



wwPDB X-ray Structure Validation Summary Report ⓘ

Jan 23, 2021 – 02:13 PM EST

PDB ID : 1DFC
Title : CRYSTAL STRUCTURE OF HUMAN FASCIN, AN ACTIN-CROSSLINKING PROTEIN
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Deposited on : 1999-11-18
Resolution : 2.90 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity : 4.02b-467
Xtrriage (Phenix) : **NOT EXECUTED**
EDS : **NOT EXECUTED**
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.16

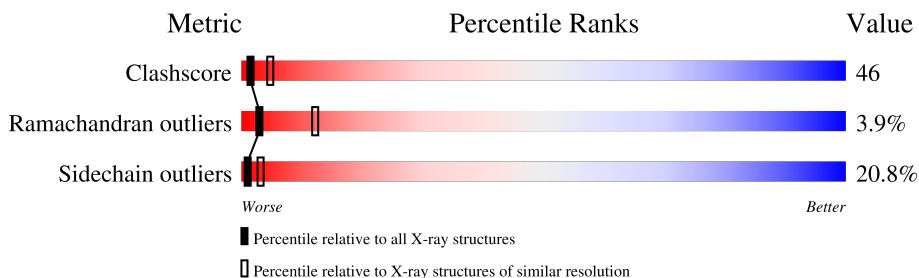
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.90 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	2172 (2.90-2.90)
Ramachandran outliers	138981	2115 (2.90-2.90)
Sidechain outliers	138945	2117 (2.90-2.90)

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	493	 35% 46% 14% . .
1	B	493	 35% 47% 13% . .

2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 7427 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 FASCIN.

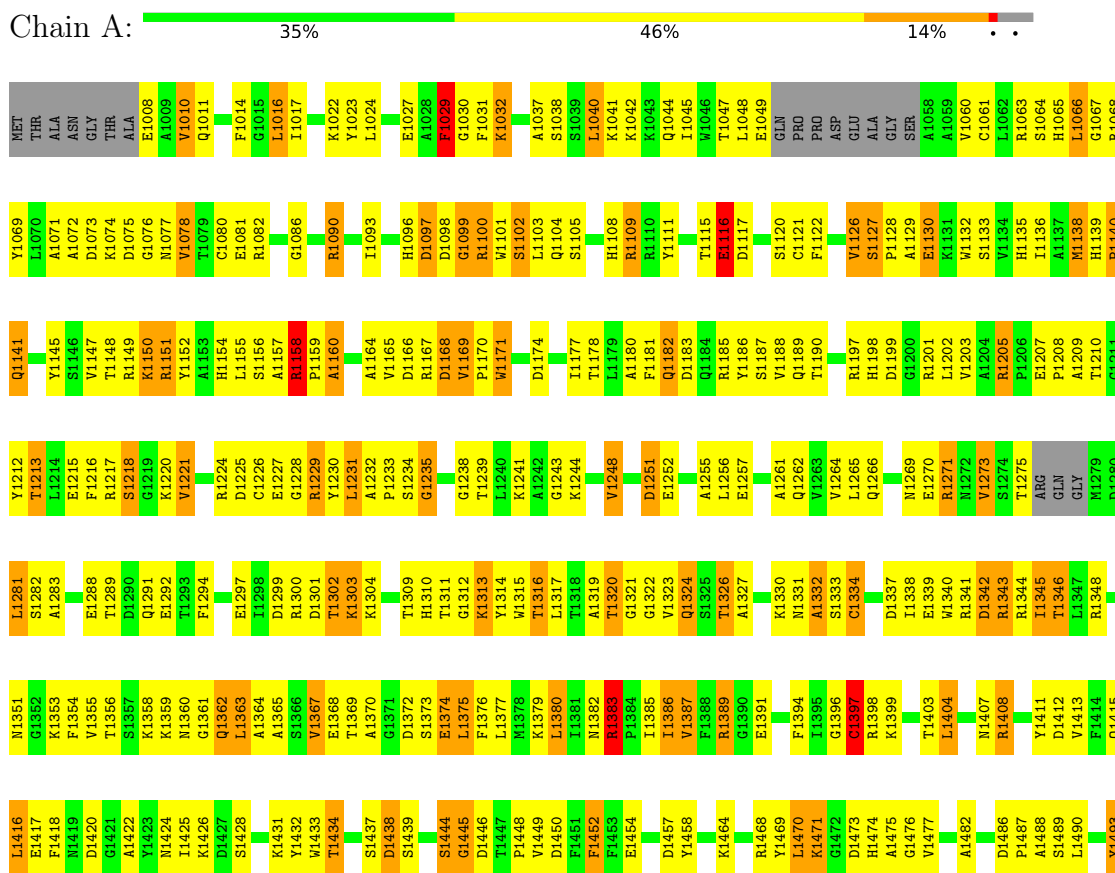
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	475	Total 3716	C 2326	N 663	O 714	S 13	0	0	0
1	B	474	Total 3711	C 2323	N 662	O 713	S 13	0	0	0

3 Residue-property plots

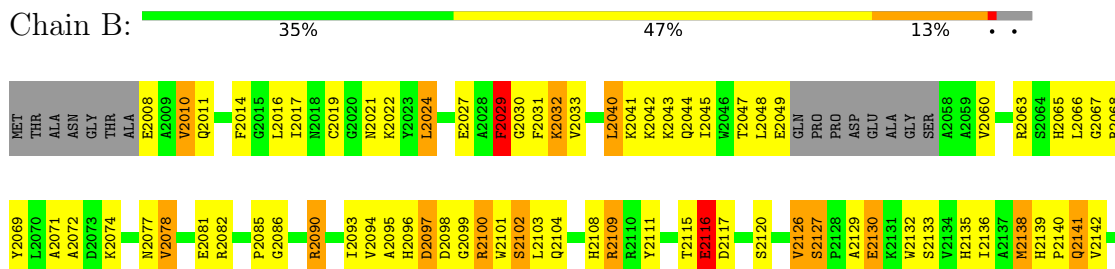
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. Residues are color-coded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



- Molecule 1: FASCIN



S2489	Q2415	R2348	A2283	E2215	Y2145
Y2493	L2416	N2351	N2284	F2216	S2146
	E2417	N2351	Q2285	R2217	V2147
	F2418	F2354	E2288	S2218	T2148
	N2419	V2355	T2289	G2219	R2149
	D2420	T2356	D2289	K2220	K2150
	G2421	S2357	Q2291	V2221	R2151
	A2422	K2358	E2292	R2224	Y2152
	L2425	K2359	T2293	D2225	S2156
	K2426	N2360	F2294	C2226	A2157
	D2427	Q2361	Q2295	E2227	R2158
	S2428	Q2362	L2296	G2228	P2159
	T2429	L2363	D2299	R2229	A2160
	G2430	A2364	R2300	Y2230	D2161
	K2431	A2365	R2300	L2231	A2164
	Y2432	S2366	T2301	A2232	V2165
	N2433	V2367	D2302	P2233	D2166
	T2434	E2368	K2303	S2234	R2167
	D2438	T2369	K2304	G2235	D2168
	S2439	A2370	C2305	R2238	V2169
	T2442	G2371	R2308	T2239	P2170
	S2443	D2372	T2309	G2243	H2171
	S2444	L2375	H2310	G2243	G2172
	G2445	F2376	T2311	K2244	V2173
	D2446	L2377	G2312	D2174	S2175
	T2447	M2378	K2313	V2248	T2178
	P2448	K2379	Y2314	D2251	F2181
	V2449	L2380	N2315	E2252	Q2182
	D2450	I2381	T2316	L2253	D2183
	F2451	N2382	L2317	F2254	Q2184
	F2452	R2383	T2318	A2255	R2185
	F2453	P2384	A2319	L2256	Y2186
	E2454	I2385	T2320	E2257	S2187
	F2455	I2386	G2321	Q2258	V2188
	C2456	R2389	G2322	S2259	Q2189
	D2457	G2390	V2323	C2260	H2193
	Y2458	E2391	Q2324	A2261	R2194
	K2464	F2394	T2326	Q2262	R2197
	V2465	I2395	A2327	V2263	H2198
	R2468	G2396	K2330	V2264	D2199
	Y2469	C2397	N2331	E2270	D2203
	L2470	R2399	A2332	R2271	A2204
	K2471	K2399	S2333	N2272	R2205
	G2472	V2400	C2334	V2273	F2206
	D2473	T2401	D2337	S2274	E2207
	H2474	L2403	I2338	T2275	P2208
	A2475	D2404	E2339	ARC	A2209
	G2476	A2406	W2340	GLN	T2210
	V2477	N2407	R2341	GLY	G2211
	A2482	R2408	D2342	MET	Y2212
	D2486	Y2411	R2343	D2280	T2213
	P2487	D2412	I2345	L2281	S2282
	A2488	V2413	T2346	L2214	
		F2414	L2347		

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	165.43Å 71.69Å 116.92Å 90.00° 132.17° 90.00°	Depositor
Resolution (Å)	8.00 – 2.90	Depositor
% Data completeness (in resolution range)	83.6 (8.00-2.90)	Depositor
R_{merge}	0.06	Depositor
R_{sym}	(Not available)	Depositor
Refinement program	CNS	Depositor
R, R_{free}	0.184 , 0.268	Depositor
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	7427	wwPDB-VP
Average B, all atoms (Å ²)	36.0	wwPDB-VP

5 Model quality i

5.1 Standard geometry i

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
1	A	0.96	2/3793 (0.1%)	0.98	3/5126 (0.1%)
1	B	0.95	3/3788 (0.1%)	0.98	2/5119 (0.0%)
All	All	0.96	5/7581 (0.1%)	0.98	5/10245 (0.0%)

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	2
1	B	0	1
All	All	0	3

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	2456	CYS	CB-SG	-6.68	1.70	1.82
1	A	1397	CYS	CB-SG	-6.12	1.71	1.82
1	B	2260	CYS	CB-SG	-5.68	1.72	1.81
1	A	1061	CYS	CB-SG	-5.42	1.73	1.81
1	B	2305	CYS	CB-SG	-5.34	1.73	1.81

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	1383	ARG	NE-CZ-NH1	-6.77	116.91	120.30
1	B	2194	ARG	NE-CZ-NH1	-6.15	117.22	120.30
1	A	1387	VAL	N-CA-C	-5.67	95.70	111.00
1	A	1363	LEU	CA-CB-CG	5.30	127.50	115.30
1	B	2404	LEU	CA-CB-CG	5.27	127.42	115.30

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	1452	PHE	Sidechain
1	A	1493	TYR	Sidechain
1	B	2493	TYR	Sidechain

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	3716	0	3599	343	1
1	B	3711	0	3597	336	1
All	All	7427	0	7196	679	1

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 46.

The worst 5 of 679 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:1139:HIS:CE1	1:A:1141:GLN:HG3	1.61	1.36
1:A:1416:LEU:HD12	1:A:1416:LEU:H	1.15	1.12
1:A:1158:ARG:HB2	1:A:1159:PRO:HD3	1.14	1.10
1:B:2158:ARG:HB2	1:B:2159:PRO:HD3	1.11	1.10
1:B:2158:ARG:HB2	1:B:2159:PRO:CD	1.86	1.05

All (1) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:1075:ASP:OD1	1:B:2343:ARG:NH1[1_565]	2.15	0.05

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	469/493 (95%)	390 (83%)	61 (13%)	18 (4%)	3	13
1	B	468/493 (95%)	390 (83%)	59 (13%)	19 (4%)	3	11
All	All	937/986 (95%)	780 (83%)	120 (13%)	37 (4%)	3	12

5 of 37 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1029	PHE
1	A	1116	GLU
1	A	1158	ARG
1	A	1160	ALA
1	A	1227	GLU

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	391/404 (97%)	312 (80%)	79 (20%)	1	4
1	B	391/404 (97%)	307 (78%)	84 (22%)	1	3
All	All	782/808 (97%)	619 (79%)	163 (21%)	1	3

5 of 163 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	1438	ASP

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Mol	Chain	Res	Type
1	B	2100	ARG
1	B	2404	LEU
1	A	1446	ASP
1	B	2019	CYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 16 such sidechains are listed below:

Mol	Chain	Res	Type
1	B	2013	GLN
1	B	2021	ASN
1	B	2182	GLN
1	B	2011	GLN
1	B	2324	GLN

5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

6 Fit of model and data [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.