Primary cerebral lymphomas (PCL), related to the systemic diffuse large B-cell lymphoma family, are highly aggressive tumors with poor prognosis and no specific standardized therapy. Despite good results obtained with high dose chemotherapy, many patients relapse and new therapeutic strategies are needed. PCLs are characterized by the presence of CD20+ B-cells and as such are suitable for therapy with anti human CD20 antibodies. In this study, we evaluated the efficiency of ublituximab, a promising glycoengineered anti-CD20 monoclonal antibody that displays a high affinity for FcγRlla (CD16) receptors.

Ublituximab, a next-generation anti-CD20 antibody currently in clinical development, is characterized by a specific glycosylation pattern containing a high percentage of non-fucosylated antibody molecules at the Fc site. This specific pattern of glycosylation increases the affinity of antibodies for human FcγRllα (CD16), resulting in an increased antibody dependent cell-mediated cytotoxicity (ADCC) by human FcγRlla-expressing effector cells.

RESULTS

Conclusions
- Ublituximab exhibited a marked anti-tumor effect from a single dose, especially in the PCL model where some animals experienced complete elimination of tumor
- Ublituximab treatment decreased the number of tumor cells and concomitantly increased CD6+ T-cells following treatment, suggesting the implication of the adaptive arm of the immune system
- Optimal efficacy of ublituximab was achieved with 20g and was superior to rituximab at the same dose
- In vivo results confirm the potential of the glycoengineered anti-CD20 ublituximab as an innovative therapeutic approach for the treatment of PCNL tumors, as well as other B-cell lymphomas
- Future clinical trials in primary CNS lymphomas are warranted