W O R L D W I D E

wwPDB

P R O T E I N   D A T A   B A N K

wwPDB EM Validation Summary Report ⓘ

Jun 1, 2025 – 12:07 AM JST

PDB ID	:	9L3W / pdb_00009l3w
EMDB ID	:	EMD-62793
Title	:	Cryo-EM structure of the chemokine-like receptor 1 in complex with chemerin and Gi1
Authors	:	Zhu, Y.; He, M.; Wu, B.; Zhao, Q.
Deposited on	:	2024-12-19
Resolution	:	3.50 Å(reported)

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

|		
EMDB validation analysis	:	FAILED
MolProbity	:	4-5-2 with Phenix2.0rc1
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	FAILED
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.43.1

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

The reported resolution of this entry is 3.50 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	Percentile Ranks	Value
Clashscore		7
Ramachandran outliers		0
Sidechain outliers		0

Worse — *Better*

▮ Percentile relative to all structures
▯ Percentile relative to all EM structures
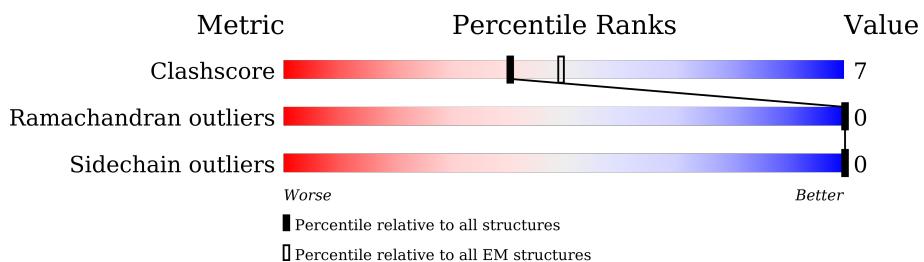
Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	A	354	49% 8% 42%
2	B	340	81% 18% •
3	C	71	68% 8% 24%
4	L	137	71% 8% 21%
5	R	419	55% 12% 33%

2 Entry composition ⓘ

There are 5 unique types of molecules in this entry. The entry contains 7262 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, 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 Guanine nucleotide-binding protein G(i) subunit alpha-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	205	Total	C	N	O	S	0	0
			1572	1007	259	293	13		

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	47	CYS	SER	engineered mutation	UNP P63096
A	202	THR	GLY	engineered mutation	UNP P63096
A	203	ALA	GLY	engineered mutation	UNP P63096
A	245	ALA	GLU	engineered mutation	UNP P63096
A	326	SER	ALA	engineered mutation	UNP P63096

- Molecule 2 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1.

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	335	Total	C	N	O	S	0	0
			2487	1542	437	487	21		

- Molecule 3 is a protein called Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	54	Total	C	N	O	S	0	0
			353	224	63	64	2		

- Molecule 4 is a protein called Retinoic acid receptor responder protein 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	L	108	Total	C	N	O	S	0	0
			732	467	123	136	6		

- Molecule 5 is a protein called Chemerin-like receptor 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	R	281	Total 2118	C 1411	N 347	O 342	S 18	0	0

There are 46 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
R	374	GLU	-	expression tag	UNP Q99788
R	375	PHE	-	expression tag	UNP Q99788
R	376	LEU	-	expression tag	UNP Q99788
R	377	GLU	-	expression tag	UNP Q99788
R	378	VAL	-	expression tag	UNP Q99788
R	379	LEU	-	expression tag	UNP Q99788
R	380	PHE	-	expression tag	UNP Q99788
R	381	GLN	-	expression tag	UNP Q99788
R	382	GLY	-	expression tag	UNP Q99788
R	383	PRO	-	expression tag	UNP Q99788
R	384	TRP	-	expression tag	UNP Q99788
R	385	SER	-	expression tag	UNP Q99788
R	386	HIS	-	expression tag	UNP Q99788
R	387	PRO	-	expression tag	UNP Q99788
R	388	GLN	-	expression tag	UNP Q99788
R	389	PHE	-	expression tag	UNP Q99788
R	390	GLU	-	expression tag	UNP Q99788
R	391	LYS	-	expression tag	UNP Q99788
R	392	GLY	-	expression tag	UNP Q99788
R	393	GLY	-	expression tag	UNP Q99788
R	394	GLY	-	expression tag	UNP Q99788
R	395	SER	-	expression tag	UNP Q99788
R	396	GLY	-	expression tag	UNP Q99788
R	397	GLY	-	expression tag	UNP Q99788
R	398	GLY	-	expression tag	UNP Q99788
R	399	SER	-	expression tag	UNP Q99788
R	400	GLY	-	expression tag	UNP Q99788
R	401	GLY	-	expression tag	UNP Q99788
R	402	SER	-	expression tag	UNP Q99788
R	403	ALA	-	expression tag	UNP Q99788
R	404	TRP	-	expression tag	UNP Q99788
R	405	SER	-	expression tag	UNP Q99788
R	406	HIS	-	expression tag	UNP Q99788
R	407	PRO	-	expression tag	UNP Q99788
R	408	GLN	-	expression tag	UNP Q99788
R	409	PHE	-	expression tag	UNP Q99788
R	410	GLU	-	expression tag	UNP Q99788

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Chain	Residue	Modelled	Actual	Comment	Reference
R	411	LYS	-	expression tag	UNP Q99788
R	412	ASP	-	expression tag	UNP Q99788
R	413	TYR	-	expression tag	UNP Q99788
R	414	LYS	-	expression tag	UNP Q99788
R	415	ASP	-	expression tag	UNP Q99788
R	416	ASP	-	expression tag	UNP Q99788
R	417	ASP	-	expression tag	UNP Q99788
R	418	ASP	-	expression tag	UNP Q99788
R	419	LYS	-	expression tag	UNP Q99788

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.

- Molecule 1: Guanine nucleotide-binding protein G(i) subunit alpha-1
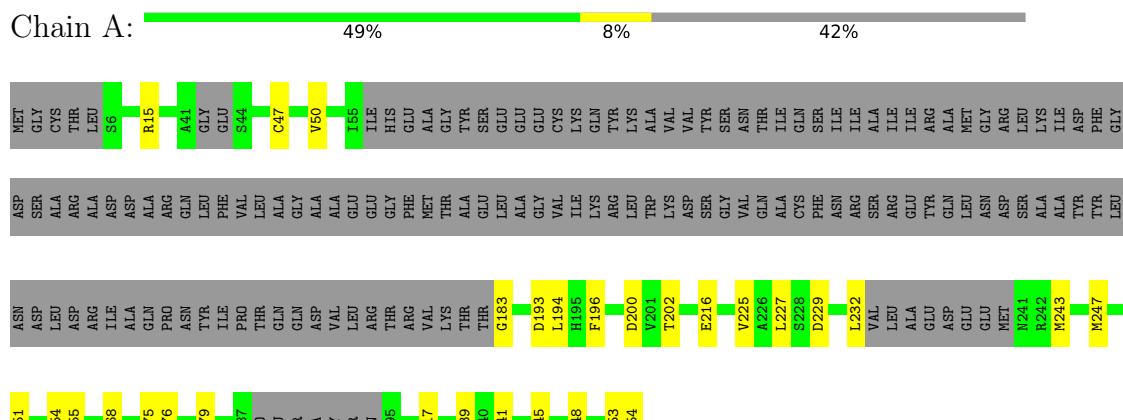
Chain A:

- Molecule 2: Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1

Chain B:

- Molecule 3: Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-2
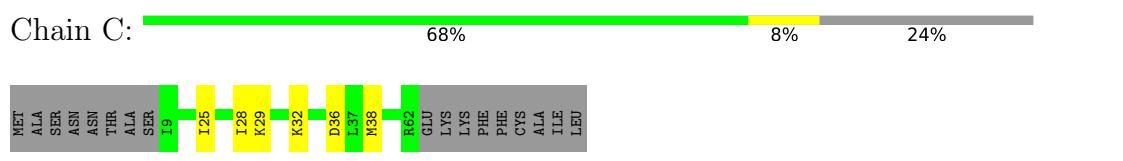
Chain C:

- Molecule 4: Retinoic acid receptor responder protein 2

Chain L:

HIS Q131 V138 F156 S157
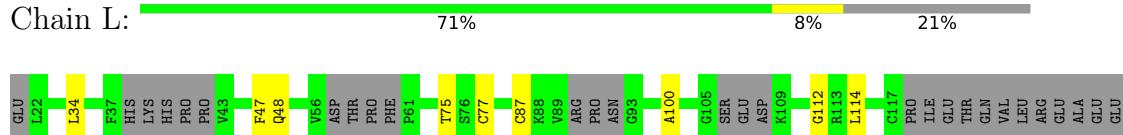
• Molecule 5: Chemerin-like receptor 1

Chain R:

55%   12%   33%

MET ARG MET GLU ASP GLU ASP TYR ASN THR SER ILE SER TYR GLY ASP GLU TYR PRO ASP TYR LEU ASP SER ILE VAL LEU GLU ASP LEU SER PRO LEU E35 I49 F52 N58 V61 I64 A65 T66 V73 L79 N80 V83 F86 L87 F88 N89 V90

K113 M123 L129 I132 C138 S147 Q148 N149 H150 R151 A156 C160 W164 F177 R178 D179 T180 A181 N182 K186 I187 S188 C189 F190 N191 L195 SER THR PRO GLY SER SER SER TRP PRO THR HIS SER GLN MET ASP P211 H217 T221 F225

C239 L247 L252 K257 P258 H277 T278 L279 L282 M289 L298 I314 F318 L330 PHE SER ARG LEU VAL ASN ALA LEU SER GLU ASP THR GLY HIS SER SER TYR PRO SER HIS ARG SER PHE THR LYS MET SER SER MET ASN GLU ARG THR SER MET

ASN GLU ARG GLU THR GLY MET LEU GLU PHE LEU GLU VAL LEU PHE GLN GLY PRO TRP SER HIS PRO GLN PHE GLU LYS ASP TYR LYS ASP ASP ASP ASP LYS

4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	89786	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	70	Depositor
Minimum defocus (nm)	800	Depositor
Maximum defocus (nm)	1500	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	Depositor

5 Model quality ⓘ

5.1 Standard geometry ⓘ

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

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#|Z| > 5$	RMSZ	$\#|Z| > 5$
1	A	0.08	0/1597	0.25	0/2154
2	B	0.09	0/2534	0.29	0/3448
3	C	0.10	0/359	0.24	0/494
4	L	0.13	0/741	0.39	0/1004
5	R	0.12	0/2174	0.32	0/2969
All	All	0.10	0/7405	0.30	0/10069

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts ⓘ

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

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1572	0	1482	22	0
2	B	2487	0	2331	40	0
3	C	353	0	312	5	0
4	L	732	0	629	6	0
5	R	2118	0	2097	34	0
All	All	7262	0	6851	96	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 7.

The worst 5 of 96 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)
2:B:271:CYS:HB2	2:B:290:ASP:HB2	1.74	0.70
1:A:196:PHE:HE2	1:A:339:VAL:HG21	1.58	0.69
2:B:161:SER:OG	2:B:163:ASP:OD1	2.12	0.68
5:R:80:ASN:ND2	5:R:160:CYS:SG	2.67	0.67
4:L:48:GLN:HB2	4:L:75:THR:HG21	1.76	0.67

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	195/354 (55%)	192 (98%)	3 (2%)	0	100	100
2	B	333/340 (98%)	325 (98%)	8 (2%)	0	100	100
3	C	52/71 (73%)	52 (100%)	0	0	100	100
4	L	96/137 (70%)	94 (98%)	2 (2%)	0	100	100
5	R	277/419 (66%)	261 (94%)	16 (6%)	0	100	100
All	All	953/1321 (72%)	924 (97%)	29 (3%)	0	100	100

There are no Ramachandran outliers to report.

5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

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	161/306 (53%)	161 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	B	258/283 (91%)	258 (100%)	0	100	100
3	C	27/58 (47%)	27 (100%)	0	100	100
4	L	64/121 (53%)	64 (100%)	0	100	100
5	R	217/375 (58%)	217 (100%)	0	100	100
All	All	727/1143 (64%)	727 (100%)	0	100	100

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

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
4	L	153	GLN
5	R	80	ASN
5	R	217	HIS
5	R	104	HIS
4	L	73	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

There are no chain breaks in this entry.