

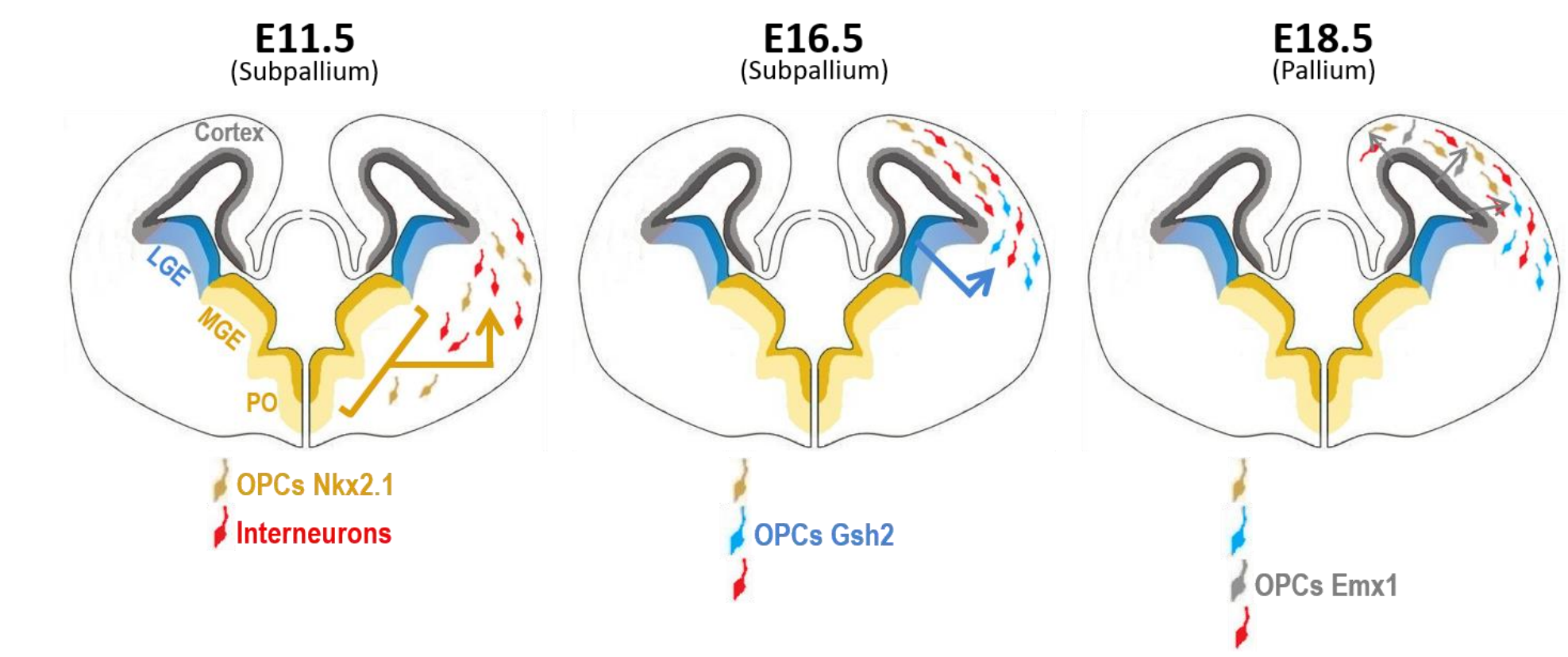
# Characterization of Oligodendrocyte Precursor Cell Migration During Corticogenesis

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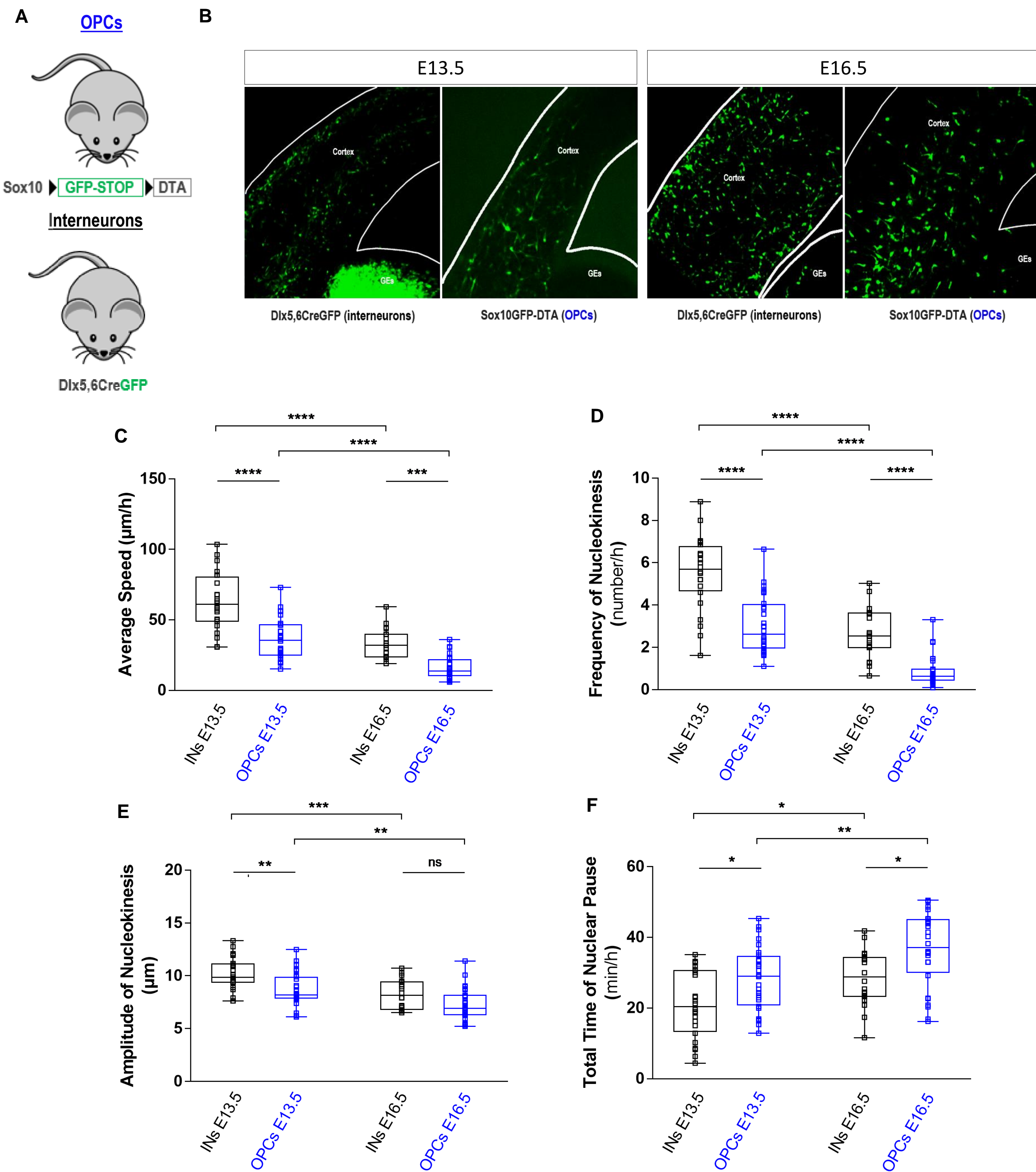
## Introduction

The oligodendrocyte precursor cells (OPCs) are derived from distinct progenitor pools. The two first cohorts are born in the ventral forebrain. The first one is generated at E11.5 in the medial ganglionic eminence (MGE) and the preoptic area (POA) and the second one around E16.5 in the lateral ganglionic eminence (LGE). There is an additional wave of OPCs born at birth in the pallium. While the origin of OPCs has been well described, their migration mode remains poorly understood. In the present study, we performed time-lapse video microscopy to quantify the migration parameters of OPCs at E13.5 and E16.5. We also compared the migration parameters of OPCs generated in the two first generation waves with the migration parameters of cortical interneurons, a cell population that migrates concomitantly with OPCs. We further investigate the interactions between embryonically generated-OPCs and other structures as blood vessels, meninges and fibers.

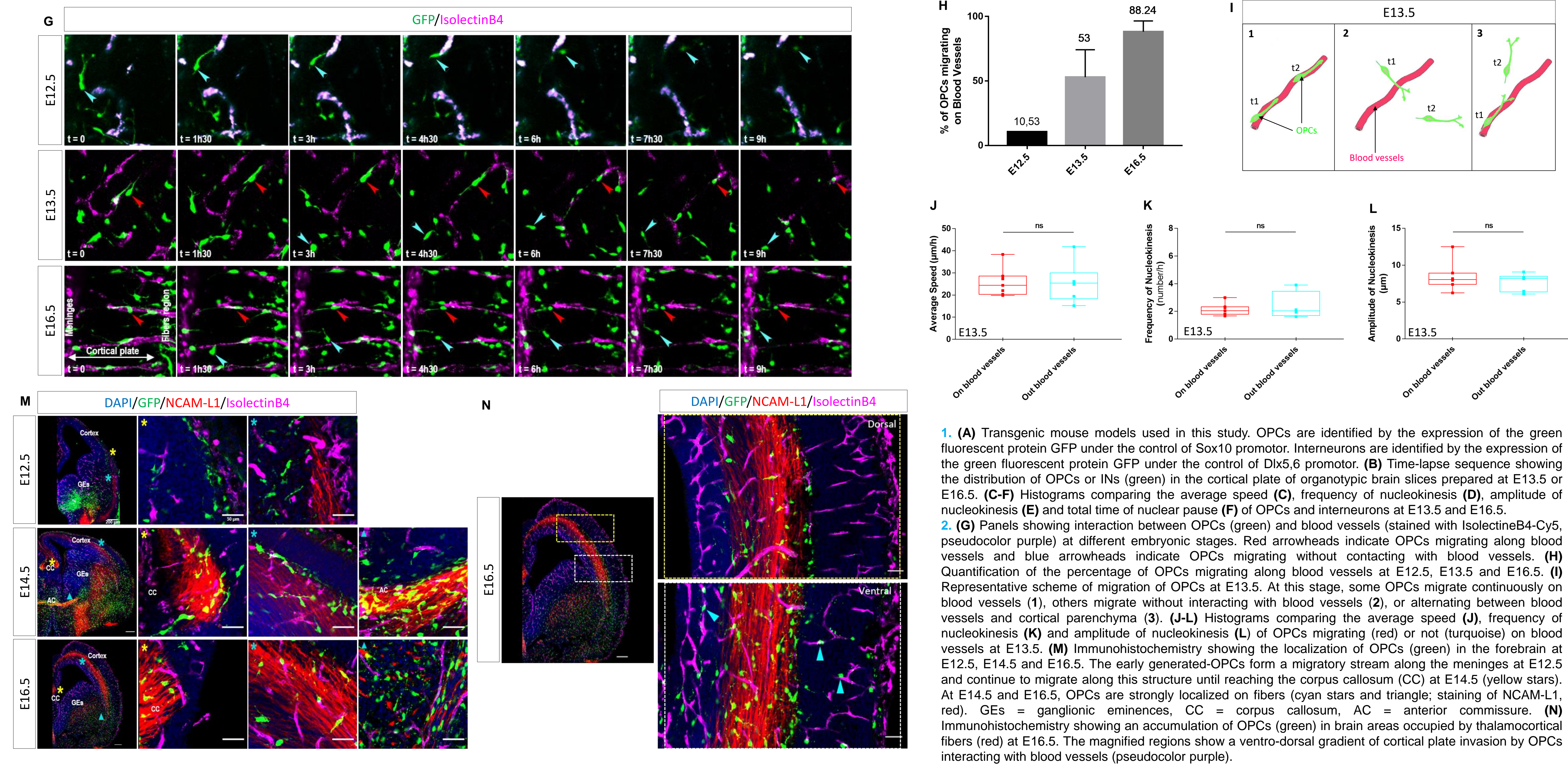


## Results

### 1. ANALYSIS OF THE MIGRATION PARAMETERS OF THE FIRST WAVES OF OPCs AND CONTEMPORARY CORTICAL INTERNEURONS



### 2. MIGRATION PROFILE OF OPCs AND ITS INTERACTION WITH VESSELS AND FIBERS IN THE PALLIUM



## Conclusions

- OPCs and interneurons concomitantly invade the cortical plate using distinct migration parameters. OPCs migrate by performing less discontinuous movements. This difference is not related to the fact that OPCs migrate along the vasculature, suggesting that OPCs mode of migration is intrinsically regulated.
- OPCs interact and migrate on various substrates. At E12.5, early generated-OPCs migrate in an organized stream in the cortical parenchyma, along the meninges. At E13.5, OPCs/ blood vessels interaction is more frequent and their movement is erratic. At E16.5, OPCs are mainly organized on thalamocortical fibers and migrate into the cortical plate using the vasculature, following a ventro-dorsal pattern of invasion.

