# Postdoctoral Researcher in Neuroscience

A 24-month post-doctoral position is available at the CNRS (*Laboratoire Parole et Langage*, Aix-Marseille University, https://www.lpl-aix.fr, France) with an approximate start date of September 2026, and salary between €3,131.32 and €4,341.70 gross per month, depending on experience. The position is part of the *DiverseSounds* project, funded by the European Research Council (ERC) (https://cordis.europa.eu/project/id/101221485), and will be carried out under the supervision of CNRS researcher Olga Kepinska (https://olgakepinska.com/), with co-supervision by CNRS researcher Guillaume Auzias (*Institut de Neurosciences de la Timone*, https://www.int.univ-amu.fr/, Methods and Computational Anatomy (MeCA) research group, https://meca-brain.org/).

The objective of the post-doctoral project is to examine the relationship between fetal brain structure and characteristics of the prenatal language environment. In particular, the study will address whether structural brain differences are observed between fetuses of monolingual and bilingual mothers, and whether such differences are modulated by the typological distance between the mother's languages.

The post-doctoral researcher will work on existing, publicly available fetal neuroimaging data. They will be responsible for data management and quality assessment, preprocessing, feature extraction, statistical analysis, and reporting, and will contribute to the development of a reproducible analysis pipeline in line with Open Science practices.

The post-doctoral researcher is expected to use advanced neuroimaging and statistical methods to analyze structural T2-weighted and diffusion-weighted fetal MRI data. They will link ROI-based and whole-brain structural patterns (including volumetric measures, sulcal patterns, and connectomic features) to linguistic descriptors of the fetal language environment and will work in close interaction with other work packages of the ERC project, as well as national and international collaborators.

- **MAIN ACTIVITIES:**
  - Analysis of fetal structural MRI data (T2-weighted and diffusion MRI)
  - Advanced statistical modeling of neuroimaging and linguistic data
  - Dissemination of results, including writing peer-reviewed scientific articles and presenting findings at international conferences and workshops

- **REQUIRED SKILLS:**
  - PhD degree in a relevant discipline (e.g., neuroscience, psychology, biomedical engineering)
  - Demonstrated record of research
  - Prior knowledge of neuroimaging and experience with MRI analysis
  - Strong written and oral communication skills in English
  - Ability to work both independently and collaboratively within an interdisciplinary team

- **ADDITIONAL DESIRED SKILLS:**
  - Prior knowledge of neurodevelopment, neurolinguistics and/or bilingualism
  - Familiarity with Open Science practices and reproducible research workflows
  - Previous experience with fetal neuroimaging data is a plus

- **APPLICATION**

The candidates are requested to submit their application, including their academic CV (with contact details to 2 referees), and a statement addressing the selection criteria (max. 1 page, in English) through: https://emploi.cnrs.fr/Offres/CDD/UMR7309-STELHU-016/Default.aspx?Lang=EN

- **INQUIRIES**

To enquire about this position, please contact the PI, Olga Kepinska at olga.kepinska@cnrs.fr

- **CONTEXT:**

DIVERSE SOUNDS. HOW PRENATAL LANGUAGE EXPERIENCE SHAPES FETAL BRAIN DEVELOPMENT AND LATER LANGUAGE LEARNING. A LONGITUDINAL STUDY.

The prenatal period represents a critical window in which key neural structures and functions are shaped, laying the foundation for sensory processing, language learning, and cognitive function throughout an individual's lifetime. While research recognizes the importance of prenatal auditory and language stimulation, it is unclear whether and to what degree the language environment in utero shapes the fetal brain and language acquisition after birth. This project focuses on the prenatal language environment and its effects on neural plasticity and language development. We are adopting a longitudinal approach combining developmental cognitive neuroscience, linguistics, and information theory, using both novel and existing data.

Given the diversity of speech sounds across languages, multilingualism provides an excellent framework for studying environmental effects on early learning in typical development. *DiverseSounds* investigates input-driven neuroplasticity of fetal brain organization, assesses which characteristics of speech are processed by human fetuses, aims at determining fetal neural predictors of inter-individual differences in speech sound perception in early infancy, and investigates if fetal neuroplasticity longitudinally predicts language learning mechanisms in infancy.

We use state-of-the-art brain imaging techniques (both MRI and EEG) in monolinguals and multilinguals, and novel measures of phonological diversity informed by descriptive and typological linguistic work. In doing so, we examine the relationship between prenatal experience and subsequent developmental trajectories of language acquisition from 25 weeks of gestation to 6 months of age.

This research will advance our understanding of fetal and infant development and therefore bears significant implications for theory building, language therapy, and public health policy.