Annexin A1 (ANXA1)

Annexin A1 is the protein product of the **ANXA1 gene**. The terms **Annexin A1** and **ANXA1** are often used interchangeably in scientific literature.

Gene and Protein

- **Gene symbol**: ANXA1
- **Protein name**: Annexin A1
- **Location**: Chromosome 9q21
- **Family**: Annexin superfamily (calcium-dependent phospholipid-binding proteins)

Functions

Annexin A1 is involved in:

- Resolution of inflammation
- Inhibition of neutrophil transmigration
- Promotion of apoptotic cell clearance by macrophages
- Glucocorticoid-mediated immune modulation

Role in Cancer

Annexin A1 plays a dual role, depending on the cancer type:

- **Tumor suppressor** in some cancers (e.g. breast, prostate)
- **Tumor promoter** in others (e.g. glioma, pancreatic cancer)

ANXA1 in Glioma

Recent studies show that in glioma, ANXA1:

- Is upregulated in a **methionine metabolism-dependent** manner
- Drives macrophages toward an **immunosuppressive phenotype**
- Promotes immune evasion and tumor progression

[1)]

Summary

Annexin A1 = ANXA1 They refer to the same biological entity:

- **ANXA1** → gene name
- **Annexin A1** → protein name

Both are essential to understanding the molecular basis of glioma immune escape.

---

annexin ANXA1 glioma methionine immunosuppression

Annexin A1, also known as lipocortin I, is a protein that is encoded by the ANXA1 gene in humans.

Also known as lipocortin I, is a protein that is encoded by the ANXA1 gene in humans [2)]

Flores et al. hypothesized that FPR2 activation by FPR2 agonist Annexin A1 (AnxA1) will enhance hematoma resolution via the upregulation of the CD36 signaling pathway, thereby improving short- and long-term neurological outcomes. Bacterial collagenase (0.3 U) was infused intraparenchymally into the right hemispheric ganglionic eminence in P7 rat pups to induce GMH. AnxA1 and FPR2 Inhibitor (Boc2) were given at 1-h post-GMH via intranasal administration. FPR2 CRISPR was given 48-h prior to GMH induction. Short-term neurological deficits were assessed using negative geotaxis test. Hematoma volume was assessed using hemoglobin assay. Protein expression was assessed using western blots. Long-term neurocognitive deficits and motor coordination were assessed using Morris water maze, rotarod, and foot fault tests. We have demonstrated that AnxA1 treatment enhances hematoma resolution and improved short and long-term outcomes. Lastly, FPR2 agonist AnxA1 treatment resulted in the upregulation of the FPR2/p-ERK(1/2)/DUSP1/CD36 signaling pathway [3)]

1)
Discov Oncol. 2025 Jul;16(1):1269. doi:10.1007/s12672-025-03112-y
2)
Lin Z, Wen M, Yu E, Lin X, Wang H, Chen J, Yao C, Zhang H, Ru J, Wang K, Zhang Y, Huang L, Zhuge Q, Yang S. ANXA1 as a Prognostic and Immune Microenvironmental Marker for Gliomas Based on Transcriptomic Analysis and Experimental Validation. Front Cell Dev Biol. 2021 Aug 4;9:659080. doi: 10.3389/fcell.2021.659080. PMID: 34422796; PMCID: PMC8371204.
3)
Flores JJ, Ding Y, Sherchan P, Zhang JH, Tang J. Annexin A1 upregulates hematoma resolution via the FPR2/p-ERK(1/2)/DUSP1/CD36 signaling pathway after germinal matrix hemorrhage. Exp Neurol. 2023 Jan;359:114257. doi: 10.1016/j.expneurol.2022.114257. Epub 2022 Oct 21. PMID: 36279933.