



# NEURO GLOBAL Seminar

## Speaker

## Laurent Nguyen

Scientific Director,  
Molecular regulation of neurogenesis  
GIGA Institute, Neurosciences,  
University of Liège, Belgium



**Date February 26, 2025 (Wed)**

## Time & Title

① 13:00~14:30

**Building the cerebral cortex - in health and disease**

② 14:40~16:10

**Cellular crosstalk shape cortex morphogenesis - an evo devo perspective**

## Venue

Conference Room 1, School of Medicine Building 6 1F, Seiryō Campus

[MAP] [https://www.tohoku.ac.jp/map/en/?f=SR\\_B08](https://www.tohoku.ac.jp/map/en/?f=SR_B08)

**Format** Hybrid (On-site & Online)

**Registration** Please contact NGP Office ([neuroglobal@grp.tohoku.ac.jp](mailto:neuroglobal@grp.tohoku.ac.jp))

**Related Website** [Laurent Nguyen lab website](#)

### ●Neuro Globalプログラム生 (Neuro Global Program Students)

【脳科学セミナーシリーズEx】 2 points

### ●医学系研究科(Graduate School of Medicine)

【医学履修課程】国際交流セミナー(アドバンスド講義科目) 出席2回分

【Medical Science Doctoral Course】 International Interchange Seminar (Advanced Lecture course) 2 attendances

### ●生命科学研究科(Graduate School of Life Sciences)

【単位認定セミナー】 【イノベーションセミナー(留学生対象)】 3ポイント

【Credit-granted seminar】 【Innovation seminar (For international students)】 3 points

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NEURO GLOBAL  
Tohoku University



# NEURO GLOBAL Seminar

## **Title1:**

### **Building the cerebral cortex - in health and disease**

#### **Abstract**

The cerebral cortex is an evolutionarily advanced brain structure composed of neuronal layers that are tangentially organized into specialized functional areas. Its formation requires the continuous remodeling of a primordial structure through successive biological steps, the disruption of which can lead to neurological disorders. The Nguyen laboratory has developed strong expertise in assessing neurogenesis and neuronal migration during cortical development, employing innovative tools and integrating mouse genetics with human stem cell-derived models. Over the past decade, Laurent Nguyen has built a large, internationally recognized laboratory with a strong reputation in the field of brain development. His research program is dedicated to characterizing the cellular and molecular mechanisms underlying cerebral cortex formation. Advancing this fundamental knowledge is crucial for identifying the molecular origins of cortical malformations caused by genetic mutations or viral infections. This lecture will outline the key stages of cortical development and illustrate how their disruption can lead to pathological malformations.

## **Title2:**

### **Cellular crosstalk shape cortex morphogenesis - an evo devo perspective**

#### **Abstract**

The cerebral cortex is the brain's outermost layer, responsible for processing motor and sensory information, supporting higher cognitive functions, and shaping personality. Its development and functional organization depend on intricate cell communication networks, established through diffusible signals and physical interactions during development. Disruptions in this cellular crosstalk can lead to neurodevelopmental disorders.

This lesson will explore how interactions between migrating cells and their environment influence cerebral cortex development, from neurogenesis and synaptogenesis to the assembly of cortical circuits, with a particular emphasis on cell migration. Most mature cortical neurons originate from distant progenitor regions during embryogenesis, making migration essential for positioning them within the cortex. Additionally, recent findings from the Nguyen laboratory and others suggest that migrating cells not only relocate but also transmit instructive signals to neighboring cells and structures, playing a crucial role in cortical morphogenesis.