

Results report

1. Title of Research and Development :

Decoding of in vivo two-photon imaging data in mouse motor cortex.

2. Principal Investigator :

Yukiyasu Kamitani, Professor, Graduate School of Informatics, Kyoto University, Japan.

3. Counterpart Principal investigator :

Takashi Sato, Junior group leader, Center for Integrative Neuroscience, University of Tübingen, Germany.

4. Results of Research and Development:

We performed multi-variate pattern analysis to two-photon microscopy data that were obtained by Dr. Sato's group in Germany. In our preliminary analysis before 2015, we observed that mice performed a movement task more quickly when the motor cortex exhibited sparse and stable neural activity. In 2015, we obtained data from multiple mice for quantitative analysis with additional experiments where excitatory and inhibitory cells were recorded separately. In the first analysis, we confirmed the reproducibility of the results on additional six mice. In the second analysis, the similar tendency was observed for both excitatory and inhibitory cells in terms of the stability and sparseness of motor cortical activity.

To conduct the above analyses in a tight collaboration with Dr. Sato's group in Germany, a researcher in Dr. Kamitani's group visited Dr. Sato's laboratory in University of Tübingen in February. As a result, we performed the analysis work efficiently, and enabled the members in Dr. Sato's group to do preliminary analyses in their own side by providing a set of computer programs for the analysis made in Dr. Kamitani's group.