



MASTER 2 Fundamental and Clinical Neurosciences

Internship proposal 2024-2025

(internship from January to June 2025)

Host laboratory:

Centre de Recherches en Neurosciences de Lyon
CRNL - CHU Le Vinatier - 95 bd Pinel 69500 Bron

Host team : CoPhy - <https://www.crnl.fr/fr/equipe/cophy>

Internship supervisors :

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Project title :

Language, music, and brain rhythms

Project summary :

For humans and other animals, predicting the timing of sensory events is essential for their daily behavior. Importantly, natural auditory stimulation (such as music, or speech) can present temporal regularities allowing for temporal prediction of incoming sensory information. For instance, individuals can easily predict in time the next step of a walker, or the next beat of a song based on the rhythm. The objective of this project is to understand how we process natural and complex forms of temporal regularities, and how individuals make inferences on the timing of sensory events based on past temporal statistics of sensory information. This is particularly important for speech processing, considering that speech is an acoustic signal that is known to possess some form of temporal regularity, and yet is not purely rhythmic nor does have a deterministic temporal structure. The project aims to test the role of temporal statistics in speech listening. Several internships are available, that either focus on behavioural experimentation, or on collection or analysis of neuroimaging data (electroencephalography/ magnetoencephalography data).

3-5 recent publications :

- Bonnet, P. A., Bonnefond, M., & Kösem, A. (2024). What is a rhythm for the brain? The impact of contextual temporal variability on auditory perception. *Journal of Cognition* 7.1 (2024).
- Kösem, A., Dai, B., McQueen, J. M., & Hagoort, P. (2023). Neural tracking of speech envelope does not unequivocally reflect intelligibility. *NeuroImage*, 272, 120040.
- Dai, B., McQueen, J. M., Terporten, R., Hagoort, P., & Kösem, A. (2022). Distracting linguistic information impairs neural tracking of attended speech. *Current Research in Neurobiology*, 3, 100043.
- Kösem, A., Bosker, H. R., Takashima, A., Meyer, A., Jensen, O., & Hagoort, P. (2018). Neural entrainment determines the words we hear. *Current Biology*, 28(18), 2867-2875.