

You are kindly invited to the public defense to obtain the degree of

DOCTOR OF PSYCHOLOGY

of Ms. Meijia Li

Which will take place on **January 30, 2024 at 10 am** CET **Promotiezaal D.2.01** – VUB Main Campus Brussels Pleinlaan 2 – 1050 Brussel Or if you wish to attend online, <u>click here to join the meeting</u>

## SOCIAL CEREBELLUM AND GOAL-DIRECTED NAVIGATION



**INTERN:** 

Prof. dr. Olivier Mairesse (Chair) Vrije Universiteit Brussel

Prof. dr. Natacha Deroost Vrije Universiteit Brussel

Prof. dr. Chris Baeken Vrije Universiteit Brussel

EXTERN:

Prof. dr. Lara Bardi Universiteit Gent

**Prof. dr. Matthias Schurz University of Innsbruck** 



Prof. dr. Kris Baetens Vrije Universiteit Brussel

Prof. dr. Frank Van Overwalle Vrije Universiteit Brussel

Coming by car? Please register your licence plate in advance to have access to the campus.

You are also invited to the reception afterwards.

Please confirm your attendance before January 28 via meijia.li@vub.be.

How to reach the VUB? Click for directions.



## SUMMARY

Social navigation involves observing individuals navigate a socially rich environment sequentially while mentalizing their goals or preferences. The posterior cerebellum Crus area is responsible for the understanding and learning of sequences of actions by others, which are prerequisites for social understanding. My dissertation primarily focuses on the posterior cerebellum's role in regulating human social behavior and guiding social navigation. Participants undertook a novel social navigation task, memorizing and replicating a protagonist's path through a grid to a desired goal. The dissertation explores how the posterior cerebellum contributes to encoding and prediction (Chapter 2), planning and production (Chapter 4), anticipation and perception of violations in dyadic interactions (Chapter 3), and the transgression of social norms (Chapter 5) during social navigation. The dynamic causal modeling analysis of the four fMRI studies reveals effective connectivity between cerebellar mentalizing areas and cortical regions.

Taken together, findings highlight the role of the posterior cerebellar Crus in supporting goal-oriented social navigation, enhancing our understanding of the cerebellum's contribution to identifying navigational sequences via neural pathways with the cerebrum, and its response to social violations during navigation.

## CURRICULUM VITAE

Meijia Li, born on March 16, 1994, in Shijiazhuang, Hebei province, China, completed her Master of Education degree at Beijing Normal University in 2019. Meijia commenced her Ph.D. journey in September 2019 at Vrije Universiteit Brussel under the supervision of Prof. dr. Frank Van Overwalle and Prof. dr. Kris Baetens. Her research during her Ph.D. focused on unravelling the neural mechanisms of the cerebellum in social cognition and exploring the functional interactions between the cerebellum and cerebrum in the context of social navigation. Meijia has presented her Ph.D. work at both national and international conferences. Additionally, two articles derived from her Ph.D. research have been published in international peer-reviewed journals, and three more articles are currently under review.