:H	2.17	0.47
1:A:710:MSE:HE1	1:A:732:LEU:HD13	1.95	0.47
1:A:842:TYR:CD1	1:A:968:LYS:HD3	2.49	0.47
1:B:202:TYR:HE1	1:B:313:MSE:HG3	1.79	0.47
1:B:345:LEU:HB3	1:B:377:VAL:HG22	1.96	0.47
1:B:1200:VAL:HG11	1:B:1281:ILE:HD12	1.97	0.47
1:B:489:ILE:HD11	1:B:548:MSE:SE	2.65	0.47
1:B:836:GLN:OE1	1:B:838:LYS:HD2	2.14	0.47
1:B:427:MSE:HE1	1:B:548:MSE:HE1	1.96	0.47
1:A:1407:LEU:HD12	1:A:1489:MSE:HE1	1.95	0.47
1:A:727:ARG:CZ	1:A:799:ARG:HH21	2.26	0.47
1:B:1527:VAL:HB	1:B:1530:ALA:HB3	1.97	0.47
1:B:317:ALA:HB1	1:B:321:MSE:HA	1.97	0.47
1:A:385:TYR:HD2	1:A:958:LYS:HD3	1.80	0.47
1:A:147:VAL:HG21	1:A:287:VAL:HG11	1.96	0.47
1:A:501:ILE:CG2	1:A:544:PHE:HB2	2.44	0.47
1:B:1531:TYR:O	1:B:1532:GLY:C	2.53	0.47
1:B:641:LEU:HD12	1:B:642:PRO:HD2	1.97	0.47
1:A:149:VAL:HG23	1:A:312:PHE:HD1	1.79	0.47
1:B:1571:ARG:O	1:B:1572:LEU:CB	2.63	0.47
1:A:1318:VAL:CG1	1:A:1379:ARG:HG2	2.43	0.47
1:A:462:LYS:HE2	1:A:495:LYS:HG2	1.97	0.47
1:B:177:MSE:O	1:B:181:GLN:HG3	2.15	0.47
1:B:429:VAL:HG21	1:B:548:MSE:CE	2.45	0.47
1:A:1030:PRO:HD3	1:A:1132:PRO:HA	1.97	0.47
1:B:1405:LEU:HD13	1:B:1487:MSE:HE2	1.97	0.47
1:B:385:TYR:HD2	1:B:958:LYS:HD3	1.81	0.46
1:A:942:GLU:HB3	1:A:944:LYS:HG2	1.96	0.46
1:A:1217:VAL:HA	1:A:1262:GLN:O	2.16	0.46
1:A:623:ILE:HD13	1:A:680:LEU:HD22	1.97	0.46
1:A:1474:LEU:HD23	1:A:1481:GLN:HG3	1.97	0.46
1:B:156:PRO:O	1:B:193:ASN:ND2	2.49	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:929:GLN:OE1	1:B:1571:ARG:NH1	2.48	0.46
1:B:126:ILE:O	1:B:130:VAL:HG22	2.16	0.46
1:B:1320:GLU:HG3	1:B:1374:TYR:HE1	1.80	0.46
1:B:352:GLY:O	1:B:585:THR:HG23	2.16	0.46
1:A:455:LYS:HG3	1:A:460:TYR:CZ	2.51	0.46
1:A:714:VAL:O	1:A:768:THR:HG23	2.15	0.46
1:B:402:VAL:HG22	1:B:407:THR:HG22	1.96	0.46
1:B:415:ALA:HB2	1:B:592:PRO:HG3	1.98	0.46
1:A:651:LYS:O	1:A:655:MSE:HG3	2.16	0.46
1:B:1302:ASP:HB2	1:B:1361:ILE:HB	1.98	0.46
1:B:1491:ALA:O	1:B:1537:GLU:HG2	2.16	0.46
1:B:861:LEU:HA	1:B:861:LEU:HD23	1.69	0.46
1:A:1014:MSE:HB3	1:A:1014:MSE:HE2	1.69	0.46
1:A:1154:MSE:HE2	1:A:1160:GLY:HA2	1.97	0.46
1:B:1023:LEU:HD13	1:B:1118:ALA:HB2	1.98	0.46
1:B:780:LYS:HA	1:B:780:LYS:HD3	1.67	0.46
1:A:119:LEU:HD23	1:A:119:LEU:HA	1.69	0.45
1:B:870:VAL:HG22	1:B:1079:ASP:OD2	2.16	0.45
1:A:1450:TYR:HB2	1:A:1472:PHE:CE2	2.51	0.45
1:B:1546:LEU:HA	1:B:1546:LEU:HD23	1.62	0.45
1:A:1214:THR:HG23	1:A:1266:THR:HB	1.97	0.45
1:A:1421:LEU:HB3	1:A:1455:LEU:HD21	1.98	0.45
1:A:1020:LYS:HA	1:A:1114:ASN:HB3	1.98	0.45
1:B:158:HIS:HB2	1:B:281:MSE:HE1	1.98	0.45
1:A:1213:LEU:O	1:A:1236:ALA:HB3	2.17	0.45
1:A:1295:PHE:CE1	1:A:1304:PHE:HB2	2.52	0.45
1:B:909:PRO:HG2	1:B:1018:ARG:NH1	2.31	0.45
1:B:188:TYR:CD2	1:B:200:HIS:CE1	3.05	0.45
1:B:177:MSE:HE1	1:B:338:LEU:HD22	1.99	0.45
1:A:1150:ASP:OD1	1:A:1203:LYS:NZ	2.35	0.45
1:B:432:LEU:O	1:B:437:ASP:CA	2.64	0.45
1:B:852:ILE:HB	1:B:885:THR:HG21	1.99	0.45
1:A:718:ASN:HB2	1:A:761:VAL:CG1	2.47	0.45
1:A:706:ILE:HD13	1:A:815:GLY:HA3	1.99	0.45
1:B:200:HIS:CE1	1:B:201:ASN:O	2.70	0.45
1:A:1128:LEU:O	1:A:1130:LYS:N	2.45	0.45
1:B:1168:LEU:HD12	1:B:1383:VAL:CG1	2.47	0.45
1:B:1370:SER:HB3	1:B:1389:ARG:HE	1.80	0.45
1:B:1415:ILE:HD11	1:B:1462:ALA:HB3	1.99	0.45
1:B:190:SER:O	1:B:192:ILE:HD12	2.17	0.45
1:B:1430:ILE:HD11	1:B:1450:TYR:CE2	2.52	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:325:GLU:OE2	1:B:360:PRO:HG2	2.17	0.45
1:A:680:LEU:HD11	1:A:682:ILE:HG12	1.98	0.44
1:A:1004:GLY:HA3	1:A:1527:VAL:CG2	2.45	0.44
1:A:458:LEU:O	1:A:460:TYR:N	2.50	0.44
1:B:133:LYS:HG2	1:B:134:GLY:N	2.32	0.44
1:B:1525:LEU:HD23	1:B:1526:TYR:CE2	2.51	0.44
1:B:706:ILE:CD1	1:B:792:LEU:HB2	2.48	0.44
1:A:1464:LEU:HA	1:A:1487:MSE:HE2	1.99	0.44
1:A:202:TYR:HE1	1:A:313:MSE:HG3	1.83	0.44
1:B:1508:ARG:HB2	1:B:1545:SER:CB	2.47	0.44
1:B:949:VAL:HG12	1:B:982:LEU:HD21	2.00	0.44
1:A:1525:LEU:HD23	1:A:1526:TYR:CE1	2.52	0.44
1:B:1322:VAL:HG21	1:B:1359:TYR:CG	2.52	0.44
1:B:1552:ILE:C	1:B:1553:GLU:HG2	2.37	0.44
1:B:593:ASP:HB3	1:B:655:MSE:SE	2.68	0.44
1:B:705:ASN:HA	1:B:816:PHE:O	2.17	0.44
1:A:1189:ILE:HG13	1:A:1191:PRO:HD3	2.00	0.44
1:B:1124:LEU:HD21	1:B:1133:ILE:HD11	1.99	0.44
1:B:188:TYR:HD2	1:B:200:HIS:CE1	2.35	0.44
1:A:177:MSE:CE	1:A:197:VAL:HB	2.46	0.44
1:A:171:VAL:HB	1:A:197:VAL:HG11	1.99	0.44
1:A:852:ILE:HB	1:A:885:THR:HG21	2.00	0.44
1:B:1039:PRO:HB2	1:B:1041:LYS:HD2	1.99	0.44
1:B:1105:TYR:CE2	1:B:1119:LYS:HB2	2.53	0.44
1:B:1523:GLN:HB2	1:B:1531:TYR:CE2	2.53	0.44
1:B:171:VAL:HB	1:B:197:VAL:HG11	1.99	0.44
1:A:1188:PHE:HD1	1:A:1282:SER:HG	1.65	0.44
1:A:929:GLN:HB2	1:A:1571:ARG:HD3	1.99	0.44
1:B:1026:ALA:HB2	1:B:1137:LEU:HD11	1.99	0.44
1:B:1523:GLN:NE2	1:B:1528:PRO:O	2.37	0.44
1:B:792:LEU:HA	1:B:792:LEU:HD23	1.83	0.43
1:A:134:GLY:HA3	1:A:683:ASP:OD1	2.19	0.43
1:A:693:THR:CG2	1:A:697:ASN:HA	2.48	0.43
1:A:506:LYS:HG2	1:A:508:GLY:H	1.83	0.43
1:A:730:THR:HG23	1:A:796:VAL:HG22	2.00	0.43
1:B:400:GLY:O	1:B:958:LYS:NZ	2.52	0.43
1:A:727:ARG:HG2	1:A:799:ARG:NH2	2.34	0.43
1:A:1571:ARG:HG3	1:A:1571:ARG:O	2.18	0.43
1:A:330:LYS:HA	1:A:330:LYS:HD2	1.64	0.43
1:B:1040:LEU:HD21	1:B:1051:ASP:OD2	2.18	0.43
1:B:329:ILE:HG23	1:B:364:ALA:HB2	1.99	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:572:LYS:HE2	1:B:572:LYS:HB2	1.37	0.43
1:A:781:GLU:O	1:A:785:GLN:HG2	2.18	0.43
1:A:847:GLY:HA3	1:A:848:PRO:HD2	1.81	0.43
1:B:851:ASP:HA	1:B:893:PHE:O	2.18	0.43
1:A:151:ASP:O	1:A:314:ARG:HA	2.18	0.43
1:A:551:LEU:HD12	1:A:552:ASN:OD1	2.18	0.43
1:A:690:LEU:HD11	1:A:807:ASN:HB3	2.00	0.43
1:B:591:LYS:HB3	1:B:592:PRO:HA	2.00	0.43
1:A:1403:PHE:CE1	1:A:1452:VAL:HG21	2.54	0.43
1:A:723:ASP:N	1:A:763:ALA:HB2	2.33	0.43
1:A:1150:ASP:O	1:A:1152:LEU:HD13	2.18	0.43
1:A:120:PRO:HG3	1:A:294:ALA:HB2	2.00	0.43
1:A:1505:GLU:N	1:A:1505:GLU:OE2	2.46	0.43
1:A:501:ILE:HG23	1:A:503:LEU:N	2.33	0.43
1:A:800:ASP:OD2	1:A:802:GLN:HG2	2.19	0.43
1:B:1102:GLY:O	1:B:1119:LYS:HE3	2.19	0.43
1:B:1152:LEU:HD22	1:B:1182:LYS:HG3	2.00	0.43
1:B:163:ILE:HD11	1:B:166:VAL:HG13	2.01	0.43
1:A:1161:LEU:HD12	1:A:1187:PHE:CE1	2.54	0.43
1:A:705:ASN:O	1:A:706:ILE:HD12	2.18	0.43
1:A:820:PHE:HB3	1:A:1526:TYR:CE2	2.53	0.43
1:B:1062:LYS:HD3	1:B:1062:LYS:HA	1.85	0.43
1:B:1072:TYR:O	1:B:1173:ARG:HD2	2.19	0.43
1:B:1291:THR:HG22	1:B:1480:PHE:CG	2.54	0.43
1:A:192:ILE:HG22	1:A:193:ASN:ND2	2.33	0.42
1:A:383:ARG:HG2	1:A:384:VAL:HG22	2.00	0.42
1:B:136:TRP:CD1	1:B:141:LYS:HG2	2.54	0.42
1:B:1400:VAL:HG13	1:B:1480:PHE:CD2	2.51	0.42
1:A:833:LEU:HA	1:A:833:LEU:HD23	1.85	0.42
1:B:400:GLY:HA2	1:B:583:GLY:HA3	2.01	0.42
1:B:711:THR:HA	1:B:771:VAL:O	2.19	0.42
1:B:935:VAL:HG23	1:B:948:TRP:HE3	1.84	0.42
1:A:1036:LYS:HD3	1:A:1091:SER:HB3	2.00	0.42
1:B:1567:GLU:HG3	1:B:1567:GLU:O	2.19	0.42
1:A:1027:THR:CG2	1:A:1036:LYS:HB3	2.46	0.42
1:A:353:ALA:HA	1:A:585:THR:CG2	2.49	0.42
1:A:392:PRO:HD2	1:A:746:LEU:HD21	2.00	0.42
1:A:171:VAL:HA	1:A:176:ASP:OD2	2.20	0.42
1:A:201:ASN:HD22	1:A:204:GLU:HG3	1.84	0.42
1:A:893:PHE:C	1:A:894:ILE:HD12	2.39	0.42
1:B:1411:GLU:O	1:B:1414:GLN:HB2	2.20	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:279:ALA:C	1:B:281:MSE:H	2.23	0.42
1:B:727:ARG:NH1	1:B:729:ASP:OD1	2.43	0.42
1:A:482:VAL:C	1:A:484:GLY:H	2.23	0.42
1:A:513:LEU:HA	1:A:513:LEU:HD22	1.66	0.42
1:A:1296:ASP:N	1:A:1296:ASP:OD1	2.52	0.42
1:A:188:TYR:OH	1:A:330:LYS:HE3	2.20	0.42
1:B:1308:LYS:HD2	1:B:1309:THR:O	2.19	0.42
1:B:1400:VAL:HG21	1:B:1436:TYR:CD2	2.55	0.42
1:A:177:MSE:HG2	1:A:197:VAL:O	2.19	0.42
1:A:572:LYS:HB2	1:A:572:LYS:HE2	1.50	0.42
1:A:977:PHE:CZ	1:A:979:GLY:HA2	2.55	0.42
1:B:1054:PHE:CE2	1:B:1081:LYS:HG2	2.54	0.42
1:B:1420:TYR:HA	1:B:1453:GLU:O	2.20	0.42
1:B:186:ILE:HD12	1:B:338:LEU:HD21	2.02	0.42
1:A:1311:ALA:O	1:A:1312:LEU:C	2.58	0.42
1:B:1436:TYR:HB2	1:B:1444:ILE:HG13	2.02	0.42
1:B:954:PHE:CZ	1:B:974:GLY:HA3	2.55	0.42
1:B:1101:LEU:HD13	1:B:1123:HIS:HE2	1.84	0.42
1:B:155:ASP:HB3	1:B:281:MSE:HE2	2.01	0.42
1:A:728:TYR:CZ	1:A:769:VAL:HG21	2.55	0.41
1:B:433:GLU:CA	1:B:437:ASP:HA	2.48	0.41
1:A:1034:ARG:NH2	1:A:1089:ASP:OD2	2.39	0.41
1:A:1286:LYS:HZ1	1:A:1411:GLU:HA	1.85	0.41
1:A:154:ILE:HG23	1:A:155:ASP:N	2.35	0.41
1:A:359:LYS:HB2	1:A:360:PRO:HD3	2.02	0.41
1:B:320:VAL:CG2	1:B:1417:ASN:HB3	2.50	0.41
1:B:380:GLY:HA3	1:B:581:ASN:ND2	2.35	0.41
1:A:162:ARG:NH1	1:A:292:LYS:HG3	2.35	0.41
1:A:710:MSE:HE3	1:A:773:MSE:HE3	2.02	0.41
1:B:1378:ASP:OD1	1:B:1382:ASN:N	2.51	0.41
1:B:596:ALA:HB3	1:B:619:ALA:HB1	2.02	0.41
1:B:1154:MSE:HE2	1:B:1160:GLY:HA2	2.02	0.41
1:B:821:GLU:HB2	1:B:1002:VAL:HG11	2.01	0.41
1:B:935:VAL:HG23	1:B:948:TRP:CE3	2.55	0.41
1:A:1086:ARG:CZ	1:A:1090:GLY:HA2	2.51	0.41
1:A:1470:VAL:HG21	1:A:1483:VAL:HB	2.01	0.41
1:A:559:LEU:HD12	1:A:560:GLU:N	2.36	0.41
1:A:1102:GLY:HA2	1:A:1120:LEU:O	2.21	0.41
1:A:906:ALA:HB1	1:A:1112:ALA:HB2	2.01	0.41
1:B:154:ILE:HG23	1:B:312:PHE:CE1	2.56	0.41
1:B:963:ASP:OD1	1:B:965:ARG:HG2	2.21	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1149:LYS:HA	1:A:1149:LYS:HD3	1.78	0.41
1:A:1331:ARG:HG3	1:A:1333:PHE:O	2.20	0.41
1:A:1351:ILE:HG22	1:A:1359:TYR:HD2	1.86	0.41
1:B:1331:ARG:H	1:B:1331:ARG:HG2	1.70	0.41
1:B:1504:PRO:O	1:B:1507:SER:OG	2.35	0.41
1:A:1324:TYR:CE2	1:A:1349:VAL:CG2	3.03	0.41
1:A:908:SER:CB	1:A:910:ASN:ND2	2.80	0.41
1:A:1244:THR:OG1	1:A:1244:THR:O	2.36	0.41
1:A:383:ARG:HD2	1:A:578:HIS:O	2.21	0.41
1:B:1053:VAL:HG12	1:B:1092:PHE:CD2	2.56	0.41
1:B:1021:PRO:HG2	1:B:1108:VAL:HG12	2.02	0.40
1:B:1215:VAL:HG22	1:B:1265:VAL:HG22	2.02	0.40
1:B:854:VAL:HB	1:B:881:HIS:HA	2.02	0.40
1:A:1022:VAL:HG12	1:A:1041:LYS:O	2.20	0.40
1:A:1523:GLN:HB2	1:A:1531:TYR:CE2	2.55	0.40
1:A:317:ALA:HB1	1:A:321:MSE:HG2	2.04	0.40
1:B:1273:LYS:HB2	1:B:1273:LYS:NZ	2.36	0.40
1:B:585:THR:HG22	1:B:587:ASP:OD1	2.21	0.40
1:B:682:ILE:HG21	1:B:682:ILE:HD13	1.79	0.40
1:A:1313:GLY:O	1:A:1379:ARG:HD2	2.22	0.40
1:A:177:MSE:HG2	1:A:191:TRP:HB2	2.03	0.40
1:A:462:LYS:HE3	1:A:462:LYS:HB2	1.49	0.40
1:B:1124:LEU:HD13	1:B:1127:THR:CA	2.52	0.40
1:B:1163:THR:HB	1:B:1183:MSE:HE3	2.03	0.40
1:B:383:ARG:O	1:B:582:TRP:HB2	2.21	0.40
1:B:786:MSE:SE	1:B:790:TYR:HB3	2.72	0.40
1:B:991:TYR:CE2	1:B:1045:LEU:HD22	2.56	0.40
1:A:1214:THR:CG2	1:A:1266:THR:HB	2.52	0.40
1:B:1079:ASP:HB2	1:B:1081:LYS:HG3	2.03	0.40
1:B:1134:LYS:HE3	1:B:1134:LYS:HB3	1.78	0.40
1:B:428:THR:O	1:B:429:VAL:HG23	2.22	0.40
1:B:779:THR:HG22	1:B:780:LYS:HE2	2.02	0.40
1:B:828:GLU:CG	1:B:832:ARG:HD2	2.52	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	1320/1533 (86%)	1182 (90%)	117 (9%)	21 (2%)	9	35
1	B	1294/1533 (84%)	1165 (90%)	121 (9%)	8 (1%)	25	57
All	All	2614/3066 (85%)	2347 (90%)	238 (9%)	29 (1%)	14	44

All (29) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	537	SER
1	A	538	ALA
1	A	554	ASN
1	A	1038	GLU
1	A	1184	ASN
1	A	1539	THR
1	B	708	ASP
1	B	1038	GLU
1	A	512	VAL
1	A	536	PRO
1	A	1365	ASP
1	B	1552	ILE
1	A	542	HIS
1	A	708	ASP
1	A	846	SER
1	A	1150	ASP
1	A	1311	ALA
1	A	1564	GLU
1	A	1573	VAL
1	B	1572	LEU
1	B	461	ASP
1	B	1150	ASP
1	B	1160	GLY
1	A	350	ALA
1	A	453	ASN

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Mol	Chain	Res	Type
1	A	1301	VAL
1	B	1546	LEU
1	A	1284	ASN
1	A	1565	VAL

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1036/1271 (82%)	1015 (98%)	21 (2%)	55	78
1	B	1033/1271 (81%)	1011 (98%)	22 (2%)	53	77
All	All	2069/2542 (81%)	2026 (98%)	43 (2%)	53	77

All (43) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	188	TYR
1	A	206	SER
1	A	319	ASP
1	A	643	LYS
1	A	708	ASP
1	A	748	SER
1	A	802	GLN
1	A	810	ASN
1	A	829	SER
1	A	890	ASP
1	A	902	ASN
1	A	1049	ARG
1	A	1060	ASP
1	A	1123	HIS
1	A	1157	SER
1	A	1252	ARG
1	A	1282	SER
1	A	1339	LYS
1	A	1396	LYS

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Mol	Chain	Res	Type
1	A	1439	SER
1	A	1571	ARG
1	B	133	LYS
1	B	313	MSE
1	B	346	SER
1	B	427	MSE
1	B	652	ASN
1	B	804	ASP
1	B	810	ASN
1	B	829	SER
1	B	866	SER
1	B	873	LYS
1	B	902	ASN
1	B	1049	ARG
1	B	1060	ASP
1	B	1076	SER
1	B	1123	HIS
1	B	1212	ASP
1	B	1308	LYS
1	B	1339	LYS
1	B	1389	ARG
1	B	1465	GLU
1	B	1471	SER
1	B	1545	SER

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	200	HIS

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

5.6 Ligand geometry [i](#)

Of 9 ligands modelled in this entry, 7 are monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
2	SO4	B	1701	-	4,4,4	0.28	0	6,6,6	0.59	0
2	SO4	A	1701	-	4,4,4	0.19	0	6,6,6	0.42	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

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	1309/1533 (85%)	0.02	34 (2%) 56 31	32, 57, 117, 196	0
1	B	1285/1533 (83%)	-0.09	20 (1%) 72 51	30, 54, 111, 204	0
All	All	2594/3066 (84%)	-0.04	54 (2%) 63 41	30, 56, 115, 204	0

All (54) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	1129	GLY	5.5
1	A	498	ASP	4.9
1	A	492	ASP	4.5
1	A	1128	LEU	4.5
1	B	506	LYS	4.1
1	A	497	TYR	3.7
1	B	566	SER	3.7
1	B	204	GLU	3.5
1	A	1075	VAL	3.4
1	A	1204	GLY	3.3
1	B	486	ILE	3.3
1	A	1570	LEU	3.2
1	A	1331	ARG	3.0
1	A	293	GLU	3.0
1	A	1566	HIS	3.0
1	B	1117	ILE	2.9
1	A	206	SER	2.9
1	A	1491	ALA	2.9
1	A	468	TYR	2.8
1	A	299	GLU	2.7
1	B	487	ALA	2.7
1	B	1028	PHE	2.7
1	A	542	HIS	2.7
1	A	1210	TYR	2.6

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Mol	Chain	Res	Type	RSRZ
1	A	1281	ILE	2.6
1	A	469	VAL	2.6
1	A	1237	GLY	2.5
1	A	294	ALA	2.5
1	B	540	ILE	2.4
1	A	1238	ALA	2.4
1	B	1532	GLY	2.4
1	B	1123	HIS	2.4
1	A	1398	LYS	2.4
1	B	1135	LEU	2.3
1	A	322	GLY	2.3
1	A	1246	TRP	2.3
1	B	504	ALA	2.3
1	B	489	ILE	2.3
1	A	1221	ASP	2.2
1	A	1280	THR	2.2
1	B	1116	ALA	2.2
1	B	441	GLY	2.2
1	A	163	ILE	2.2
1	A	540	ILE	2.2
1	A	1333	PHE	2.1
1	A	1150	ASP	2.1
1	B	1284	ASN	2.1
1	A	1373	TYR	2.1
1	B	565	VAL	2.1
1	B	1407	LEU	2.1
1	B	297	THR	2.1
1	A	1363	LYS	2.0
1	B	466	PHE	2.0
1	A	541	SER	2.0

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

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

6.3 Carbohydrates [\(i\)](#)

There are no carbohydrates in this entry.

6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q<0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
3	CA	A	1704	1/1	0.83	0.12	53,53,53,53	0
2	SO4	B	1701	5/5	0.86	0.27	98,98,99,99	0
2	SO4	A	1701	5/5	0.87	0.30	115,115,116,116	0
3	CA	A	1702	1/1	0.91	0.35	74,74,74,74	0
3	CA	B	1703	1/1	0.94	0.06	48,48,48,48	0
3	CA	B	1704	1/1	0.96	0.10	43,43,43,43	0
3	CA	B	1702	1/1	0.98	0.04	35,35,35,35	0
3	CA	A	1703	1/1	0.98	0.14	37,37,37,37	0
3	CA	A	1705	1/1	0.98	0.17	30,30,30,30	0

6.5 Other polymers [i](#)

There are no such residues in this entry.