

Bibliometric analysis autophagy

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Findings of: Yi L, Wang W, Chen Y, Xiong Z, Ma L, Wang Z, Ye W, Li X. A bibliometric analysis of global research trends in autophagy and glioblastomas. Naunyn Schmiedebergs Arch Pharmacol. 2025 Sep 17. doi: 10.1007/s00210-025-04578-x. PMID: 40960516.

Methods & dataset

- Retrieved literature from the Web of Science Core Collection (search cutoff **9 Sept 2024**) and analyzed it with **CiteSpace**, **VOSviewer**, and **Scimago Graphica**. [PubMed](#)
- **1621 publications** covering ~20 years were included. [PubMed](#)

Major bibliometric findings

- **Geography / institutions:** China and the United States lead in publication volume. [PubMed](#)
- **Journals:** *International Journal of Molecular Sciences* and *Cancers* were the most prolific journals in this topic area. [PubMed](#)
- **Tools/authors (high-level):** network/cluster analyses identified the main collaborative groups and citation clusters (visualized with the above tools). [PubMed](#)

Top thematic hotspots & trends

- Recent strong keyword/citation bursts included “**Beclin-1**”, “**epithelial–mesenchymal transition (EMT)**”, “**chloroquine**”, “**unfolded protein response (UPR)**”, and “**drug resistance**” — indicating current focus on autophagy mechanisms, pharmacologic modulators, and resistance. [PubMed](#)
- The paper emphasizes two major thematic threads: (1) **autophagy as a mechanism of GBM therapeutic resistance**, and (2) the **dual (context-dependent) role of autophagy** in glioblastoma biology — cytoprotective vs. cytotoxic effects. [PubMed](#)

Translational implications highlighted

Growing interest in combining **autophagy regulators (e.g., chloroquine/hydroxychloroquine and related agents)** with standard anti-GBM therapies to overcome resistance — but the authors note complexity because autophagy can be either pro- or anti-tumor depending on context. [PubMed](#)

Takeaway

The field is expanding (steady publication growth), led by China/USA; current and near-term research emphasis is on mechanistic studies of autophagy (Beclin-1, UPR, EMT), drug resistance, and pharmacologic modulation (chloroquine family) as adjuncts to therapy — with caution because autophagy's role is dual and context-dependent. [PubMed](#)

If you'd like, I can:

- pull the paper's figures/tables (if full text is available),
- list the **top 10 most-cited papers** the authors found, or
- extract the exact keyword-burst timeline and top contributing institutions/authors — tell me which and I'll fetch it.

List the top 10 most-cited papers the authors found, in Vancouver form

I couldn't locate a direct list of the *top 10 most cited papers* from Yi et al. in the full text based on the sources I found. The paper's abstract and our accessible materials do **not** explicitly list the 10 most cited specific references.

However, I can give you several of the prominent, highly cited works in the autophagy + glioblastoma area that *are* discussed by Yi et al. / appear frequently in the field. If you want, I can try to access the full text or supplementary materials to pull together *exactly* the top-10 in Vancouver style. In the meantime, here are some key papers in Vancouver style:

Representative highly cited papers in autophagy & glioblastoma:

1. Golden EB, Cho HY, Jahanian A, Hofman FM, Louie SG, Schönthal AH, Chen TC. *Chloroquine enhances temozolomide cytotoxicity in malignant gliomas by blocking autophagy*. Neurosurg Focus. 2014 Dec;37(6):E12. [PubMed](#)
2. Li X, Liu X, Sun Z, Liu Y, Cao L, Hou X, Yang Z, Zheng Z. *Impact of autophagy inhibition at different stages on cytotoxic effect of autophagy inducer in glioblastoma cells*. Cell Physiol Biochem. 2015;35(4):1303-16. [PubMed](#)
3. Beclin 1, an autophagy-related gene, augments apoptosis in U87 glioblastoma cells. (Author(s): name(s) missing in the snippet) *Journal/Year etc.* [PubMed](#)
4. Ye H, Chen M, Cao F, Huang H, Zhan R, Zheng X, et al. *Chloroquine, an autophagy inhibitor, potentiates the radiosensitivity of glioma initiating cells by inhibiting autophagy and activating apoptosis*. BMC Neurol. 2016;16:178. [BioMed Central](#)
5. Autophagy activation promotes bevacizumab resistance in glioblastoma by suppressing Akt/mTOR signaling pathway. Spandidos Publications, 2017; *Oncology Letters or Oncology Reports etc.* [spandidos-publications.com](#)

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