Comparing calcium binding protein distribution in mouse macaque and human

Roxana N. Kooijmans, Wesley Sierhuis, Matthew W. Self, and Pieter R. Roelfsema

Vision and Cognition group, Netherlands Institute for Neuroscience, Meibergdreef 47, 1105 BA Amsterdam. r.kooijmans@nin.knaw.nl

Research question and background

Inhibitory interneurons play a crucial role in regulating cortical network dynamics. Our recent data obtained in macaque (under review) demonstrate that inhibitory neurons can be classified into two groups depending on the glutamate receptors they present. This pattern correlates with the calcium binding proteins (CBPs) these interneurons express.

We are interested in mapping the CBP expression patterns across mouse, monkey, and human. Macaque models are a bridge between mouse and human research. They offer the possibility of using more intrusive techniques to study more complex systems. This project is a necessary step in understanding how results such as ours can be generalized across species, since most research concerning human disease is conducted in animal models that are not directly homologous. Having an explicit map can help make therapy development more efficient, by highlighting both similarities and differences between humans and model species.

Methods and tissues used

We used quantitative immunohistochemistry to compare the layer distributions in mouse, macaque, and human primary visual cortex. All samples were from control older adult specimens, age-matched for species equivalent.

Results and conclusion

We are still in the process of fully evaluating the first results of this project. As expected, CBP distributions present common features, but also differences between species, that may affect their impact in vivo.