



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 17, 2021 – 03:07 AM EDT

PDB ID : 1M7R
Title : Crystal Structure of Myotubularin-related Protein-2 (MTMR2) Complexed with Phosphate
Authors : Begley, M.J.; Taylor, G.S.; Kim, S.-A.; Veine, D.M.; Dixon, J.E.; Stuckey, J.A.
Deposited on : 2002-07-22
Resolution : 2.60 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)
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.23.2

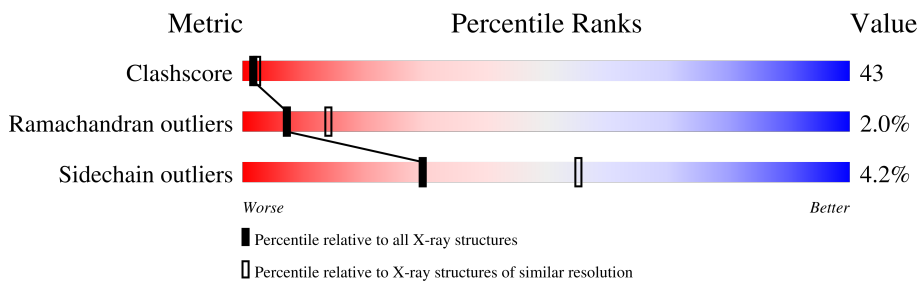
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.60 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)

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 $\leq 5\%$

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	657	 36% 37% 5% 22%
1	B	657	 30% 43% 5% 22%

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
2	PO4	A	656	-	-	X	-

2 Entry composition i

There are 3 unique types of molecules in this entry. The entry contains 8632 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 Myotubularin-related Protein-2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	513	4189	2679	729	764	17	75	0	0
1	B	513	4189	2679	729	764	17	114	0	0

There are 30 discrepancies between the modelled and reference sequences:

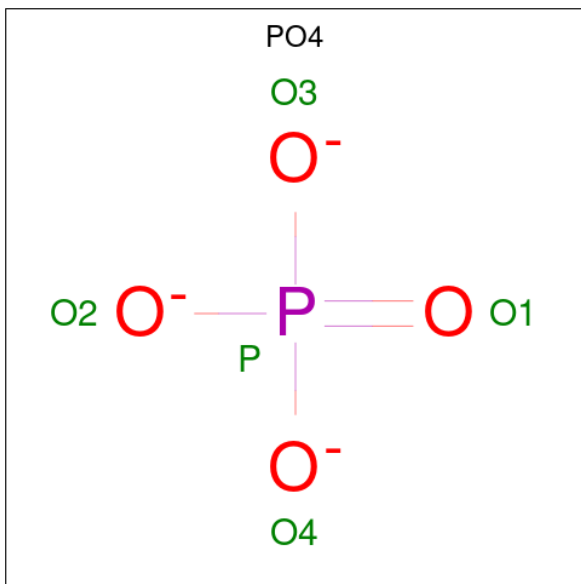
Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	MET	-	cloning artifact	UNP Q13614
A	-1	ALA	-	cloning artifact	UNP Q13614
A	0	SER	-	cloning artifact	UNP Q13614
A	417	SER	CYS	engineered mutation	UNP Q13614
A	644	ALA	-	expression tag	UNP Q13614
A	645	ALA	-	expression tag	UNP Q13614
A	646	ALA	-	expression tag	UNP Q13614
A	647	LEU	-	expression tag	UNP Q13614
A	648	GLU	-	expression tag	UNP Q13614
A	649	HIS	-	expression tag	UNP Q13614
A	650	HIS	-	expression tag	UNP Q13614
A	651	HIS	-	expression tag	UNP Q13614
A	652	HIS	-	expression tag	UNP Q13614
A	653	HIS	-	expression tag	UNP Q13614
A	654	HIS	-	expression tag	UNP Q13614
B	-2	MET	-	cloning artifact	UNP Q13614
B	-1	ALA	-	cloning artifact	UNP Q13614
B	0	SER	-	cloning artifact	UNP Q13614
B	417	SER	CYS	engineered mutation	UNP Q13614
B	644	ALA	-	expression tag	UNP Q13614
B	645	ALA	-	expression tag	UNP Q13614
B	646	ALA	-	expression tag	UNP Q13614
B	647	LEU	-	expression tag	UNP Q13614
B	648	GLU	-	expression tag	UNP Q13614
B	649	HIS	-	expression tag	UNP Q13614

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Chain	Residue	Modelled	Actual	Comment	Reference
B	650	HIS	-	expression tag	UNP Q13614
B	651	HIS	-	expression tag	UNP Q13614
B	652	HIS	-	expression tag	UNP Q13614
B	653	HIS	-	expression tag	UNP Q13614
B	654	HIS	-	expression tag	UNP Q13614

- Molecule 2 is PHOSPHATE ION (three-letter code: PO4) (formula: O₄P).



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

- Molecule 3 is water.

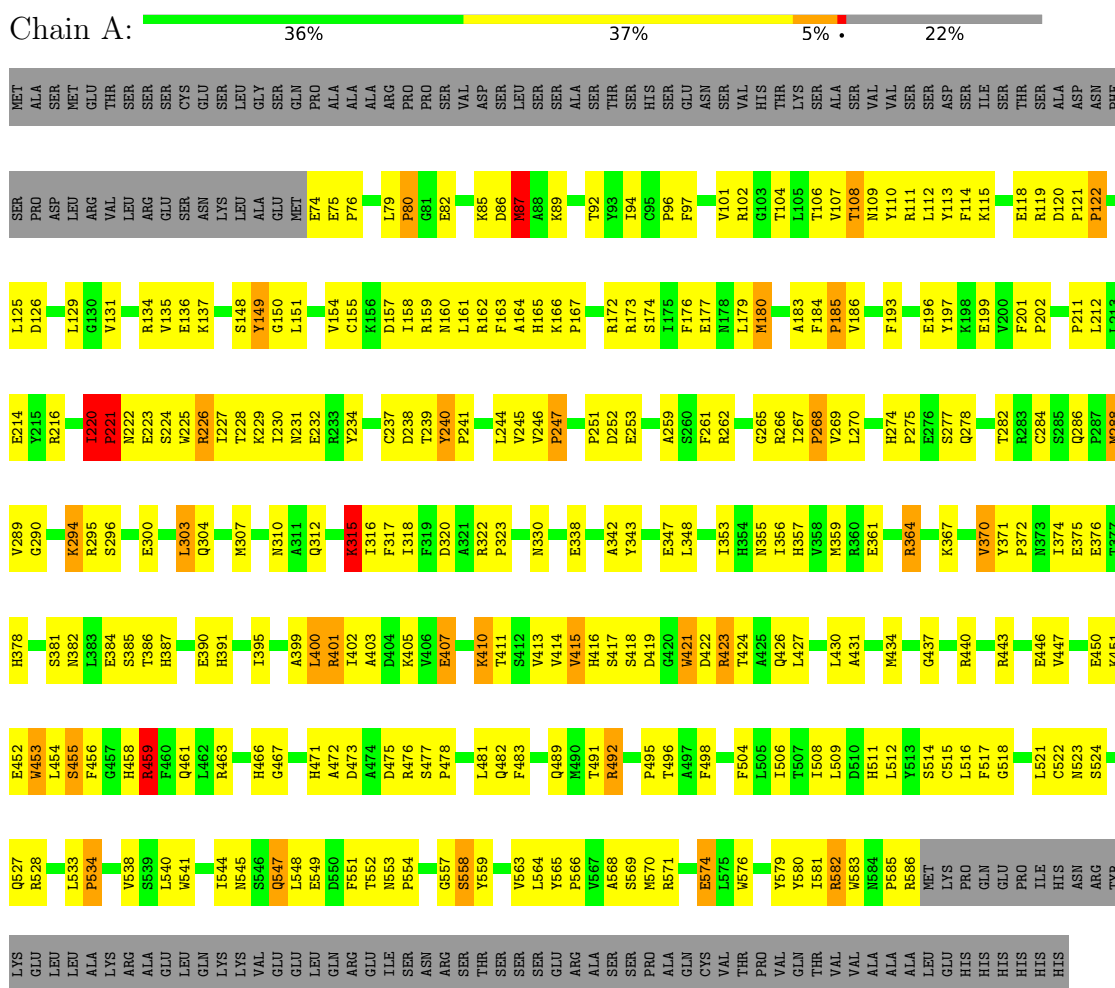
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	146	Total O 146 146	0	0
3	B	88	Total O 88 88	0	0

3 Residue-property plots [i](#)

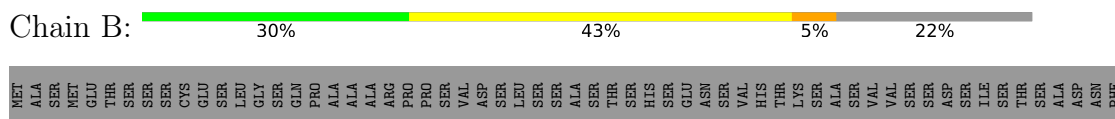
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded 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. 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.

Note EDS was not executed.

- Molecule 1: Myotubularin-related Protein-2



- Molecule 1: Myotubularin-related Protein-2



SER	PRO	ASP	LEU	VAL	LEU	ARG	GLU	GLY	MET	E74	E75	P76	P77	L78	L79	P80	G81	E82	M83	I84	K85	D86	M87	V81	T92	Y93	I94	C95	F97	T98	R102	T106	V107	M109	Y110	R111	L112	Y113	F114	K115	R119	D120	P121	P122	F123	V124	L125																																																																																																																																																																																																																																																																																																																																																																																														
D126	A127	S128	L129	G130	V131	V135	E136	K137	I138	G139	G140	M147	S148	Y149	T153	V154	D157	I158	R159	M160	L161	F163	A164	H165	S174	I175	F176	E177	M178	L179	M180	K181	Y182	A183	F184	P185	V186	S187	M188	Y192	F193	Y197	K198	E199	P202	W206	K207	L208	Y209																																																																																																																																																																																																																																																																																																																																																																																												
P210	P211	L212	R216	I220	P221	M222	E223	S224	W225	R226	I227	T228	K229	S148	Y149	M231	E232	R233	Y234	E235	L236	C237	D238	T239	Y240	A242	L244	V245	V246	P247	A248	P251	E254	L255	K256	R257	V258	A259	S260	P261	R266	I267	P268	V269	L270	S271	W272	I273	H274	P275	Q278																																																																																																																																																																																																																																																																																																																																																																																										
I281	T282	R283	C284	S285	Q286	P287	M288	V289	G290	V291	S292	G293	K294	R295	S296	K297	E298	D299	E300	R301	Y302	L303	M307	D308	S309	N310	A311	Q312	L313	H314	K315	I316	D320	R322	P323	S324	V325	N326	A327	V328	A329	N330	K331	A332	K333	G336	Y337	E338	S339	E340	D341	A342	Y343	Q344	N345																																																																																																																																																																																																																																																																																																																																																																																						
L348	V349	H354	S355	I356	H357	V358	N359	R360	E361	S362	L363	R364	K365	L366	K367	V370	I374	E375	E376	T377	H378	W379	L383	Q312	E384	S885	T386	H387	W388	L389	E390	H391	I392	K393	L394	I395	L396	A399	L400	R401	I402	E407	S408	G409	K410	T411	S412	V413	V414	W415	W416	S417																																																																																																																																																																																																																																																																																																																																																																																									
S418	D419	G420	W421	D422	R423	Q426	L427	T428	S429	L430	A431	M432	L433	M434	L435	D436	G437	R440	T441	I442	R443	E446	V447	E450	K451	E452	W453	E531	N532	L533	P534	K535	R536	F537	V538	S539	L540	W541	G465	H466	G467	D468	K469	R476	S477	L481	Q482	D485	C486	W487	Q489																																																																																																																																																																																																																																																																																																																																																																																										
P495	T496	F500	N501	E502	F503	F504	L505	I508	L509	B510	H511	L512	Y513	S514	C515	L516	F517	G518	L521	M522	M523	Q526	Q527	R528	G529	K530	E531	N532	L533	P534	K535	R536	F537	V538	S539	L540	W541	Y543	F544	N545	S546	Q547	L548	E549	D550	F551	T552	S553	P554	L555	Y556	N561																																																																																																																																																																																																																																																																																																																																																																																									
H562	P566	V567	A568	S569	M570	R571	H572	L573	E574	L575	W576	Y579	F580	I581	R582	W583	M584	P585	R586	L591	L592	L593	L594	L595	L596	L597	L598	L599	L600	L601	L602	L603	L604	L605	L606	L607	L608	L609	L610	L611	L612	L613	L614	L615	L616	L617	L618	L619	L620	L621	L622	L623	L624	L625	L626	L627	L628	L629	L630	L631	L632	L633	L634	L635	L636	L637	L638	L639	L640	L641	L642	L643	L644	L645	L646	L647	L648	L649	L650	L651	L652	L653	L654	L655	L656	L657	L658	L659	L660	L661	L662	L663	L664	L665	L666	L667	L668	L669	L670	L671	L672	L673	L674	L675	L676	L677	L678	L679	L680	L681	L682	L683	L684	L685	L686	L687	L688	L689	L690	L691	L692	L693	L694	L695	L696	L697	L698	L699	L700	L701	L702	L703	L704	L705	L706	L707	L708	L709	L710	L711	L712	L713	L714	L715	L716	L717	L718	L719	L720	L721	L722	L723	L724	L725	L726	L727	L728	L729	L730	L731	L732	L733	L734	L735	L736	L737	L738	L739	L740	L741	L742	L743	L744	L745	L746	L747	L748	L749	L750	L751	L752	L753	L754	L755	L756	L757	L758	L759	L760	L761	L762	L763	L764	L765	L766	L767	L768	L769	L770	L771	L772	L773	L774	L775	L776	L777	L778	L779	L780	L781	L782	L783	L784	L785	L786	L787	L788	L789	L790	L791	L792	L793	L794	L795	L796	L797	L798	L799	L800	L801	L802	L803	L804	L805	L806	L807	L808	L809	L810	L811	L812	L813	L814	L815	L816	L817	L818	L819	L820	L821	L822	L823	L824	L825	L826	L827	L828	L829	L830	L831	L832	L833	L834	L835	L836	L837	L838	L839	L840	L841	L842	L843	L844	L845	L846	L847	L848	L849	L850	L851	L852	L853	L854	L855	L856	L857	L858	L859	L860	L861	L862	L863	L864	L865	L866	L867	L868	L869	L870	L871	L872	L873	L874	L875	L876	L877	L878	L879	L880	L881	L882	L883	L884	L885	L886	L887	L888	L889	L890	L891	L892	L893	L894	L895	L896	L897	L898	L899	L900	L901	L902	L903	L904	L905	L906	L907	L908	L909	L910	L911	L912	L913	L914	L915	L916	L917	L918	L919	L920	L921	L922	L923	L924	L925	L926	L927	L928	L929	L930	L931	L932	L933	L934	L935	L936	L937	L938	L939	L940	L941	L942	L943	L944	L945	L946	L947	L948	L949	L950	L951	L952	L953	L954	L955	L956	L957	L958	L959	L960	L961	L962	L963	L964	L965	L966	L967	L968	L969	L970	L971	L972	L973	L974	L975	L976	L977	L978	L979	L980	L981	L982	L983	L984	L985	L986	L987	L988	L989	L990	L991	L992	L993	L994	L995	L996	L997	L998	L999	L1000

4 Data and refinement statistics

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

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α , β , γ	158.25Å 82.66Å 100.13Å 90.00° 117.93° 90.00°	Depositor
Resolution (Å)	8.00 – 2.60	Depositor
% Data completeness (in resolution range)	98.1 (8.00-2.60)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	0.07	Depositor
Refinement program	CNS	Depositor
R, R_{free}	0.207 , 0.280	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	8632	wwPDB-VP
Average B, all atoms (Å ²)	41.0	wwPDB-VP

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: PO4

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	0.73	13/4300 (0.3%)	0.80	8/5829 (0.1%)
1	B	0.77	13/4300 (0.3%)	0.81	8/5829 (0.1%)
All	All	0.75	26/8600 (0.3%)	0.80	16/11658 (0.1%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	7
1	B	0	2
All	All	0	9

All (26) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	554	PRO	N-CD	-18.06	1.22	1.47
1	A	220	ILE	CA-C	-6.00	1.37	1.52
1	B	323	PRO	N-CD	5.38	1.55	1.47
1	B	251	PRO	N-CD	5.37	1.55	1.47
1	B	585	PRO	N-CD	5.37	1.55	1.47
1	B	247	PRO	N-CD	5.36	1.55	1.47
1	B	77	PRO	N-CD	5.35	1.55	1.47
1	A	534	PRO	N-CD	5.34	1.55	1.47
1	A	585	PRO	N-CD	5.34	1.55	1.47
1	B	80	PRO	N-CD	5.34	1.55	1.47
1	A	122	PRO	N-CD	5.32	1.55	1.47
1	B	122	PRO	N-CD	5.32	1.55	1.47
1	A	323	PRO	N-CD	5.32	1.55	1.47
1	A	247	PRO	N-CD	5.31	1.55	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	202	PRO	N-CD	5.31	1.55	1.47
1	A	185	PRO	N-CD	5.31	1.55	1.47
1	A	268	PRO	N-CD	5.31	1.55	1.47
1	A	80	PRO	N-CD	5.30	1.55	1.47
1	A	211	PRO	N-CD	5.30	1.55	1.47
1	B	268	PRO	N-CD	5.30	1.55	1.47
1	A	251	PRO	N-CD	5.29	1.55	1.47
1	A	495	PRO	N-CD	5.29	1.55	1.47
1	A	221	PRO	N-CD	5.29	1.55	1.47
1	B	534	PRO	N-CD	5.28	1.55	1.47
1	B	211	PRO	N-CD	5.25	1.55	1.47
1	B	561	ASN	C-O	5.15	1.33	1.23

All (16) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	220	ILE	CB-CA-C	7.91	127.42	111.60
1	A	571	ARG	NE-CZ-NH2	6.81	123.70	120.30
1	A	459	ARG	NE-CZ-NH2	6.79	123.69	120.30
1	B	582	ARG	NE-CZ-NH2	6.68	123.64	120.30
1	B	459	ARG	NE-CZ-NH2	6.63	123.61	120.30
1	B	102	ARG	NE-CZ-NH2	6.47	123.53	120.30
1	A	87	MET	CG-SD-CE	5.85	109.56	100.20
1	B	570	MET	CG-SD-CE	5.74	109.39	100.20
1	B	288	MET	CG-SD-CE	5.72	109.35	100.20
1	A	288	MET	CG-SD-CE	5.71	109.34	100.20
1	B	532	ASN	O-C-N	-5.70	113.58	122.70
1	A	221	PRO	O-C-N	5.70	131.81	122.70
1	A	570	MET	CG-SD-CE	5.64	109.23	100.20
1	B	554	PRO	N-CD-CG	5.52	111.48	103.20
1	B	388	TRP	O-C-N	5.24	131.08	122.70
1	A	410	LYS	O-C-N	-5.07	114.60	122.70

There are no chirality outliers.

All (9) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	149	TYR	Mainchain
1	A	180	MET	Mainchain
1	A	220	ILE	Mainchain,Peptide
1	A	315	LYS	Mainchain
1	A	453	TRP	Mainchain

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Mol	Chain	Res	Type	Group
1	A	547	GLN	Mainchain
1	B	266	ARG	Mainchain
1	B	562	HIS	Mainchain

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	4189	0	4113	319	0
1	B	4189	0	4113	392	0
2	A	10	0	0	2	0
2	B	10	0	0	1	0
3	A	146	0	0	16	0
3	B	88	0	0	14	0
All	All	8632	0	8226	707	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 43.

All (707) 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:A:317:PHE:CE1	1:A:405:LYS:HD2	1.60	1.36
1:A:454:LEU:HD13	3:A:1207:HOH:O	1.38	1.23
1:B:393:LYS:HG3	1:B:568:ALA:O	1.37	1.20
1:A:261:PHE:O	1:A:288:MET:HG2	1.42	1.16
1:B:370:VAL:CG1	1:B:581:ILE:HG12	1.75	1.14
1:B:137:LYS:HE3	1:B:176:PHE:CD2	1.83	1.13
1:B:230:ILE:HD11	1:B:256:LYS:HE2	1.22	1.12
1:B:511:HIS:HD2	1:B:540:LEU:CD1	1.62	1.11
1:A:112:LEU:HD13	1:A:179:LEU:HD21	1.31	1.11
1:B:511:HIS:HD2	1:B:540:LEU:HD11	0.98	1.11
1:B:511:HIS:CD2	1:B:540:LEU:CD1	2.32	1.11
1:B:337:TYR:CD1	1:B:348:LEU:CD2	2.34	1.11
1:A:74:GLU:HB3	1:A:115:LYS:HD3	1.31	1.10
1:B:137:LYS:HE2	1:B:176:PHE:CG	1.86	1.10

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:410:LYS:HE2	3:B:1093:HOH:O	0.92	1.09
1:B:94:ILE:HD11	1:B:147:ASN:HB3	1.28	1.07
1:A:544:ILE:HG23	1:A:551:PHE:CE1	1.89	1.07
1:B:337:TYR:HD1	1:B:348:LEU:CD2	1.67	1.06
1:B:511:HIS:CD2	1:B:540:LEU:HD11	1.88	1.06
1:A:317:PHE:CE1	1:A:405:LYS:CD	2.41	1.04
1:B:94:ILE:HD11	1:B:147:ASN:CB	1.90	1.02
1:A:274:HIS:CD2	1:A:275:PRO:HD2	1.96	0.99
1:B:337:TYR:CD1	1:B:348:LEU:HD21	1.96	0.98
1:B:314:HIS:CD2	1:B:315:LYS:HB2	1.97	0.98
1:B:370:VAL:HG13	1:B:581:ILE:HG12	1.45	0.98
1:B:261:PHE:O	1:B:288:MET:HG2	1.64	0.97
1:B:137:LYS:HE2	1:B:176:PHE:CB	1.94	0.97
1:B:91:VAL:HG22	1:B:165:HIS:ND1	1.78	0.96
1:B:137:LYS:CE	1:B:176:PHE:CD2	2.47	0.96
1:B:337:TYR:CD1	1:B:348:LEU:HD23	2.01	0.96
1:B:370:VAL:HG11	1:B:581:ILE:HG12	1.45	0.96
1:A:158:ILE:HG23	1:A:367:LYS:HG3	1.46	0.95
1:A:110:TYR:HB2	1:A:193:PHE:CD1	2.02	0.95
1:B:137:LYS:CE	1:B:176:PHE:CG	2.49	0.94
1:A:101:VAL:CG2	1:A:119:ARG:HH21	1.81	0.93
1:B:229:LYS:O	1:B:232:GLU:HG2	1.70	0.91
1:B:274:HIS:ND1	1:B:275:PRO:HD2	1.86	0.91
1:A:317:PHE:HE1	1:A:405:LYS:HD2	1.35	0.90
1:A:165:HIS:CD2	1:A:172:ARG:HG2	2.06	0.89
1:A:544:ILE:HG23	1:A:551:PHE:CD1	2.08	0.89
1:B:137:LYS:HG2	1:B:176:PHE:CD1	2.08	0.89
1:B:338:GLU:HB3	1:B:343:TYR:CD1	2.08	0.88
1:B:402:ILE:HG23	1:B:413:VAL:HG21	1.56	0.88
1:A:390:GLU:HG2	3:A:1037:HOH:O	1.74	0.87
1:B:432:MET:HE3	1:B:452:GLU:HG3	1.57	0.87
1:B:74:GLU:HB3	1:B:115:LYS:HD3	1.58	0.86
1:B:314:HIS:HD2	1:B:315:LYS:HB2	1.39	0.85
1:B:511:HIS:CD2	1:B:540:LEU:HD13	2.10	0.85
1:A:545:ASN:HA	1:A:548:LEU:HD21	1.59	0.84
1:A:74:GLU:CB	1:A:115:LYS:HD3	2.07	0.83
1:B:320:ASP:OD1	1:B:322:ARG:HG3	1.78	0.83
1:B:125:LEU:HD21	1:B:161:LEU:HD22	1.60	0.83
1:A:274:HIS:CG	1:A:275:PRO:HD2	2.13	0.82
1:B:138:ILE:HD13	1:B:162:ARG:NH1	1.94	0.82
1:B:400:LEU:HD23	1:B:434:MET:SD	2.19	0.82

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:267:ILE:O	1:A:269:VAL:HG13	1.80	0.82
1:B:120:ASP:HB3	1:B:121:PRO:HD3	1.60	0.82
1:A:387:HIS:O	1:A:391:HIS:CD2	2.33	0.81
1:B:231:ASN:HD22	1:B:236:LEU:H	1.27	0.81
1:B:432:MET:CE	1:B:452:GLU:HG3	2.09	0.81
1:A:378:HIS:HB2	1:A:382:ASN:HD21	1.46	0.80
1:A:277:SER:O	1:A:278:GLN:HB2	1.79	0.80
1:A:261:PHE:CE1	1:A:288:MET:O	2.34	0.80
1:B:338:GLU:HA	1:B:343:TYR:CE1	2.15	0.80
1:B:295:ARG:HH11	1:B:342:ALA:HA	1.48	0.79
1:A:353:ILE:HD13	1:A:395:ILE:HD13	1.64	0.79
1:A:359:MET:HE3	1:A:482:GLN:HE22	1.48	0.79
1:B:110:TYR:HB2	1:B:193:PHE:CD1	2.19	0.78
1:B:330:ASN:HA	1:B:333:LYS:HE3	1.64	0.78
1:B:375:GLU:OE2	1:B:377:THR:HB	1.83	0.78
1:B:567:VAL:HG11	1:B:572:HIS:CD2	2.18	0.78
1:A:518:GLY:HA2	1:A:521:LEU:CD1	2.13	0.78
1:B:138:ILE:CD1	1:B:162:ARG:NH1	2.46	0.78
1:B:466:HIS:CD2	1:B:521:LEU:HD23	2.17	0.78
1:B:393:LYS:CG	1:B:568:ALA:O	2.27	0.78
1:B:545:ASN:HA	1:B:548:LEU:HD21	1.64	0.78
1:B:137:LYS:HG3	1:B:176:PHE:CE1	2.19	0.77
1:A:317:PHE:CD1	1:A:405:LYS:HG2	2.19	0.77
1:A:259:ALA:HA	1:A:267:ILE:CG2	2.14	0.77
1:B:307:MET:CE	1:B:316:ILE:HG22	2.15	0.77
1:A:212:LEU:O	1:A:216:ARG:HG3	1.85	0.76
1:B:359:MET:HE2	1:B:482:GLN:HE22	1.50	0.76
1:B:110:TYR:HB2	1:B:193:PHE:CG	2.19	0.76
1:A:137:LYS:HD3	1:A:172:ARG:NH1	2.00	0.75
1:A:120:ASP:HB3	1:A:121:PRO:HD3	1.68	0.75
1:A:267:ILE:O	1:A:267:ILE:HG13	1.84	0.75
1:B:159:ARG:HB3	1:B:583:TRP:CD1	2.22	0.75
1:B:314:HIS:CG	1:B:315:LYS:N	2.55	0.75
1:B:504:PHE:CZ	1:B:508:ILE:HD11	2.21	0.75
1:B:135:VAL:HG22	1:B:153:THR:HG22	1.67	0.75
1:A:268:PRO:HA	1:A:284:CYS:HB3	1.69	0.74
1:B:340:GLU:HG2	3:B:1227:HOH:O	1.86	0.74
1:B:461:GLN:HE22	1:B:466:HIS:HB2	1.53	0.74
1:B:216:ARG:HD2	1:B:216:ARG:O	1.88	0.74
1:A:359:MET:CE	1:A:482:GLN:HE22	1.99	0.74
1:B:240:TYR:HE1	1:B:266:ARG:NH1	1.86	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:185:PRO:HD2	1:A:467:GLY:HA3	1.70	0.74
1:B:295:ARG:NH1	1:B:342:ALA:HA	2.02	0.74
1:A:101:VAL:HG23	1:A:119:ARG:HH21	1.51	0.73
1:A:134:ARG:NH1	1:A:136:GLU:HG3	2.03	0.73
1:B:545:ASN:HA	1:B:548:LEU:CD2	2.19	0.73
1:A:509:LEU:HD12	1:A:579:TYR:CE1	2.24	0.73
1:B:340:GLU:HG3	1:B:341:ASP:N	2.04	0.73
1:A:166:LYS:HB3	1:A:167:PRO:HD2	1.71	0.73
1:A:374:ILE:HD11	1:A:581:ILE:HD13	1.69	0.73
1:B:337:TYR:HD1	1:B:348:LEU:HD23	1.40	0.73
1:B:137:LYS:CG	1:B:176:PHE:CD1	2.71	0.72
1:B:286:GLN:OE1	1:B:322:ARG:NH1	2.22	0.72
1:A:101:VAL:CG2	1:A:119:ARG:HE	2.02	0.72
1:A:186:VAL:HG22	1:A:467:GLY:O	1.89	0.72
1:B:343:TYR:O	1:B:345:ASN:N	2.22	0.72
1:B:526:GLN:HG2	1:B:530:LYS:HE3	1.69	0.72
1:A:101:VAL:CG2	1:A:119:ARG:NH2	2.53	0.72
1:A:387:HIS:O	1:A:391:HIS:HD2	1.72	0.72
1:B:383:LEU:HD11	1:B:575:LEU:HD13	1.72	0.72
1:A:511:HIS:HA	1:A:514:SER:OG	1.90	0.72
1:B:137:LYS:HE2	1:B:176:PHE:HB3	1.70	0.72
1:B:138:ILE:HD13	1:B:162:ARG:HH12	1.54	0.71
1:A:437:GLY:HA2	1:A:440:ARG:NH1	2.04	0.71
1:B:329:ALA:O	1:B:333:LYS:HG3	1.91	0.71
1:B:268:PRO:HA	1:B:284:CYS:HB3	1.71	0.71
1:A:89:LYS:HG2	1:A:104:THR:OG1	1.90	0.71
1:B:340:GLU:CG	1:B:341:ASP:H	2.04	0.71
1:B:185:PRO:CG	1:B:192:LEU:HD23	2.20	0.70
1:A:158:ILE:HG12	1:A:367:LYS:HB2	1.74	0.70
1:B:295:ARG:HD2	1:B:300:GLU:OE2	1.90	0.70
1:A:289:VAL:O	1:A:294:LYS:HG3	1.91	0.70
1:A:222:ASN:O	1:A:224:SER:N	2.25	0.70
1:A:158:ILE:HG22	1:A:158:ILE:O	1.92	0.70
1:B:518:GLY:HA2	1:B:521:LEU:CD1	2.21	0.70
1:B:86:ASP:OD1	1:B:87:MET:N	2.25	0.70
1:B:370:VAL:HG11	1:B:580:TYR:O	1.92	0.69
1:B:370:VAL:HG13	1:B:581:ILE:CG1	2.21	0.69
1:A:338:GLU:HB3	1:A:343:TYR:CD1	2.27	0.69
1:A:509:LEU:CD1	1:A:579:TYR:CE1	2.76	0.69
1:B:401:ARG:HD2	3:B:1197:HOH:O	1.89	0.69
1:B:400:LEU:HD21	1:B:566:PRO:HD2	1.75	0.69

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:518:GLY:HA2	1:B:521:LEU:HD12	1.75	0.69
1:A:125:LEU:HD21	1:A:161:LEU:HD13	1.75	0.69
1:A:491:THR:HG22	1:A:498:PHE:CD1	2.27	0.69
1:B:431:ALA:HA	1:B:434:MET:HE3	1.75	0.69
1:B:458:HIS:NE2	1:B:463:ARG:HG3	2.08	0.69
1:A:317:PHE:CZ	1:A:405:LYS:NZ	2.61	0.68
1:A:361:GLU:OE2	1:A:364:ARG:NH1	2.27	0.68
1:B:495:PRO:HD2	3:B:1217:HOH:O	1.93	0.68
1:A:422:ASP:OD1	1:A:458:HIS:CE1	2.47	0.68
1:B:220:ILE:HG23	1:B:221:PRO:HA	1.76	0.68
1:A:286:GLN:OE1	1:A:322:ARG:NH1	2.23	0.68
1:A:518:GLY:HA2	1:A:521:LEU:HD12	1.76	0.68
1:B:266:ARG:HD2	1:B:419:ASP:O	1.94	0.68
1:B:185:PRO:HG2	1:B:192:LEU:CD2	2.23	0.68
1:B:231:ASN:ND2	1:B:236:LEU:H	1.91	0.68
1:B:291:VAL:HG12	3:B:1211:HOH:O	1.93	0.68
1:B:322:ARG:NH2	1:B:336:GLY:O	2.22	0.68
1:A:220:ILE:HD12	1:A:225:TRP:HB2	1.75	0.67
1:B:338:GLU:HG3	1:B:343:TYR:CZ	2.29	0.67
1:A:356:ILE:HG13	1:A:357:HIS:N	2.08	0.67
1:B:314:HIS:CD2	1:B:315:LYS:N	2.62	0.67
1:B:79:LEU:HG	1:B:111:ARG:NH2	2.09	0.67
1:B:91:VAL:CG2	1:B:165:HIS:ND1	2.56	0.67
1:B:254:GLU:HG3	1:B:257:ARG:NH2	2.08	0.67
1:A:296:SER:O	1:A:300:GLU:HG3	1.95	0.67
1:A:466:HIS:ND1	1:A:515:CYS:SG	2.68	0.67
1:B:154:VAL:HA	1:B:160:ASN:OD1	1.93	0.67
1:A:101:VAL:HG22	1:A:119:ARG:HE	1.58	0.67
1:B:340:GLU:HG3	1:B:341:ASP:H	1.59	0.67
1:A:120:ASP:HB3	1:A:121:PRO:CD	2.24	0.66
1:A:317:PHE:HB2	1:A:413:VAL:HG12	1.76	0.66
1:B:231:ASN:HD21	1:B:237:CYS:H	1.43	0.66
1:B:359:MET:CE	1:B:482:GLN:HE22	2.08	0.66
1:B:356:ILE:HG13	1:B:357:HIS:N	2.10	0.66
1:A:378:HIS:CB	1:A:382:ASN:ND2	2.59	0.66
1:A:226:ARG:NE	3:A:1130:HOH:O	2.29	0.66
1:A:378:HIS:CB	1:A:382:ASN:HD21	2.09	0.66
1:A:74:GLU:HB3	1:A:115:LYS:CD	2.17	0.66
1:A:452:GLU:O	1:A:456:PHE:HB2	1.96	0.66
1:B:230:ILE:CD1	1:B:256:LYS:HE2	2.14	0.66
1:A:266:ARG:HD2	1:A:419:ASP:O	1.95	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:284:CYS:O	1:A:416:HIS:HB2	1.96	0.66
1:B:137:LYS:CG	1:B:176:PHE:CE1	2.79	0.66
1:A:268:PRO:HG3	1:A:284:CYS:SG	2.36	0.65
1:A:400:LEU:HD11	1:A:566:PRO:O	1.96	0.65
1:B:232:GLU:OE2	1:B:243:LEU:CD2	2.43	0.65
1:B:266:ARG:CD	1:B:419:ASP:O	2.44	0.65
1:A:159:ARG:HD3	1:A:583:TRP:CE2	2.31	0.65
1:B:341:ASP:O	1:B:344:GLN:HG2	1.96	0.65
1:A:110:TYR:HB2	1:A:193:PHE:CE1	2.31	0.65
1:A:461:GLN:HB3	1:A:522:CYS:O	1.95	0.65
1:B:340:GLU:CG	1:B:341:ASP:N	2.60	0.65
1:A:107:VAL:HG22	1:A:112:LEU:HD12	1.79	0.65
1:B:307:MET:CE	1:B:316:ILE:CG2	2.75	0.65
1:A:431:ALA:HA	1:A:434:MET:HE3	1.79	0.65
1:A:150:GLY:HA3	1:A:163:PHE:O	1.97	0.64
1:B:338:GLU:CA	1:B:343:TYR:CE1	2.80	0.64
1:B:91:VAL:O	1:B:102:ARG:HA	1.98	0.64
1:B:287:PRO:HG2	1:B:337:TYR:HA	1.79	0.64
1:A:545:ASN:HA	1:A:548:LEU:CD2	2.27	0.64
1:B:138:ILE:CD1	1:B:162:ARG:HH12	2.08	0.64
1:B:159:ARG:HB3	1:B:583:TRP:NE1	2.13	0.64
1:A:378:HIS:HB2	1:A:382:ASN:ND2	2.12	0.63
1:A:426:GLN:O	1:A:430:LEU:HG	1.98	0.63
1:B:137:LYS:HE3	1:B:176:PHE:CE2	2.32	0.63
1:B:450:GLU:HA	1:B:454:LEU:HD12	1.80	0.63
1:B:292:SER:HB2	1:B:294:LYS:NZ	2.14	0.63
1:B:232:GLU:OE2	1:B:243:LEU:HD23	1.97	0.63
1:A:135:VAL:HG12	1:A:176:PHE:CE1	2.33	0.63
1:A:317:PHE:CZ	1:A:405:LYS:HD2	2.30	0.63
1:A:371:TYR:CD1	1:A:372:PRO:HA	2.33	0.63
1:B:181:LYS:HA	1:B:188:ASN:ND2	2.14	0.63
1:B:239:THR:HG22	3:B:1170:HOH:O	1.97	0.63
1:B:547:GLN:O	1:B:549:GLU:N	2.31	0.63
1:A:489:GLN:NE2	1:A:574:GLU:O	2.31	0.63
1:B:185:PRO:HD2	1:B:467:GLY:HA3	1.80	0.63
1:A:481:LEU:HD12	1:A:481:LEU:O	1.99	0.63
1:B:208:LEU:HD21	1:B:446:GLU:OE1	1.98	0.63
1:A:317:PHE:CD1	1:A:405:LYS:CG	2.81	0.62
1:B:450:GLU:CD	1:B:454:LEU:HD12	2.19	0.62
1:B:458:HIS:CE1	1:B:463:ARG:HG3	2.34	0.62
1:B:222:ASN:OD1	1:B:224:SER:N	2.31	0.62

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:295:ARG:NH2	1:A:342:ALA:HA	2.15	0.62
1:B:330:ASN:HA	1:B:333:LYS:CE	2.28	0.62
1:A:509:LEU:HD12	1:A:579:TYR:CD1	2.33	0.62
1:B:120:ASP:HB3	1:B:121:PRO:CD	2.29	0.62
1:B:308:ASP:OD1	1:B:312:GLN:HG2	2.00	0.62
1:A:112:LEU:CD1	1:A:179:LEU:HD21	2.19	0.62
1:B:92:THR:HB	1:B:164:ALA:HB3	1.82	0.62
1:B:231:ASN:ND2	1:B:237:CYS:H	1.96	0.62
1:B:365:LYS:HB2	1:B:386:THR:HG22	1.82	0.62
1:B:407:GLU:HB3	3:B:1124:HOH:O	2.00	0.62
1:B:516:LEU:O	1:B:516:LEU:HD23	1.99	0.62
1:B:511:HIS:HA	1:B:514:SER:OG	1.99	0.61
1:B:426:GLN:NE2	1:B:482:GLN:HB3	2.15	0.61
1:B:338:GLU:OE1	1:B:338:GLU:N	2.33	0.61
1:A:261:PHE:O	1:A:288:MET:CG	2.34	0.61
1:A:375:GLU:O	1:A:375:GLU:OE1	2.19	0.61
1:A:268:PRO:CA	1:A:284:CYS:HB3	2.30	0.61
1:B:387:HIS:O	1:B:391:HIS:CD2	2.54	0.61
1:B:185:PRO:HG2	1:B:192:LEU:HD23	1.83	0.61
1:B:290:GLY:HA2	1:B:331:LYS:O	2.00	0.61
1:B:338:GLU:CB	1:B:343:TYR:CE1	2.83	0.61
1:B:363:LEU:HB2	1:B:388:TRP:CZ3	2.34	0.61
1:B:267:ILE:O	1:B:269:VAL:HG13	2.01	0.61
1:B:323:PRO:HD2	1:B:326:ASN:CG	2.21	0.61
1:B:85:LYS:HB3	1:B:182:TYR:CE1	2.36	0.61
1:A:402:ILE:HG23	1:A:413:VAL:HG21	1.82	0.60
1:A:317:PHE:CZ	1:A:405:LYS:CE	2.84	0.60
1:B:85:LYS:HG3	1:B:182:TYR:CE1	2.37	0.60
1:A:227:ILE:HG12	1:A:245:VAL:HG22	1.82	0.60
1:B:321:ALA:HB2	1:B:427:LEU:HD11	1.83	0.60
1:B:138:ILE:HD13	1:B:162:ARG:CZ	2.31	0.60
1:B:157:ASP:OD1	1:B:159:ARG:HG2	2.01	0.60
1:B:246:VAL:HB	1:B:247:PRO:CD	2.32	0.60
1:B:340:GLU:HG3	1:B:341:ASP:OD1	2.02	0.60
1:A:201:PHE:HB3	1:A:202:PRO:HD2	1.83	0.60
1:A:426:GLN:HG2	1:A:453:TRP:HH2	1.67	0.60
1:B:400:LEU:CD2	1:B:566:PRO:HD2	2.32	0.60
1:A:135:VAL:HB	1:A:180:MET:SD	2.41	0.59
1:A:303:LEU:CD2	1:A:318:ILE:HD11	2.32	0.59
1:B:261:PHE:O	1:B:288:MET:CG	2.46	0.59
1:B:323:PRO:HD2	1:B:326:ASN:ND2	2.17	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:74:GLU:HG3	1:A:75:GLU:N	2.17	0.59
1:A:399:ALA:O	1:A:434:MET:HE1	2.03	0.59
1:B:291:VAL:CG1	3:B:1211:HOH:O	2.50	0.59
1:B:91:VAL:HG22	1:B:165:HIS:CE1	2.37	0.58
1:B:307:MET:HE3	1:B:316:ILE:CG2	2.33	0.58
1:B:240:TYR:CE1	1:B:266:ARG:NH1	2.69	0.58
1:B:396:LEU:HD21	1:B:486:CYS:HB3	1.85	0.58
1:A:92:THR:OG1	1:A:102:ARG:HG2	2.03	0.58
1:A:149:TYR:CE2	1:A:172:ARG:HG3	2.38	0.58
1:B:423:ARG:O	1:B:427:LEU:HG	2.04	0.58
1:B:377:THR:HG22	1:B:378:HIS:CD2	2.38	0.58
1:B:220:ILE:CD1	1:B:222:ASN:ND2	2.67	0.58
1:B:422:ASP:OD1	1:B:458:HIS:CE1	2.57	0.58
1:A:303:LEU:HD13	1:A:343:TYR:CE2	2.39	0.57
1:B:289:VAL:O	1:B:294:LYS:HG2	2.04	0.57
1:B:307:MET:HE3	1:B:316:ILE:HB	1.85	0.57
1:A:266:ARG:O	1:A:284:CYS:HB2	2.04	0.57
1:B:159:ARG:HD3	1:B:583:TRP:CE2	2.38	0.57
1:B:286:GLN:HB3	1:B:417:SER:O	2.04	0.57
1:A:241:PRO:HD2	1:A:244:LEU:HD21	1.85	0.57
1:B:115:LYS:HG3	1:B:124:VAL:HG22	1.85	0.57
1:A:229:LYS:HD3	1:A:232:GLU:OE2	2.04	0.57
1:B:549:GLU:HB2	3:B:1064:HOH:O	2.05	0.57
1:A:461:GLN:CB	1:A:522:CYS:O	2.53	0.57
1:B:186:VAL:HB	1:B:467:GLY:O	2.05	0.57
1:A:101:VAL:HG22	1:A:119:ARG:HH21	1.69	0.56
1:B:94:ILE:CD1	1:B:147:ASN:HB3	2.19	0.56
1:A:196:GLU:HG3	3:A:1159:HOH:O	2.05	0.56
1:A:241:PRO:HG2	1:A:244:LEU:HD23	1.87	0.56
1:B:375:GLU:C	1:B:375:GLU:OE1	2.43	0.56
1:A:96:PRO:HG2	1:A:97:PHE:CE1	2.41	0.56
1:B:270:LEU:C	1:B:270:LEU:HD23	2.25	0.56
1:B:338:GLU:HA	1:B:343:TYR:HE1	1.68	0.56
1:B:567:VAL:HG11	1:B:572:HIS:HD2	1.70	0.56
1:B:126:ASP:OD1	1:B:127:ALA:N	2.38	0.56
1:B:268:PRO:CA	1:B:284:CYS:HB3	2.36	0.56
1:B:129:LEU:HB3	1:B:183:ALA:HA	1.88	0.56
1:B:357:HIS:ND1	1:B:360:ARG:NH2	2.54	0.56
1:A:282:THR:OG1	1:A:414:VAL:HG22	2.05	0.56
1:A:382:ASN:O	1:A:385:SER:OG	2.23	0.56
1:A:86:ASP:OD2	1:A:174:SER:OG	2.18	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:504:PHE:O	1:A:508:ILE:HG13	2.06	0.56
1:B:526:GLN:O	1:B:530:LYS:HG3	2.05	0.56
1:A:82:GLU:HG3	1:A:108:THR:OG1	2.06	0.56
1:A:154:VAL:HA	1:A:160:ASN:OD1	2.06	0.56
1:A:443:ARG:HD3	3:A:1075:HOH:O	2.06	0.56
1:B:348:LEU:HD12	1:B:349:VAL:N	2.21	0.55
1:A:107:VAL:HG22	1:A:112:LEU:CD1	2.36	0.55
1:A:159:ARG:HD3	1:A:583:TRP:CZ2	2.41	0.55
1:B:185:PRO:CG	1:B:192:LEU:CD2	2.83	0.55
1:B:533:LEU:N	1:B:534:PRO:CD	2.69	0.55
1:A:111:ARG:HD3	1:A:126:ASP:OD1	2.06	0.55
1:B:340:GLU:HG3	1:B:341:ASP:CG	2.25	0.55
1:B:226:ARG:HD3	1:B:248:ALA:HA	1.88	0.55
1:A:586:ARG:HG3	3:A:1195:HOH:O	2.07	0.55
1:B:338:GLU:CB	1:B:343:TYR:CD1	2.86	0.55
1:A:246:VAL:HB	1:A:247:PRO:CD	2.37	0.55
1:B:78:LEU:HD22	1:B:82:GLU:HG2	1.89	0.55
1:B:181:LYS:HA	1:B:188:ASN:HD22	1.72	0.54
1:B:220:ILE:HD13	1:B:222:ASN:ND2	2.22	0.54
1:B:338:GLU:HB3	1:B:343:TYR:CE1	2.42	0.54
1:A:294:LYS:HE3	3:A:1106:HOH:O	2.07	0.54
1:A:101:VAL:CG2	1:A:119:ARG:NE	2.69	0.54
1:B:337:TYR:CE1	1:B:348:LEU:HD23	2.41	0.54
1:B:312:GLN:O	1:B:313:SER:C	2.45	0.54
1:B:184:PHE:CG	1:B:469:LYS:HG2	2.43	0.54
1:B:502:GLU:HG3	1:B:576:TRP:HZ2	1.72	0.54
1:B:567:VAL:CG1	1:B:572:HIS:CD2	2.90	0.54
1:A:322:ARG:NH1	1:A:330:ASN:HD22	2.06	0.54
1:A:407:GLU:HA	1:A:407:GLU:OE1	2.07	0.54
1:A:415:VAL:HG22	1:A:424:THR:HG23	1.89	0.54
1:B:296:SER:HB3	1:B:299:ASP:HB2	1.89	0.54
1:A:214:GLU:HA	1:A:214:GLU:OE1	2.07	0.54
1:B:209:TYR:CD1	1:B:447:VAL:HG13	2.41	0.54
1:A:110:TYR:CZ	1:A:516:LEU:HD13	2.42	0.54
1:A:547:GLN:O	1:A:547:GLN:HG3	2.08	0.54
1:A:521:LEU:O	1:A:522:CYS:HB2	2.08	0.53
1:A:245:VAL:HG11	1:A:270:LEU:HD23	1.89	0.53
1:A:511:HIS:CE1	1:A:517:PHE:HE1	2.27	0.53
1:B:266:ARG:HH21	1:B:421:TRP:HE3	1.56	0.53
1:A:496:THR:HG21	1:A:558:SER:HB2	1.91	0.53
1:A:517:PHE:HB3	1:A:538:VAL:O	2.09	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:79:LEU:HG	1:B:111:ARG:HH22	1.73	0.53
1:B:303:LEU:HD12	1:B:343:TYR:CD2	2.43	0.53
1:B:325:VAL:HG23	3:B:1005:HOH:O	2.08	0.53
1:A:528:ARG:CG	1:A:533:LEU:HD12	2.38	0.53
1:B:112:LEU:HD13	1:B:179:LEU:HD13	1.91	0.53
1:A:238:ASP:OD1	1:A:239:THR:HG23	2.09	0.53
1:B:314:HIS:CG	1:B:315:LYS:H	2.25	0.53
1:B:485:ASP:O	1:B:489:GLN:HG2	2.08	0.53
1:B:266:ARG:CD	1:B:285:SER:HB3	2.39	0.53
1:A:284:CYS:O	1:A:416:HIS:CB	2.56	0.53
1:A:456:PHE:CE1	3:A:1020:HOH:O	2.54	0.53
1:B:584:ASN:OD1	1:B:585:PRO:HD2	2.09	0.53
1:B:220:ILE:CG2	1:B:221:PRO:HA	2.40	0.52
1:B:361:GLU:O	1:B:365:LYS:HG3	2.10	0.52
1:B:461:GLN:O	1:B:465:GLY:HA2	2.08	0.52
1:B:135:VAL:HG12	1:B:176:PHE:CE1	2.45	0.52
1:B:137:LYS:HG3	1:B:176:PHE:CZ	2.45	0.52
1:A:79:LEU:HD11	1:A:111:ARG:NH2	2.25	0.52
1:B:259:ALA:HA	1:B:267:ILE:HG22	1.90	0.52
1:B:459:ARG:HB3	1:B:523:ASN:OD1	2.08	0.52
1:B:468:ASP:HB3	1:B:476:ARG:NH2	2.24	0.52
1:A:122:PRO:HD2	3:A:1152:HOH:O	2.09	0.52
1:A:451:LYS:O	1:A:456:PHE:HD1	1.92	0.52
1:B:422:ASP:HB2	2:B:656:PO4:O2	2.09	0.52
1:B:521:LEU:O	1:B:522:CYS:HB2	2.10	0.52
1:A:129:LEU:HB3	1:A:183:ALA:HA	1.92	0.52
1:B:197:TYR:O	1:B:198:LYS:HD3	2.09	0.52
1:B:466:HIS:CD2	1:B:521:LEU:CD2	2.90	0.52
1:B:468:ASP:HB3	1:B:476:ARG:HH21	1.75	0.52
1:A:430:LEU:HD23	1:A:483:PHE:HE1	1.74	0.52
1:A:304:GLN:HE22	1:A:307:MET:HE3	1.74	0.52
1:A:472:ALA:O	1:A:473:ASP:C	2.47	0.52
1:B:375:GLU:OE1	1:B:375:GLU:O	2.28	0.52
1:B:432:MET:HE1	1:B:452:GLU:HG3	1.88	0.52
1:A:240:TYR:HE1	1:A:266:ARG:NH1	2.08	0.51
1:B:240:TYR:CZ	1:B:266:ARG:HB3	2.46	0.51
1:B:246:VAL:HB	1:B:247:PRO:HD2	1.91	0.51
1:B:272:TRP:CZ3	1:B:435:LEU:HD13	2.45	0.51
1:A:390:GLU:CG	3:A:1037:HOH:O	2.45	0.51
1:B:526:GLN:CG	1:B:530:LYS:HE3	2.38	0.51
1:A:137:LYS:HD3	1:A:172:ARG:HH12	1.73	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:488:TRP:CE2	1:B:576:TRP:CD1	2.99	0.51
1:B:84:ILE:HA	1:B:108:THR:HG22	1.92	0.51
1:B:85:LYS:HG3	1:B:182:TYR:CZ	2.45	0.51
1:A:430:LEU:HD23	1:A:483:PHE:CE1	2.45	0.51
1:A:149:TYR:O	1:A:165:HIS:N	2.42	0.51
1:A:239:THR:HG23	3:A:1032:HOH:O	2.10	0.51
1:A:370:VAL:HG11	1:A:580:TYR:O	2.09	0.51
1:A:131:VAL:HG21	1:A:157:ASP:OD2	2.10	0.51
1:A:173:ARG:O	1:A:177:GLU:HG2	2.10	0.51
1:A:185:PRO:HD2	1:A:467:GLY:CA	2.39	0.51
1:A:461:GLN:HB3	1:A:523:ASN:OD1	2.11	0.51
1:B:584:ASN:C	1:B:586:ARG:H	2.14	0.51
1:A:183:ALA:O	1:A:184:PHE:CD2	2.63	0.51
1:A:410:LYS:HG3	3:A:1073:HOH:O	2.10	0.51
1:A:315:LYS:NZ	1:A:347:GLU:OE1	2.23	0.51
1:A:150:GLY:HA2	1:A:165:HIS:HD2	1.75	0.51
1:A:317:PHE:CE1	1:A:411:THR:HG21	2.45	0.51
1:B:504:PHE:CE2	1:B:508:ILE:CD1	2.94	0.51
1:B:547:GLN:C	1:B:549:GLU:H	2.14	0.51
1:A:186:VAL:CG2	1:A:467:GLY:O	2.58	0.50
1:B:338:GLU:HB3	1:B:343:TYR:CG	2.46	0.50
1:B:422:ASP:OD1	1:B:458:HIS:HE1	1.94	0.50
1:B:292:SER:HB2	1:B:294:LYS:HZ2	1.76	0.50
1:A:101:VAL:HG21	1:A:119:ARG:NE	2.27	0.50
1:A:518:GLY:CA	1:A:521:LEU:HD12	2.40	0.50
1:A:547:GLN:O	1:A:549:GLU:N	2.44	0.50
1:A:303:LEU:HD21	1:A:318:ILE:HD11	1.93	0.50
1:A:443:ARG:O	1:A:447:VAL:HG23	2.11	0.50
1:B:283:ARG:NH1	1:B:452:GLU:OE1	2.43	0.50
1:B:407:GLU:OE1	1:B:407:GLU:HA	2.10	0.50
1:A:86:ASP:OD1	1:A:87:MET:N	2.44	0.50
1:B:428:THR:O	1:B:432:MET:HE2	2.11	0.50
1:B:548:LEU:O	1:B:552:THR:OG1	2.16	0.50
1:B:206:TRP:CE2	1:B:534:PRO:HA	2.47	0.50
1:A:401:ARG:HH11	1:A:401:ARG:HB3	1.76	0.49
1:B:76:PRO:HG3	1:B:106:THR:HG21	1.94	0.49
1:B:338:GLU:CG	1:B:343:TYR:CZ	2.95	0.49
1:B:500:PHE:CE1	1:B:505:LEU:HD21	2.47	0.49
1:A:421:TRP:CD1	1:A:422:ASP:OD2	2.66	0.49
1:B:446:GLU:HG2	1:B:541:TRP:CE3	2.46	0.49
1:A:114:PHE:HB3	1:A:125:LEU:HB3	1.94	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:186:VAL:HG23	1:B:192:LEU:HD21	1.94	0.49
1:A:131:VAL:HG13	1:A:155:CYS:HB3	1.94	0.49
1:A:240:TYR:HB3	1:A:241:PRO:HD2	1.95	0.49
1:B:310:ASN:O	1:B:311:ALA:HB3	2.13	0.49
1:A:259:ALA:CA	1:A:267:ILE:CG2	2.89	0.49
1:B:323:PRO:HB2	1:B:326:ASN:HD22	1.78	0.49
1:A:582:ARG:O	1:A:582:ARG:HG3	2.12	0.49
1:B:85:LYS:CB	1:B:182:TYR:CE1	2.96	0.49
1:A:259:ALA:HA	1:A:267:ILE:HG22	1.92	0.48
1:A:262:ARG:HG3	1:A:267:ILE:HA	1.95	0.48
1:A:527:GLN:HG3	3:A:1234:HOH:O	2.13	0.48
1:B:241:PRO:HG2	1:B:244:LEU:HD23	1.95	0.48
1:A:126:ASP:OD1	1:A:126:ASP:C	2.51	0.48
1:A:378:HIS:HB3	1:A:382:ASN:ND2	2.27	0.48
1:A:516:LEU:HD23	1:A:517:PHE:CE1	2.49	0.48
1:B:234:TYR:CD2	1:B:526:GLN:HB2	2.47	0.48
1:B:355:ASN:O	1:B:359:MET:HG2	2.13	0.48
1:A:101:VAL:HG21	1:A:119:ARG:HE	1.74	0.48
1:B:78:LEU:HD11	1:B:84:ILE:HG13	1.95	0.48
1:B:119:ARG:O	1:B:120:ASP:C	2.52	0.48
1:A:267:ILE:O	1:A:268:PRO:C	2.51	0.48
1:A:430:LEU:O	1:A:434:MET:HG3	2.13	0.48
1:B:75:GLU:HB3	1:B:76:PRO:HD2	1.95	0.48
1:B:153:THR:OG1	1:B:161:LEU:HB2	2.13	0.48
1:A:416:HIS:CD2	1:A:416:HIS:C	2.85	0.48
1:B:528:ARG:HD3	1:B:533:LEU:HD12	1.94	0.48
1:A:317:PHE:CD1	1:A:411:THR:HG21	2.49	0.48
1:B:283:ARG:NH2	1:B:456:PHE:HB3	2.29	0.48
1:B:340:GLU:CG	3:B:1227:HOH:O	2.54	0.48
1:A:102:ARG:HB2	1:A:118:GLU:OE2	2.14	0.48
1:A:113:TYR:CE1	1:A:126:ASP:HB2	2.49	0.47
1:A:304:GLN:HE22	1:A:307:MET:CE	2.27	0.47
1:A:522:CYS:SG	1:A:533:LEU:HD11	2.54	0.47
1:A:318:ILE:O	1:A:348:LEU:HA	2.14	0.47
1:A:563:VAL:HG12	1:A:565:TYR:CE1	2.49	0.47
1:B:135:VAL:HG11	1:B:179:LEU:HD23	1.96	0.47
1:B:316:ILE:HG13	1:B:412:SER:O	2.14	0.47
1:B:450:GLU:OE2	1:B:454:LEU:CD1	2.62	0.47
1:A:85:LYS:O	1:A:86:ASP:HB2	2.15	0.47
1:A:381:SER:HB3	1:B:384:GLU:OE2	2.14	0.47
1:A:509:LEU:HD13	1:A:579:TYR:CE1	2.48	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:149:TYR:O	1:B:164:ALA:HA	2.15	0.47
1:B:282:THR:HG23	3:B:1110:HOH:O	2.14	0.47
1:A:79:LEU:CD1	1:A:111:ARG:NH2	2.78	0.47
1:A:197:TYR:CE2	1:A:199:GLU:HB3	2.50	0.47
1:A:220:ILE:CG2	1:A:221:PRO:N	2.78	0.47
1:A:423:ARG:HH21	2:A:656:PO4:P	2.38	0.47
1:A:446:GLU:HG2	1:A:541:TRP:CE3	2.50	0.47
1:A:541:TRP:CE3	1:A:544:ILE:HD12	2.50	0.47
1:B:85:LYS:HD2	1:B:182:TYR:OH	2.14	0.47
1:B:220:ILE:HD12	1:B:225:TRP:HB2	1.96	0.47
1:B:292:SER:HB2	1:B:294:LYS:HZ1	1.80	0.47
1:A:76:PRO:HB3	1:A:113:TYR:CG	2.50	0.47
1:A:150:GLY:HA2	1:A:165:HIS:CD2	2.49	0.47
1:A:303:LEU:HD13	1:A:343:TYR:HE2	1.80	0.47
1:B:259:ALA:HA	1:B:267:ILE:CG2	2.45	0.47
1:B:399:ALA:O	1:B:434:MET:HE1	2.15	0.47
1:A:76:PRO:HG3	1:A:106:THR:HG21	1.96	0.47
1:B:388:TRP:O	1:B:392:ILE:HG12	2.15	0.47
1:B:502:GLU:HG3	1:B:576:TRP:CZ2	2.49	0.47
1:B:531:GLU:O	1:B:536:ARG:HD3	2.14	0.47
1:B:222:ASN:OD1	1:B:225:TRP:N	2.41	0.47
1:A:237:CYS:HB2	1:A:265:GLY:O	2.15	0.46
1:A:320:ASP:HB2	1:A:348:LEU:HD11	1.96	0.46
1:A:422:ASP:O	1:A:426:GLN:HG3	2.16	0.46
1:B:383:LEU:HD13	1:B:575:LEU:HD22	1.98	0.46
1:B:296:SER:CB	1:B:299:ASP:HB2	2.45	0.46
1:B:504:PHE:CE2	1:B:508:ILE:HD11	2.49	0.46
1:B:206:TRP:CD1	1:B:534:PRO:HA	2.50	0.46
1:B:415:VAL:HG11	1:B:428:THR:HG22	1.97	0.46
1:B:543:TYR:O	1:B:546:SER:OG	2.23	0.46
1:A:511:HIS:CD2	1:A:540:LEU:CD1	2.99	0.46
1:A:524:SER:O	1:A:528:ARG:HG3	2.14	0.46
1:B:91:VAL:CG2	1:B:165:HIS:CE1	2.98	0.46
1:B:307:MET:HE2	1:B:316:ILE:N	2.30	0.46
1:B:321:ALA:HB2	1:B:427:LEU:CD1	2.46	0.46
1:B:426:GLN:HE21	1:B:482:GLN:HB3	1.78	0.46
1:A:159:ARG:NE	1:A:583:TRP:CZ2	2.84	0.46
1:A:231:ASN:HD21	1:A:237:CYS:H	1.63	0.46
1:A:511:HIS:CD2	1:A:540:LEU:HD11	2.50	0.46
1:B:158:ILE:HG23	1:B:367:LYS:HG3	1.96	0.46
1:B:212:LEU:HD21	1:B:243:LEU:HD13	1.96	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:245:VAL:HB	1:B:270:LEU:HB3	1.97	0.46
1:B:282:THR:OG1	1:B:414:VAL:HG22	2.15	0.46
1:B:545:ASN:ND2	1:B:548:LEU:HD21	2.31	0.46
1:A:112:LEU:HD13	1:A:179:LEU:CD2	2.22	0.46
1:A:418:SER:HB2	2:A:656:PO4:O3	2.16	0.46
1:A:137:LYS:HE3	1:A:176:PHE:CE2	2.51	0.46
1:A:220:ILE:HG22	1:A:221:PRO:N	2.30	0.46
1:A:222:ASN:O	1:A:222:ASN:OD1	2.33	0.46
1:B:287:PRO:HG2	1:B:337:TYR:CA	2.46	0.46
1:A:399:ALA:O	1:A:434:MET:CE	2.63	0.46
1:A:423:ARG:O	1:A:427:LEU:HG	2.15	0.46
1:B:138:ILE:HD13	1:B:162:ARG:NH2	2.31	0.46
1:B:270:LEU:HD23	1:B:271:SER:N	2.30	0.46
1:B:396:LEU:HD23	1:B:430:LEU:HD13	1.98	0.46
1:A:113:TYR:CD1	1:A:126:ASP:HB2	2.51	0.46
1:A:295:ARG:HH21	1:A:300:GLU:CD	2.19	0.46
1:B:310:ASN:O	1:B:310:ASN:OD1	2.34	0.46
1:B:437:GLY:HA2	1:B:440:ARG:NH1	2.30	0.46
1:A:159:ARG:CD	1:A:583:TRP:CZ2	2.99	0.45
1:B:85:LYS:CG	1:B:182:TYR:CE1	2.99	0.45
1:A:316:ILE:HG23	1:A:316:ILE:O	2.16	0.45
1:B:95:CYS:O	1:B:98:THR:O	2.34	0.45
1:B:307:MET:CE	1:B:316:ILE:HB	2.46	0.45
1:A:82:GLU:CG	1:A:108:THR:OG1	2.64	0.45
1:A:85:LYS:HB2	1:A:107:VAL:O	2.17	0.45
1:B:94:ILE:HD11	1:B:147:ASN:HB2	1.90	0.45
1:B:270:LEU:HA	1:B:282:THR:HG22	1.97	0.45
1:B:459:ARG:NH1	1:B:523:ASN:ND2	2.64	0.45
1:A:274:HIS:CG	1:A:275:PRO:CD	2.93	0.45
1:B:266:ARG:HD2	1:B:285:SER:HB3	1.97	0.45
1:A:318:ILE:O	1:A:348:LEU:HD12	2.16	0.45
1:A:353:ILE:CD1	1:A:395:ILE:HD13	2.41	0.45
1:A:452:GLU:HB2	1:A:453:TRP:CD1	2.52	0.45
1:A:290:GLY:HA3	3:A:1106:HOH:O	2.17	0.45
1:A:419:ASP:HB2	1:A:421:TRP:NE1	2.31	0.45
1:B:383:LEU:CD1	1:B:575:LEU:HD22	2.47	0.45
1:B:220:ILE:HD13	1:B:222:ASN:HD22	1.81	0.45
1:B:460:PHE:O	1:B:464:VAL:HG23	2.16	0.45
1:B:229:LYS:HB3	1:B:232:GLU:CG	2.46	0.45
1:B:461:GLN:HB2	1:B:522:CYS:O	2.17	0.45
1:B:307:MET:HE3	1:B:316:ILE:CB	2.46	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:320:ASP:CG	1:B:322:ARG:HE	2.20	0.45
1:B:461:GLN:O	1:B:465:GLY:N	2.47	0.45
1:A:135:VAL:HG12	1:A:176:PHE:CD1	2.52	0.45
1:A:353:ILE:HD13	1:A:395:ILE:CD1	2.41	0.45
1:A:506:ILE:CG2	1:A:582:ARG:NH1	2.80	0.45
1:B:113:TYR:CE2	1:B:115:LYS:HB2	2.52	0.45
1:B:528:ARG:CG	1:B:533:LEU:HD12	2.46	0.45
1:A:231:ASN:ND2	1:A:234:TYR:HA	2.31	0.44
1:A:557:GLY:O	1:A:558:SER:C	2.55	0.44
1:B:125:LEU:HD21	1:B:161:LEU:CD2	2.41	0.44
1:A:473:ASP:OD1	1:A:475:ASP:HB2	2.17	0.44
1:B:365:LYS:CB	1:B:386:THR:HG22	2.48	0.44
1:A:74:GLU:CG	1:A:115:LYS:HD3	2.47	0.44
1:A:246:VAL:HB	1:A:247:PRO:HD2	2.00	0.44
1:A:450:GLU:CD	1:A:454:LEU:HD12	2.37	0.44
1:B:113:TYR:CZ	1:B:124:VAL:HG13	2.52	0.44
1:B:517:PHE:HB3	1:B:538:VAL:O	2.17	0.44
1:B:544:ILE:HG23	1:B:551:PHE:CD1	2.52	0.44
1:B:224:SER:HB3	1:B:309:SER:HB2	2.00	0.44
1:B:466:HIS:CG	1:B:515:CYS:SG	3.11	0.44
1:A:134:ARG:NH1	1:A:136:GLU:CG	2.78	0.44
1:A:544:ILE:CG2	1:A:551:PHE:CD1	2.91	0.44
1:A:576:TRP:O	1:A:576:TRP:CD1	2.70	0.44
1:A:74:GLU:CG	1:A:75:GLU:N	2.80	0.44
1:A:266:ARG:NH2	1:A:456:PHE:O	2.43	0.44
1:A:359:MET:HE2	1:A:482:GLN:HE22	1.80	0.44
1:B:185:PRO:HG3	1:B:192:LEU:HD23	1.98	0.44
1:B:356:ILE:HB	1:B:477:SER:HB2	2.00	0.44
1:B:374:ILE:HD11	1:B:581:ILE:HG21	2.00	0.44
1:A:110:TYR:CE1	1:A:516:LEU:HD13	2.53	0.44
1:A:466:HIS:HE1	1:A:512:LEU:O	2.00	0.44
1:A:528:ARG:HG2	1:A:533:LEU:HD12	1.99	0.44
1:B:85:LYS:HE2	1:B:109:ASN:HB3	1.99	0.44
1:A:431:ALA:HA	1:A:434:MET:CE	2.46	0.43
1:B:267:ILE:HG13	1:B:269:VAL:HG13	1.99	0.43
1:B:460:PHE:CD2	1:B:512:LEU:HD11	2.53	0.43
1:A:423:ARG:HE	1:A:423:ARG:HB2	1.49	0.43
1:B:241:PRO:HD2	1:B:244:LEU:HD21	2.00	0.43
1:B:348:LEU:HD12	1:B:348:LEU:C	2.38	0.43
1:A:134:ARG:NH2	3:A:1200:HOH:O	2.51	0.43
1:B:234:TYR:HB2	1:B:526:GLN:NE2	2.33	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:533:LEU:N	1:B:534:PRO:HD3	2.34	0.43
1:A:231:ASN:ND2	1:A:237:CYS:H	2.15	0.43
1:A:440:ARG:HE	1:A:564:LEU:HD12	1.83	0.43
1:B:504:PHE:CE2	1:B:508:ILE:HD12	2.53	0.43
1:A:471:HIS:HA	1:A:476:ARG:NH1	2.33	0.43
1:B:410:LYS:CE	3:B:1093:HOH:O	1.83	0.43
1:A:374:ILE:CD1	1:A:581:ILE:HD13	2.43	0.43
1:A:459:ARG:O	1:A:463:ARG:HG2	2.19	0.43
1:B:509:LEU:HD12	1:B:579:TYR:CD1	2.53	0.43
1:B:432:MET:CE	1:B:452:GLU:CG	2.90	0.43
1:B:547:GLN:C	1:B:549:GLU:N	2.72	0.43
1:A:403:ALA:HB2	1:A:434:MET:HE3	2.01	0.43
1:A:430:LEU:CD2	1:A:483:PHE:CE1	3.01	0.43
1:A:533:LEU:N	1:A:534:PRO:CD	2.82	0.43
1:B:92:THR:OG1	1:B:102:ARG:HG2	2.19	0.43
1:B:298:GLU:CD	1:B:298:GLU:H	2.22	0.43
1:B:451:LYS:O	1:B:456:PHE:HD1	2.02	0.43
1:B:460:PHE:CE2	1:B:512:LEU:HD11	2.53	0.43
1:A:295:ARG:NE	1:A:300:GLU:OE2	2.40	0.43
1:A:322:ARG:HH11	1:A:330:ASN:ND2	2.16	0.43
1:B:511:HIS:CG	1:B:540:LEU:HD13	2.51	0.43
1:B:298:GLU:O	1:B:302:TYR:N	2.45	0.42
1:B:314:HIS:CD2	1:B:315:LYS:CB	2.85	0.42
1:B:323:PRO:HB2	1:B:326:ASN:ND2	2.34	0.42
1:A:317:PHE:CE1	1:A:405:LYS:CE	2.98	0.42
1:A:437:GLY:CA	1:A:440:ARG:NH1	2.79	0.42
1:B:481:LEU:HD13	1:B:509:LEU:HD13	2.02	0.42
1:A:92:THR:HB	1:A:164:ALA:HB3	2.02	0.42
1:A:234:TYR:HB3	1:A:238:ASP:HA	2.01	0.42
1:B:128:SER:O	1:B:131:VAL:HG12	2.20	0.42
1:B:97:PHE:CD1	1:B:585:PRO:HD3	2.55	0.42
1:B:114:PHE:HB3	1:B:125:LEU:HB3	2.00	0.42
1:B:401:ARG:HH11	1:B:401:ARG:HB3	1.83	0.42
1:B:461:GLN:O	1:B:465:GLY:CA	2.68	0.42
1:A:82:GLU:HA	1:A:109:ASN:OD1	2.20	0.42
1:A:101:VAL:HG22	1:A:119:ARG:NE	2.30	0.42
1:A:177:GLU:OE1	1:A:177:GLU:HA	2.20	0.42
1:B:209:TYR:HB3	3:B:1182:HOH:O	2.19	0.42
1:B:322:ARG:NH1	1:B:327:ALA:HA	2.35	0.42
1:B:354:HIS:CG	1:B:358:VAL:HG11	2.55	0.42
1:B:544:ILE:HG22	1:B:545:ASN:HD22	1.84	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:177:GLU:HA	1:B:177:GLU:OE1	2.20	0.42
1:A:338:GLU:CG	1:A:343:TYR:CE1	3.03	0.42
1:A:563:VAL:CG1	1:A:565:TYR:CE1	3.03	0.42
1:B:545:ASN:HD22	1:B:548:LEU:HD21	1.85	0.42
1:A:378:HIS:HA	1:B:384:GLU:OE1	2.20	0.42
1:A:568:ALA:O	1:A:569:SER:OG	2.33	0.42
1:B:316:ILE:O	1:B:316:ILE:HG23	2.19	0.42
1:A:395:ILE:HG22	1:A:430:LEU:CD1	2.50	0.41
1:A:399:ALA:HB1	1:A:434:MET:HE2	2.02	0.41
1:A:492:ARG:CD	1:A:574:GLU:OE2	2.67	0.41
1:B:185:PRO:HG2	1:B:192:LEU:HD21	2.01	0.41
1:A:295:ARG:HB2	3:A:1141:HOH:O	2.19	0.41
1:B:584:ASN:O	1:B:586:ARG:N	2.50	0.41
1:A:75:GLU:OE1	1:A:75:GLU:HA	2.20	0.41
1:A:492:ARG:HD3	1:A:574:GLU:OE2	2.20	0.41
1:B:226:ARG:HD3	1:B:248:ALA:O	2.21	0.41
1:B:391:HIS:O	1:B:395:ILE:HG13	2.21	0.41
1:B:501:ASN:O	1:B:504:PHE:HB3	2.20	0.41
1:B:107:VAL:HG22	1:B:112:LEU:HD12	2.01	0.41
1:A:459:ARG:O	1:A:463:ARG:CG	2.68	0.41
1:A:477:SER:OG	1:A:478:PRO:HD2	2.19	0.41
1:B:232:GLU:OE1	1:B:232:GLU:HA	2.20	0.41
1:B:303:LEU:HD12	1:B:343:TYR:HD2	1.85	0.41
1:B:320:ASP:OD2	1:B:322:ARG:NE	2.53	0.41
1:A:79:LEU:H	1:A:82:GLU:HB3	1.86	0.41
1:A:101:VAL:CG2	1:A:119:ARG:CZ	2.98	0.41
1:A:148:SER:HB2	1:A:162:ARG:NH2	2.36	0.41
1:A:416:HIS:CD2	1:A:417:SER:N	2.89	0.41
1:A:422:ASP:OD1	1:A:458:HIS:HE1	1.99	0.41
1:A:458:HIS:NE2	1:A:463:ARG:HG3	2.35	0.41
1:A:553:ASN:OD1	1:A:554:PRO:HD2	2.20	0.41
1:A:576:TRP:CD1	1:A:576:TRP:C	2.92	0.41
1:B:223:GLU:HA	1:B:223:GLU:OE1	2.20	0.41
1:B:383:LEU:HD11	1:B:575:LEU:CD1	2.47	0.41
1:B:389:LEU:HB2	1:B:570:MET:CE	2.51	0.41
1:B:401:ARG:HH11	1:B:401:ARG:CG	2.33	0.41
1:B:442:ILE:HG12	1:B:500:PHE:HB3	2.03	0.41
1:B:503:TYR:CD2	1:B:551:PHE:CE2	3.09	0.41
1:A:267:ILE:O	1:A:267:ILE:CG1	2.61	0.41
1:A:386:THR:O	1:A:387:HIS:HB2	2.21	0.41
1:A:136:GLU:HA	1:A:136:GLU:OE1	2.20	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:222:ASN:O	1:A:225:TRP:N	2.52	0.41
1:A:317:PHE:CE1	1:A:405:LYS:CG	2.98	0.41
1:A:375:GLU:OE1	1:A:375:GLU:C	2.59	0.41
1:A:384:GLU:HB2	1:B:380:LEU:HB2	2.02	0.41
1:A:400:LEU:CD2	1:A:565:TYR:HD2	2.34	0.41
1:A:576:TRP:O	1:A:576:TRP:CG	2.73	0.41
1:B:74:GLU:HG3	1:B:75:GLU:H	1.86	0.41
1:B:227:ILE:HG12	1:B:245:VAL:HG22	2.03	0.41
1:B:270:LEU:HD23	1:B:271:SER:C	2.41	0.41
1:A:355:ASN:O	1:A:359:MET:HG2	2.21	0.41
1:B:197:TYR:CZ	1:B:199:GLU:HB2	2.56	0.41
1:B:428:THR:C	1:B:432:MET:HE2	2.42	0.41
1:A:94:ILE:HD12	1:A:162:ARG:HD3	2.02	0.40
1:A:135:VAL:CG1	1:A:176:PHE:CD1	3.04	0.40
1:A:228:THR:OG1	1:A:252:ASP:OD1	2.30	0.40
1:B:76:PRO:HA	1:B:77:PRO:HD3	1.95	0.40
1:B:82:GLU:OE1	1:B:111:ARG:NH2	2.54	0.40
1:B:461:GLN:NE2	1:B:466:HIS:HB2	2.28	0.40
1:A:157:ASP:OD1	1:A:159:ARG:CG	2.70	0.40
1:A:376:GLU:OE2	1:B:569:SER:HB2	2.21	0.40
1:B:278:GLN:HA	1:B:278:GLN:OE1	2.22	0.40
1:B:281:ILE:HG12	1:B:413:VAL:HG22	2.03	0.40
1:B:363:LEU:HD12	1:B:363:LEU:O	2.20	0.40
1:A:582:ARG:O	1:A:582:ARG:CG	2.70	0.40
1:B:188:ASN:OD1	1:B:469:LYS:HE3	2.22	0.40
1:B:376:GLU:OE1	1:B:376:GLU:HA	2.20	0.40
1:B:443:ARG:O	1:B:447:VAL:HG23	2.21	0.40
1:B:496:THR:O	1:B:556:TYR:HA	2.21	0.40
1:A:149:TYR:CZ	1:A:172:ARG:HG3	2.57	0.40
1:A:230:ILE:HD12	1:A:252:ASP:HB3	2.04	0.40
1:A:450:GLU:O	1:A:455:SER:HB3	2.22	0.40
1:A:524:SER:OG	1:A:527:GLN:HB2	2.21	0.40
1:B:206:TRP:CD2	1:B:534:PRO:HA	2.56	0.40
1:B:236:LEU:CD1	1:B:256:LYS:HD3	2.51	0.40
1:B:370:VAL:CG1	1:B:580:TYR:O	2.66	0.40
1:A:193:PHE:HE2	1:A:197:TYR:CD1	2.39	0.40
1:B:237:CYS:HB3	1:B:240:TYR:HB2	2.04	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	511/657 (78%)	460 (90%)	44 (9%)	7 (1%)	11	22
1	B	511/657 (78%)	462 (90%)	36 (7%)	13 (2%)	5	9
All	All	1022/1314 (78%)	922 (90%)	80 (8%)	20 (2%)	7	14

All (20) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	221	PRO
1	A	223	GLU
1	A	559	TYR
1	B	344	GLN
1	B	548	LEU
1	A	558	SER
1	B	576	TRP
1	A	220	ILE
1	A	407	GLU
1	B	313	SER
1	B	174	SER
1	B	80	PRO
1	B	147	ASN
1	B	340	GLU
1	B	581	ILE
1	A	80	PRO
1	B	585	PRO
1	B	122	PRO
1	B	140	GLY
1	B	495	PRO

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	456/584 (78%)	432 (95%)	24 (5%)	22	45
1	B	456/584 (78%)	442 (97%)	14 (3%)	40	66
All	All	912/1168 (78%)	874 (96%)	38 (4%)	30	55

All (38) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	87	MET
1	A	108	THR
1	A	151	LEU
1	A	226	ARG
1	A	240	TYR
1	A	253	GLU
1	A	294	LYS
1	A	303	LEU
1	A	310	ASN
1	A	312	GLN
1	A	315	LYS
1	A	364	ARG
1	A	370	VAL
1	A	400	LEU
1	A	401	ARG
1	A	415	VAL
1	A	421	TRP
1	A	423	ARG
1	A	455	SER
1	A	459	ARG
1	A	492	ARG
1	A	552	THR
1	A	574	GLU
1	A	582	ARG
1	B	216	ARG
1	B	239	THR
1	B	240	TYR
1	B	266	ARG
1	B	291	VAL
1	B	299	ASP
1	B	322	ARG

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Mol	Chain	Res	Type
1	B	401	ARG
1	B	408	SER
1	B	415	VAL
1	B	417	SER
1	B	421	TRP
1	B	569	SER
1	B	574	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	165	HIS
1	A	231	ASN
1	A	304	GLN
1	A	310	ASN
1	A	330	ASN
1	A	345	ASN
1	A	373	ASN
1	A	382	ASN
1	A	426	GLN
1	A	482	GLN
1	B	231	ASN
1	B	314	HIS
1	B	326	ASN
1	B	354	HIS
1	B	378	HIS
1	B	426	GLN
1	B	461	GLN
1	B	482	GLN
1	B	511	HIS
1	B	526	GLN
1	B	532	ASN
1	B	545	ASN
1	B	572	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

4 ligands are modelled in this entry.

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	PO4	A	656	-	4,4,4	1.79	1 (25%)	6,6,6	0.46	0
2	PO4	B	656	-	4,4,4	1.79	2 (50%)	6,6,6	0.42	0
2	PO4	B	655	-	4,4,4	1.79	2 (50%)	6,6,6	0.42	0
2	PO4	A	655	-	4,4,4	1.78	0	6,6,6	0.44	0

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	656	PO4	P-O4	-2.05	1.48	1.54
2	B	655	PO4	P-O2	-2.03	1.48	1.54
2	B	656	PO4	P-O2	-2.02	1.48	1.54
2	B	656	PO4	P-O4	-2.01	1.48	1.54
2	B	655	PO4	P-O3	-2.00	1.48	1.54

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	656	PO4	2	0
2	B	656	PO4	1	0

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 [i](#)

6.1 Protein, DNA and RNA chains [i](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.