

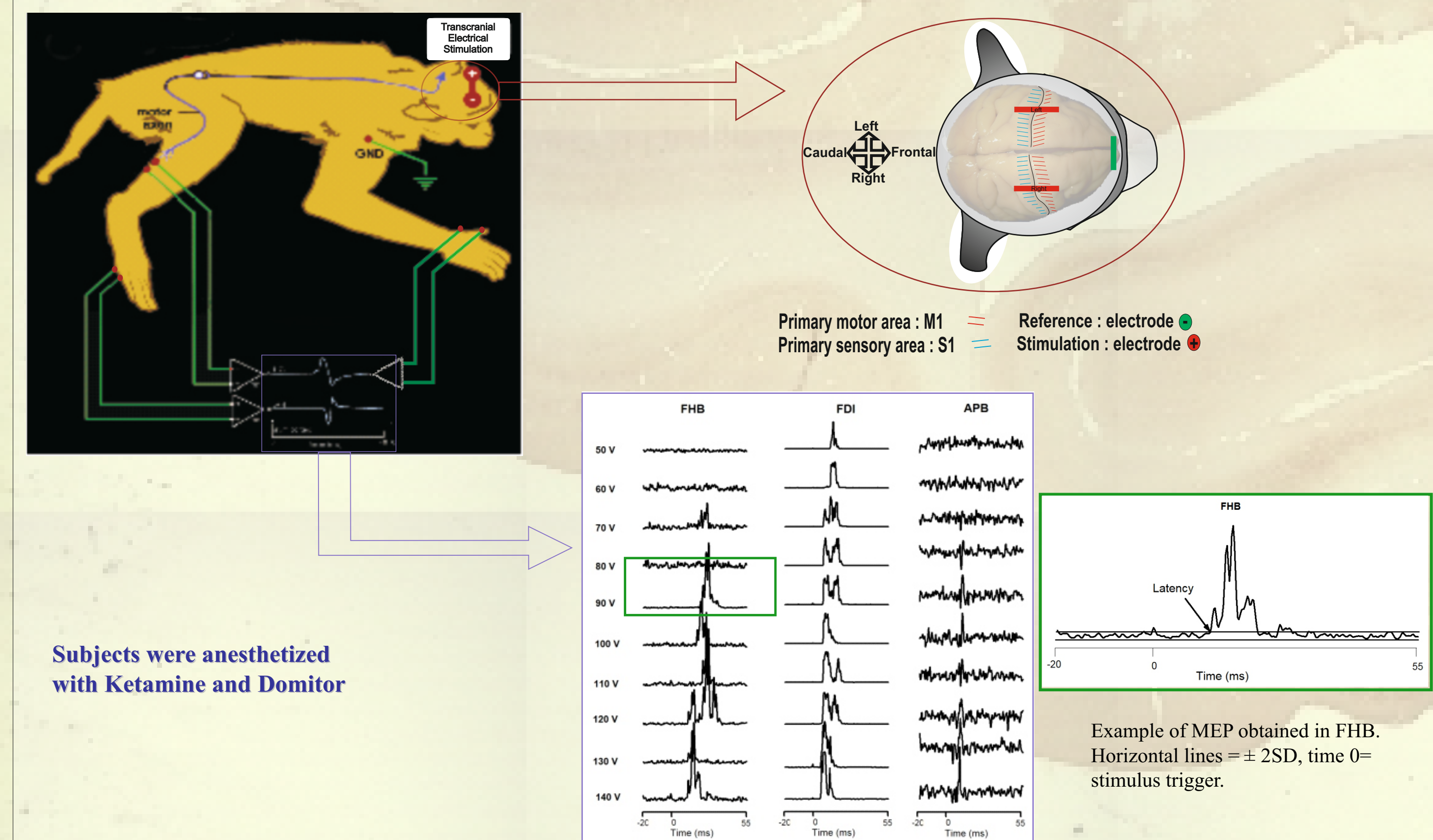
INTRODUCTION

The anti-Nogo-A antibody treatment has shown improvement of the recovery of hand dexterity in non-human primate following spinal hemisection. Such improvement of recovery parallels enhanced sprouting of CS axons caudal and rostral to the lesion in anti-Nogo-A treated animals. In clinical practice, motor evoked potential (MEP) induced by transcranial electric stimulation (TES) is commonly used to document changes in conduction time of motor tracts in neurological diseases. Using TES, the present study aimed to assess the functional properties of this CS sprouting. Moreover, in this study, we used anti-Nogo-A treatment combined with brain-derived neurotrophic factor (BDNF).

MATERIAL AND METHODS

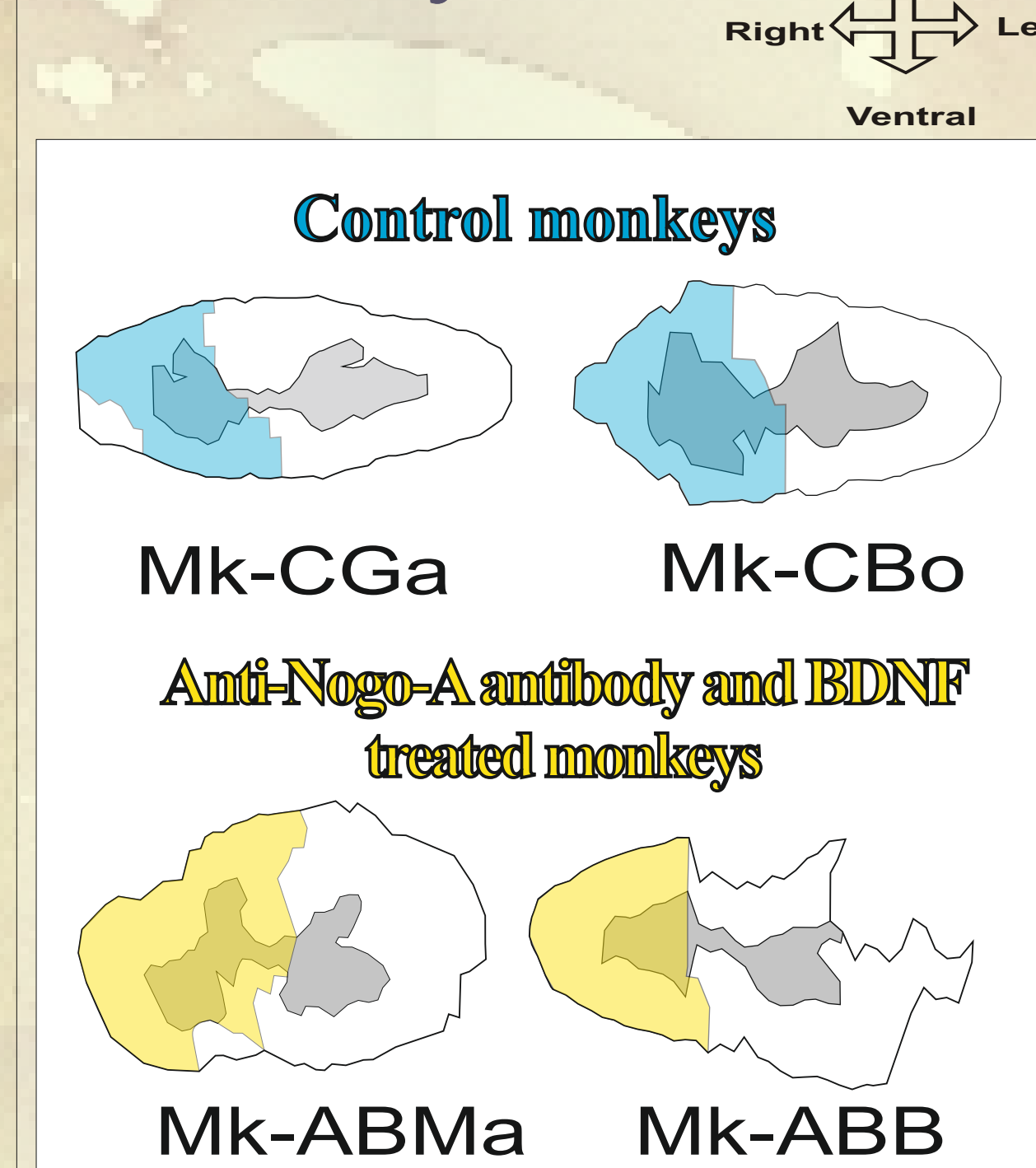
Experiments were conducted on four adult monkeys (*macaca fascicularis*)

- Behavioural assessment:** Functional recovery of the manual dexterity was investigated using a modified version of the Brinkman Board task,
- Hemisection of the spinal cord in the four monkeys at the cervical segment C7.
- Four weeks intrathecal treatment with anti-Nogo-A antibody and BDNF in two monkeys (MK-ABMa and MK-ABB) and control antibody in the other two (MK-CGa and MK-CBo). Treatment starts immediately after the spinal hemisection.
- TES starts few weeks before and after the lesion. One session a week.
- TES was done under anesthesia (a mixture of Ketamine and Domitor). TES consisted of a single pulse (0.2 ms duration) starting at 50 volts up to 500 volts. Subjects were placed in ventral decubitus inside a Faraday cage. A custom software program (Neural Average, University of Washington, Seattle, WA) was used for data acquisition and averaging.
- EMG was recorded from intrinsic hand muscles (FDI: *first dorsal interosseus*, and APB: *abductor pollicis brevis*) and intrinsic foot muscle (FHB: *flexor hallucis brevis*), using pairs of multi-stranded stainless steel wires.



ACKNOWLEDGMENT
 Supported by: SFN grants (T. Wannier: No 3100A0-104061/1, No 310000-118357 and A. Belhaj-Saif: 310030-120411); The National Center of competence in Research (NCCR): "Neuronal plasticity and repair"; Novartis Pharma.

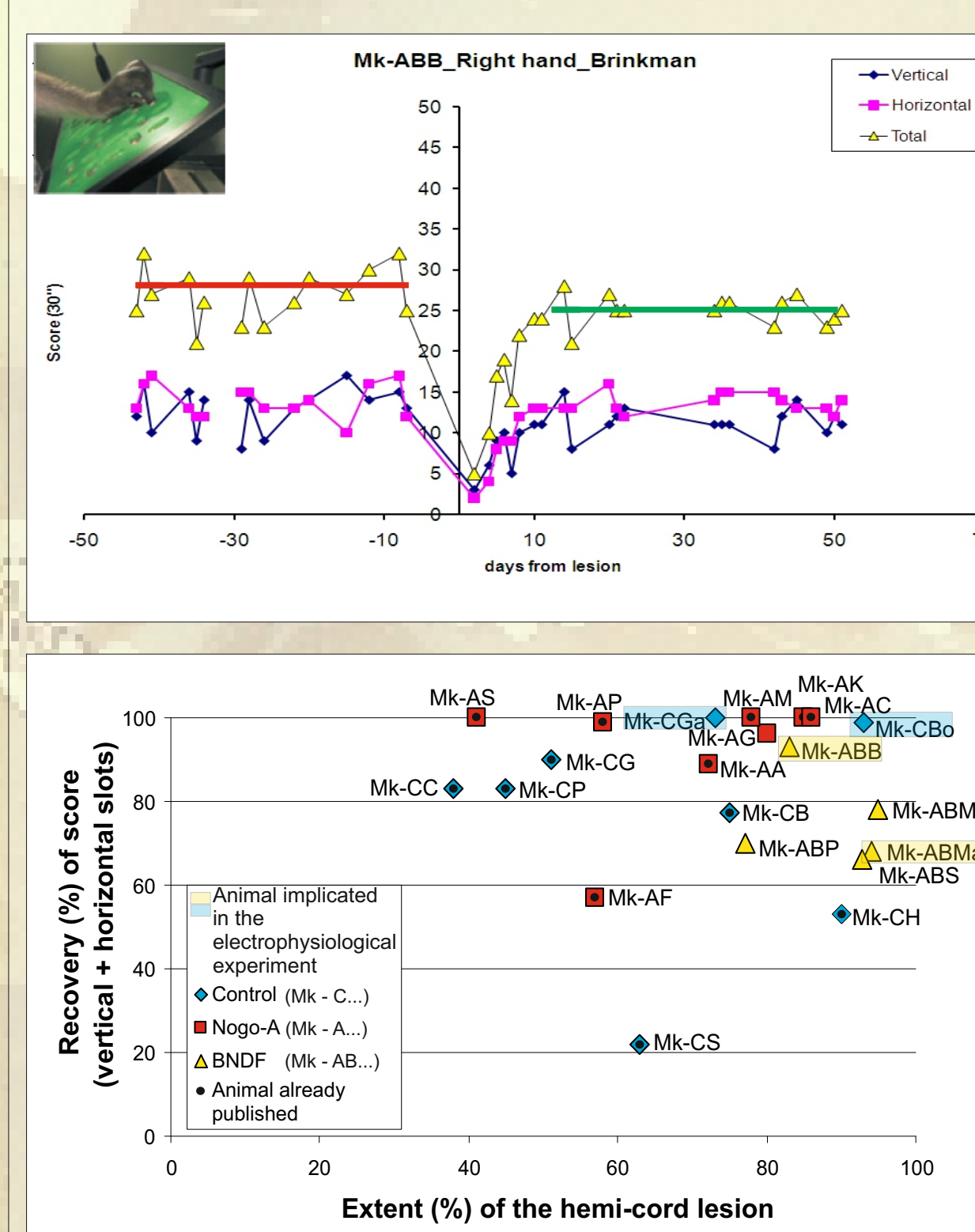
Anatomy



Reconstruction of coronal sections of the spinal cord at the level of the lesion site.

RESULTS

Behaviour



Electrophysiology



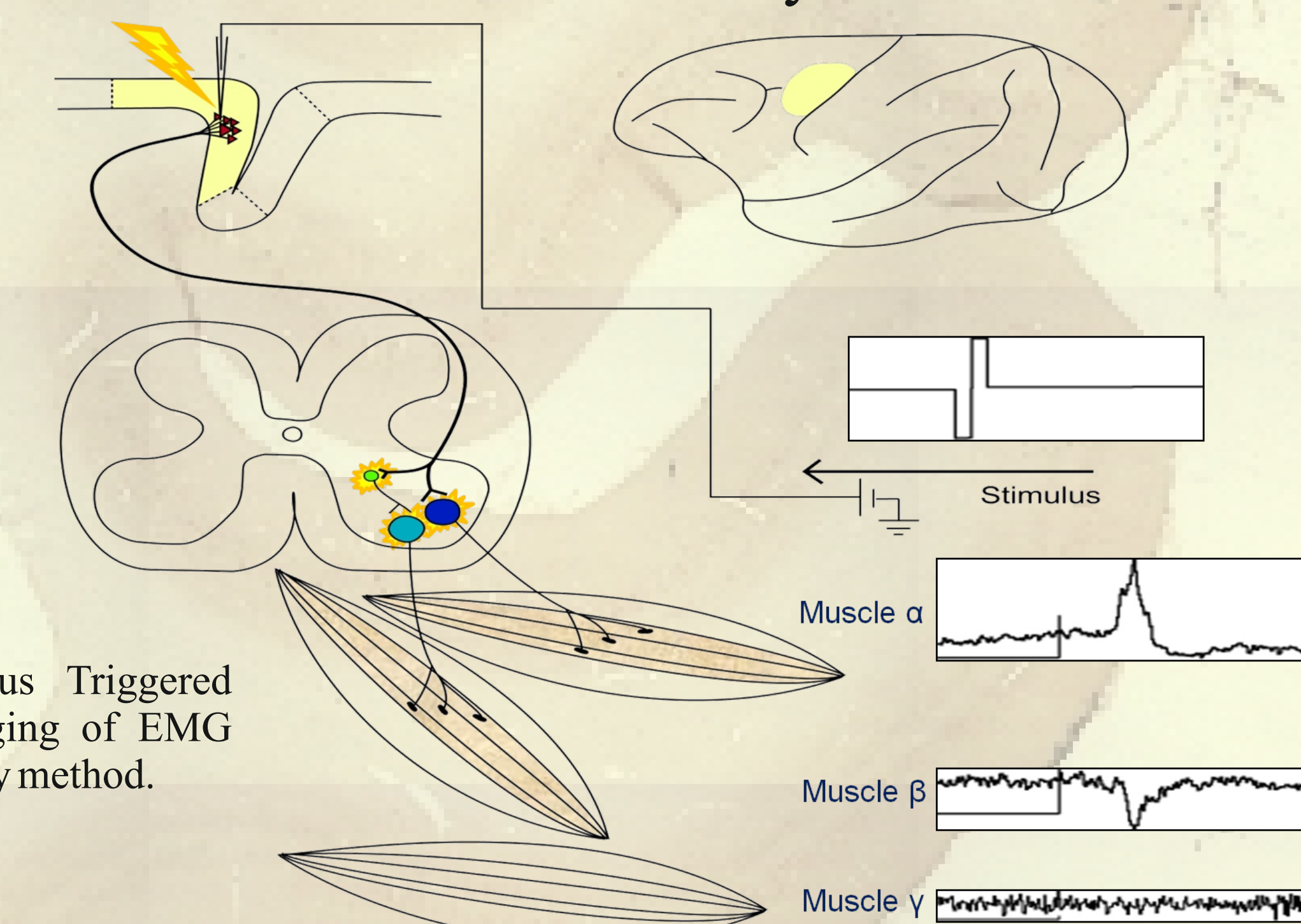
CONCLUSION

These preliminary data show that:

- The inter-sessions variability of the data is considerable when using data from a limited number of muscles. Moreover, the TES effect may be influenced by other parameters such as anaesthesia for example.
- At the present state of the analysis, no significant differences could be found between treated and untreated monkeys. More monkeys are needed to complete this study.
- A comparison with monkeys treated only with anti-Nogo-A antibody will be of interest.

PROSPECT

In our next study, we will investigate the functional role of these new projections in anti-Nogo-A antibody treated monkeys compared to untreated monkeys, using sophisticated methods: stimulus triggered averaging of EMG activity from chronically recorded forelimb muscles, during a behavioural task: the Klüver board. We will correlate these results to the behavioral recovery.



Klüver Board. Depending of the size of the slots the subject need to use different manual strategies to retrieve the reward.

