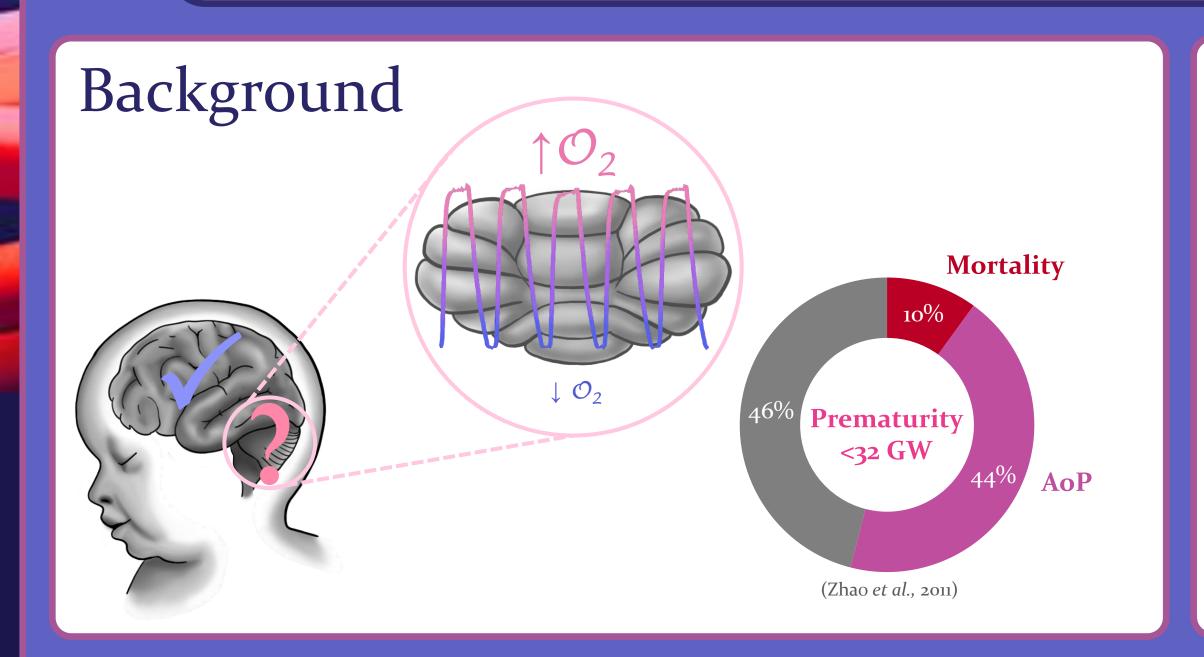
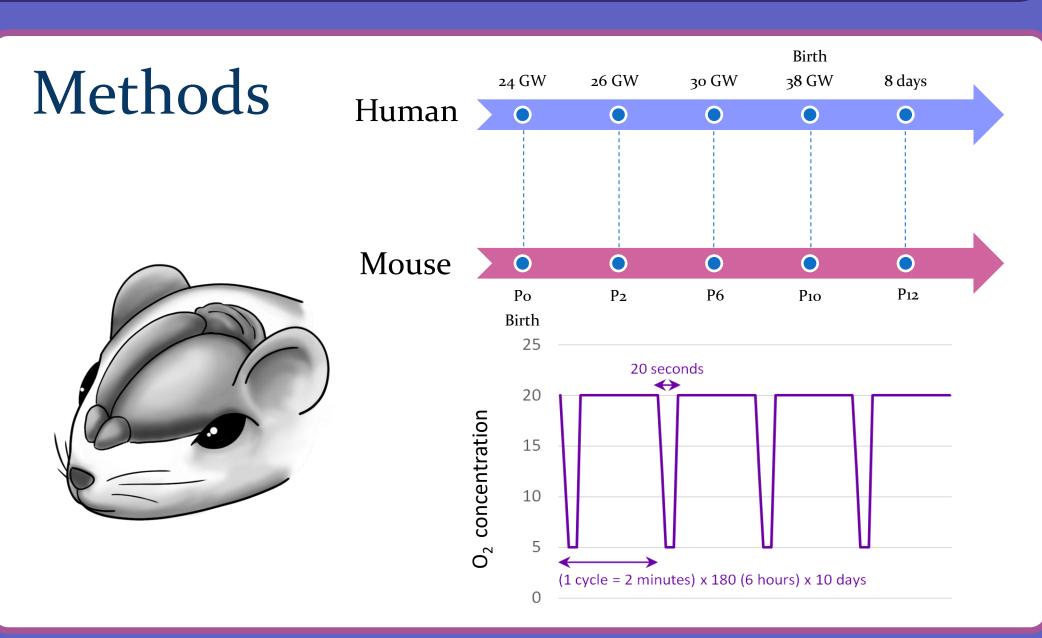
Apnea of Prematurity induces molecular, cellular, and vascular alterations in the murine cerebellum: focusing on angiogenesis

Rodriguez-Duboc A. ¹, Basille-Dugay M. ³, Vaudry D. ^{1,2}, Burel D ¹.

- ¹ Normandie Univ, UNIROUEN, Institut National de la Santé et de la Recherche Médicale (INSERM) U1245, Cancer and Brain Genomics, Team 4: Epigenetics and Pathophysiology of Neurodevelopmental Disorders, Institute for Research and Innovation in Biomedicine (IRIB), 76000 Rouen, France.
- ² Normandie Univ, UNIROUEN, Regional Cell Imaging Platform of Normandy (PRIMACEN), 76000 Rouen, France.
- ³ Normandie Univ, UNIROUEN, Research Team EA 4308, Gametogenesis and gamete quality, Institute for Research and Innovation in Biomedicine (IRIB), 76000 Rouen, France.

Introduction: Apnea of Prematurity affects the cerebellum





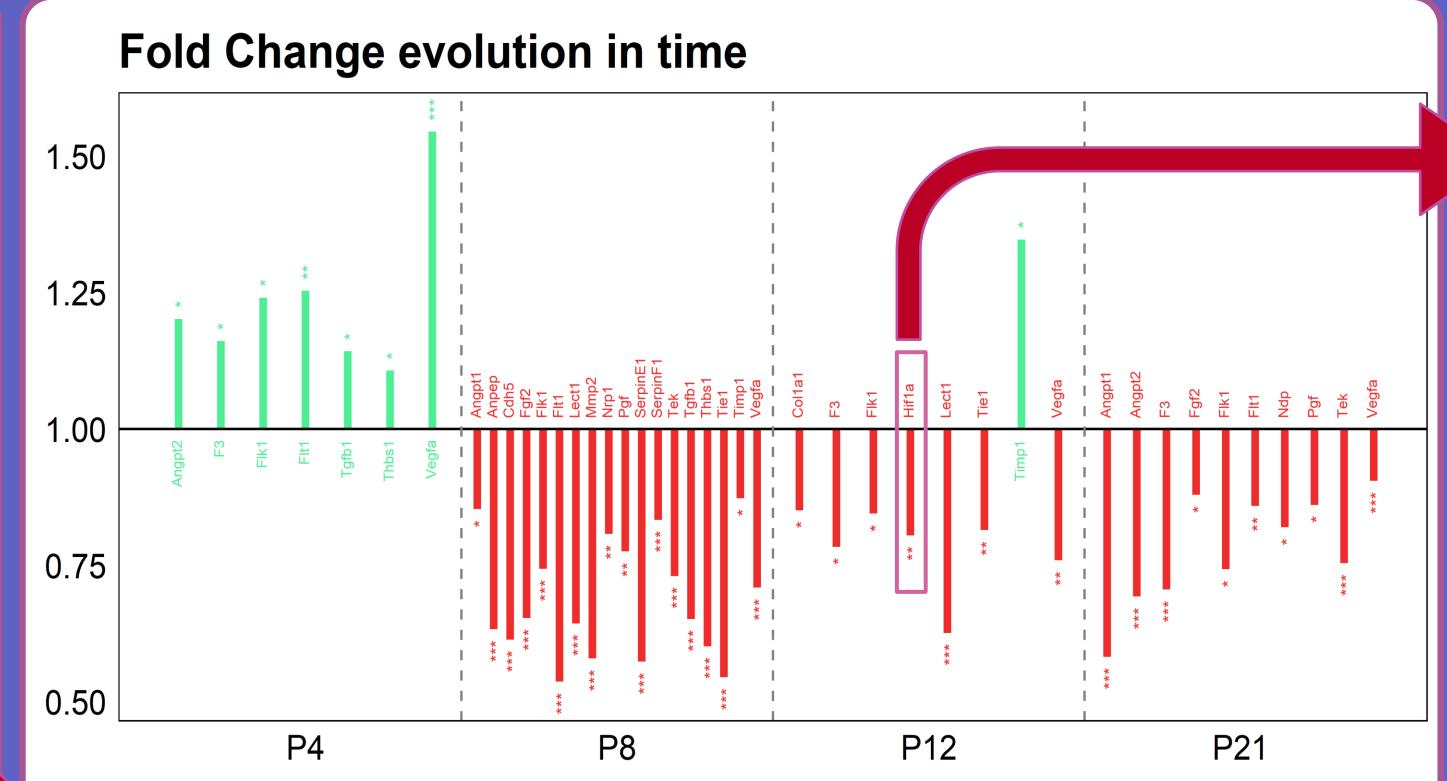
Objectives

This work aims at shedding light on the mechanisms underlying cerebellar hypoxic injury after Apnea of Prematurity (AoP).

We expect to correlate transcriptomic findings on angiogenesis-associated genes with immunohistochemical and transparisation studies to observe the repercussions of these changes on cerebellar development.

Results: the cerebellum at P8 is particularly vulnerable to AoP

Angiogenesis Pathway Collar Fig. Serpiner Vegfa Thbs1 Lect1



We demonstrated by RT-qPCR that the expression of several genes involved in angiogenesis and vascularization is differentially regulated by our IH protocol in different stages.

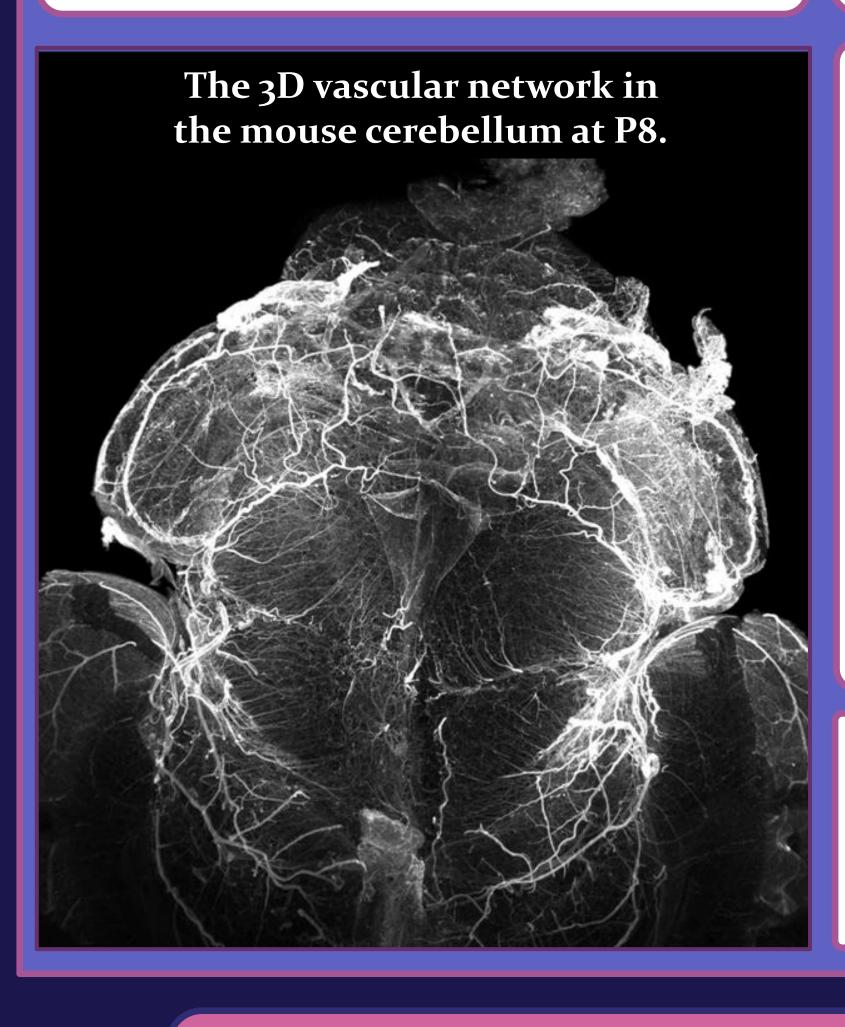
Immunohistochemistry

Previous results showed that $HIF1\alpha$, known to control vascularization, is decreased in IH, suggesting that cerebellar angiogenesis could be affected.

Following these results, we decided to choose antibodies to see if the transcriptomic changes correlated with a particular tissue distribution of the corresponding protein.

VEGF receptor regulation could be responsible for further downstream changes in the control of angiogenesis.

The angiopoietin-Tie2 pathway regulates Purkinje cell dendritic morphogenesis as well as vascularization.

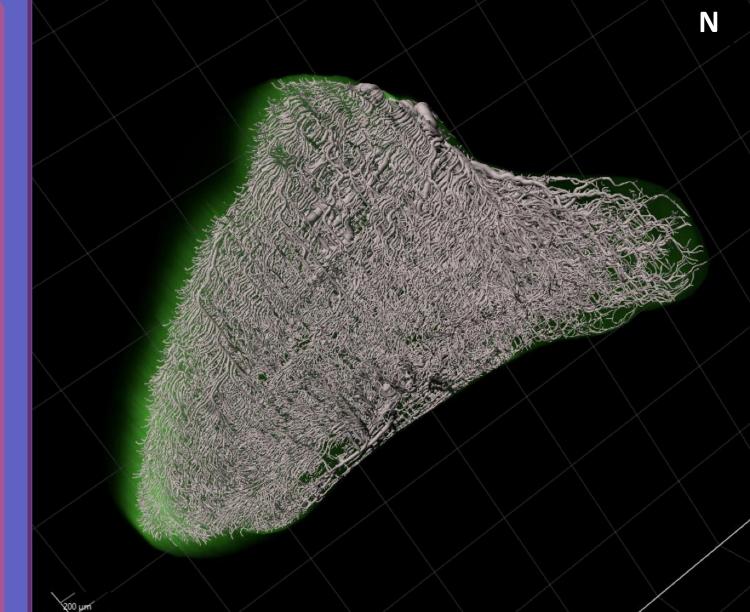


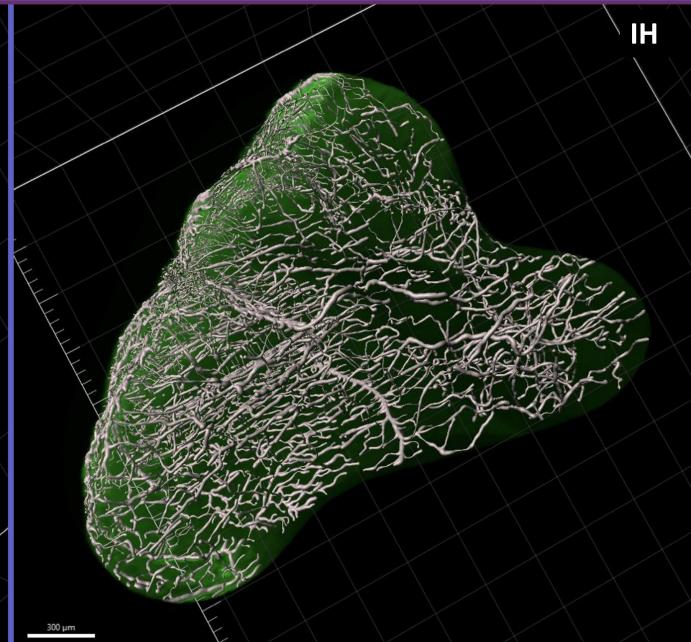
Transparisation

Specific antibodies enable us to mark the components of interest:

- Calbindin: Purkinje Cells
- α -SMA: Arteries
- Podocalyxine: Capillaries- PECAM1: Arterioles

Thanks to light sheet microscopy, we can reconstitute the integrality of the cerebellar vascular tree in 3D.

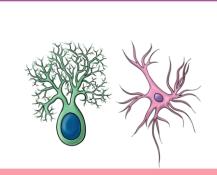




A preliminary study of cerebellar vascular network organization at P8 shows potential differences in area, volume, branching, and length of blood vessels. We aim to replicate the experiment in stages P4, P8, P12, P21 and adult to determine whether IH induces significant changes in the density and structure of blood vessels.

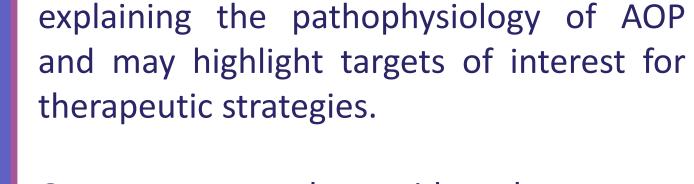
Conclusions and Perspectives: Clinical standpoint

Intermittent Hypoxia



Histological Defects



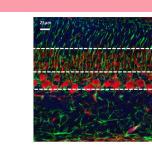


findings could

Our present work provides elements to better understand the vascular aspects of AOP-induced cerebellar injury and could lead to novel ideas to address this socioeconomically relevant health issue.







Behavioral Deficits



















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