新学術領域研究「脳構築における発生時計と場の連携」共催

## OF AXON GUIDANCE IN TRANSPARENT VERTEBRATE EMBRYOS: OF MICE AND MEN

Principal Investigator INSTITUT DE LA VISION INSERM UMRS 968

## Alain Chác (Collage) Ph.D 8月 2日(火) 17:00 ~ 慶應義塾大学信濃町キャンパス 総合医科学研究棟 3 階 会議室 3

Robo receptors play a major role in the control of axon guidance at the midline of the central nervous system. In vertebrates, a divergent Robo family member Robo3 is expressed by commissural axons of the mouse spinal cord and hindbrain before and during crossing of the ventral midline (the floor plate), and many commissures fail to develop in mice and humans lacking Robo3. We found that the Robo3 receptor fundamentally changed its mechanism of action during mammalian evolution. Interestingly, we found that the Netrin-1 receptor DCC does not exist in all vertebrates. Our results suggest that commissural axon guidance mechanisms may be more diverse across species than previously appreciated. This work might help understanding the emergence of specific sensory, motor and cognitive functions and why they differ between species. To facilitate the analysis of commissural systems in vertebrates, we have developed a new imaging method which combines whole-mount immunostaining, tissue clearing and light-sheet microscopy. I will present new applications of this method to provide the first comprehensive description of development in human embryos during the first trimester of gestation.



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