



**HAL**  
open science

## Monitoring the dynamic of intratumoral heterogeneity in 3D-models of Glioblastoma

Mélanie Laurent–Blond, Ophélie Renoult, Pierre Paris, Catherine Gratas, Claire  
Pecqueur

### ► To cite this version:

Mélanie Laurent–Blond, Ophélie Renoult, Pierre Paris, Catherine Gratas, Claire Pecqueur. Monitoring the dynamic of intratumoral heterogeneity in 3D-models of Glioblastoma. CRCI2NA inaugural symposium: A meeting on tumor and immune ecosystems, Mar 2024, Nantes, France. <hal-05479052>

**HAL Id: hal-05479052**

**<https://hal.science/hal-05479052v1>**

Submitted on 27 Jan 2026

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



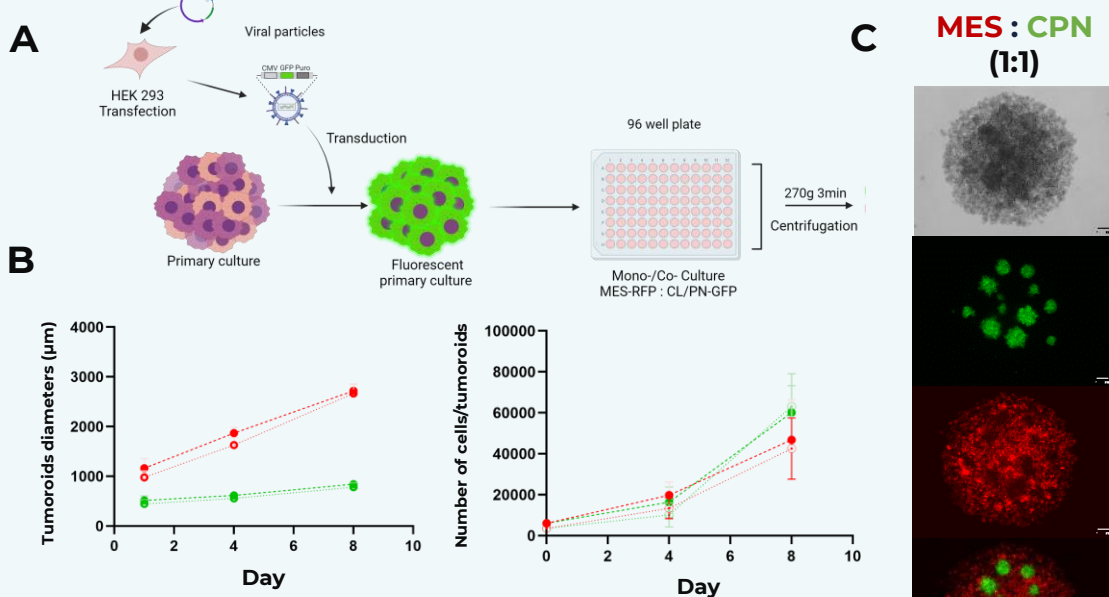
ETALAB - Open licence

Glioblastoma (GBM) is the most aggressive adult brain cancer with less than 5% survival at 5 years despite Stupp protocol. Indeed, a systematic relapse is observed which is largely due to the huge heterogeneity of this tumor (inter and intratumoral). Furthermore, literature shows that mesenchymal cells (MES), GBM cancer stem cells (GSC) and senescent endothelial cells are mostly found at relapse. Finally, it is more and more hypothesized that GBM cells are highly plastic and dynamic in favour to tumor escape.

In this context, I am developing a vascularized complex 3D model of GBM to better understand how the dynamic heterogeneity of GBM enhanced tumor escape and aggressivity.

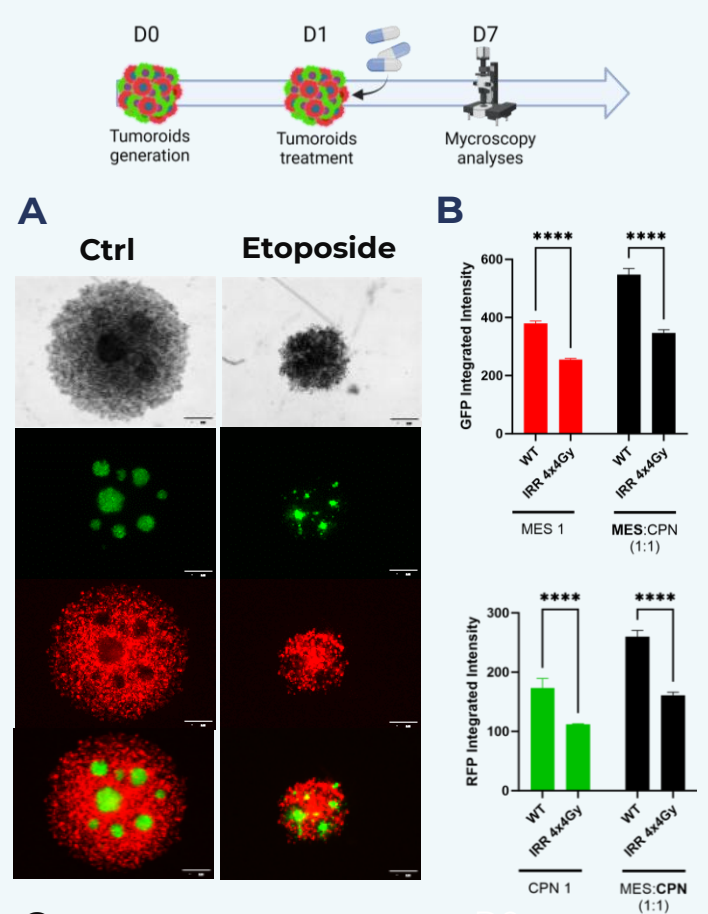
## Results

### A reproducible mixed 3D model of GBM



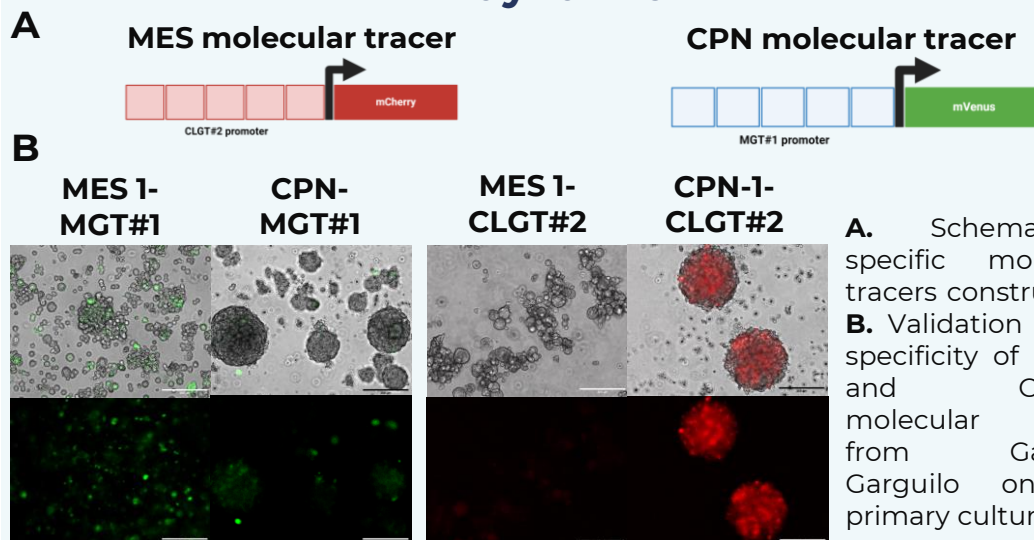
**A.** Schema representative of tumoroid generation. **B.** Tumoroids diameters and numbers of cells are reproducible (n=3). **C.** Mixed tumoroid generated with fluorescent GBM primary culture.

### Patient pathology response representative model



**A.** Tumoroids generation (D0), Tumoroids treatment (D1), Microscopy analyses (D7). **B.** GFP integrated intensity and RFP integrated intensity for WT and IRR-4x4Gy conditions in MES 1 and MES:CPN (1:1) models. **C.** Complex or simple tumoroids treated with or without (A) Etoposide (50µg/ml) (B) Irradiation (4x4Gy) (C) Lymphocytes after 7 days of treatment and followed by IncuCyte (n=3).

### Promising tools to follow molecular state dynamic



**A.** Schema of specific molecular tracers construction. **B.** Validation of the specificity of MGT#1 and CLGT#2 molecular tracer from Gaetano Garguilo on our primary culture.

## Conclusions

- Tumoroids are **strong *in vitro* 3D model of GBM.**
- Specificity of molecular tracers has been proved, now their dynamic need to be validated too.

## Perspectives

- **IPS inducible endothelial cells** will be used to vascularized our 3D model of GBM. It will permit to understand the **role of senescent endothelial cells in GBM aggressivity.**

