







Preview

# A holistic view of the malignant organism we call glioblastoma

Salma Baig<sup>1,2</sup>  , Frank Winkler<sup>1,2</sup>  [Show more](#)  Share  Cite<https://doi.org/10.1016/j.cell.2023.12.021> [Get rights and content](#) 

Refers to

## [Glioblastoma evolution and heterogeneity from a 3D whole-tumor perspective](#)

Cell, Volume 187, Issue 2, 18 January 2024, Pages 446-463.e16

Radhika Mathur, Qixuan Wang, Patrick G. Schupp, Ana Nikolic, Stephanie Hilz, Chibo Hong, Nadia R. Grishanina, Darwin Kwok, Nicholas O. Stevers, Qiushi Jin, Mark W. Youngblood, Lena Ann Stasiak, Ye Hou, Juan Wang, Takafumi N. Yamaguchi, Marisa Lafontaine, Anny Shai, Ivan V. Smirnov, David A. Solomon, Susan M. Chang, Shawn L. Hervey-Jumper, Mitchel S. Berger, Janine M. Lupo, Hideho Okada, Joanna J. Phillips, Paul C. Boutros, Marco Gallo, Michael C. Oldham, Feng Yue, Joseph F. Costello

 [View PDF](#)

Tumors are not simply a chaotic mass of mutated cells but can follow complex organizational principles, including in space. In this issue of *Cell*, Mathur and colleagues reconstruct a 3D genomic, epigenomic, and transcriptomic spatial cartograph of glioblastoma, offering a “whole-tumor” perspective with patterns of clonal expansion that are embedded in neurodevelopmental hierarchy.

## Section snippets

### Main text

Tumors are nurtured by a complex ecosystem of various malignant and non-malignant cells. Our understanding of tumor evolution and its origin rests upon two foundational theories, one being the stochastic model, which paints malignancies as a disorganized patchwork of diverse genetic clones (Figure 1A), and the other being the cancer stem cell model, which predicts that a malignancy is hierarchically organized in a manner analogous to the normal tissue (Figures 1B and 1C). Regardless, this...

### Acknowledgments

This work was supported by the German Research Foundation (SFB 1389, UNITE Glioblastoma)...

## Declaration of interests

The authors declare no competing interests...

[Recommended articles](#)

---

## References (10)

C. Neftel *et al.*

[An integrative model of cellular states, plasticity, and genetics for glioblastoma](#)

Cell (2019)

V. Venkataramani *et al.*

[Glioblastoma hijacks neuronal mechanisms for brain invasion](#)

Cell (2022)

V.M. Ravi *et al.*

[Spatially resolved multi-omics deciphers bidirectional tumor-host interdependence in glioblastoma](#)

Cancer Cell (2022)

F. Winkler *et al.*

[Cancer neuroscience: State of the field, emerging directions](#)

Cell (2023)

C.P. Couturier *et al.*

[Single-cell RNA-seq reveals that glioblastoma recapitulates a normal neurodevelopmental hierarchy](#)

Nat. Commun. (2020)

There are more references available in the full text version of this article.

---

## Cited by (0)

---

[View full text](#)

© 2023 Elsevier Inc.



All content on this site: Copyright © 2024 Elsevier B.V., its licensors, and contributors. All rights are reserved, including those for text and data mining, AI training, and similar technologies. For all open access content, the Creative Commons licensing terms apply.

