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# Interactions between the cerebellum and temporal cortex during action observation


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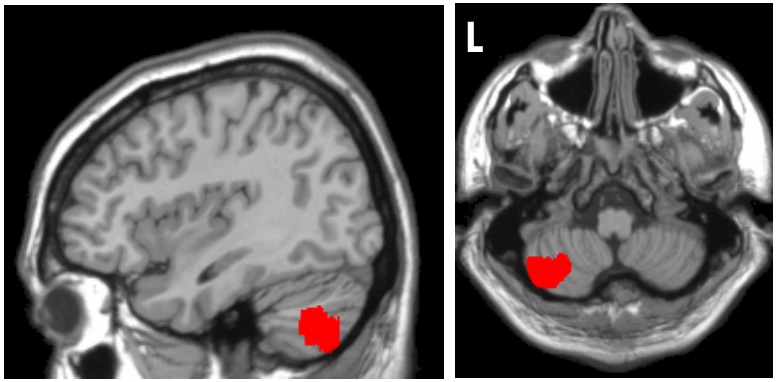
# Converging lesion and brain imaging findings uncover involvement of the cerebellum in visual perception of body motion

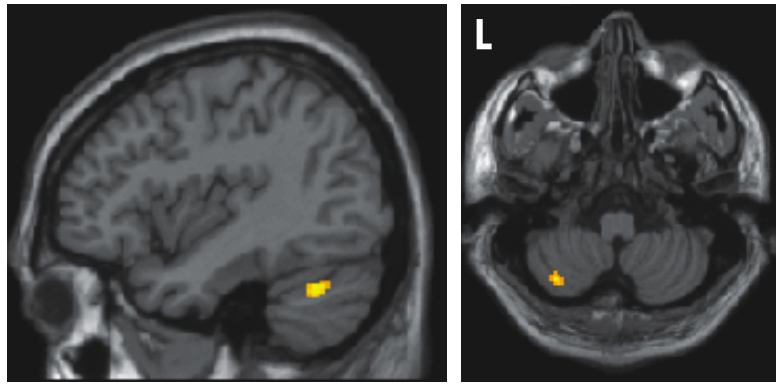
Pavlova et al., *Perception* 2001

## Neurosurgical patients (lesion-symptom mapping)



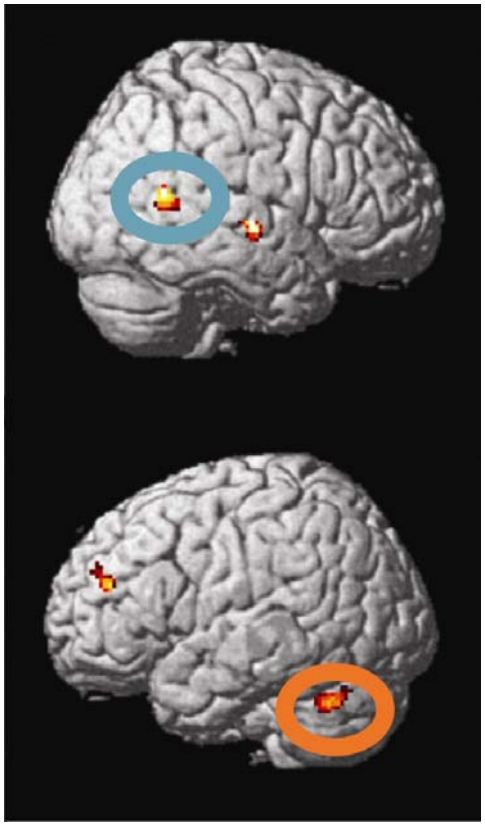

Sokolov et al., *Cerebral Cortex* 2010

## Healthy subjects (functional MRI)

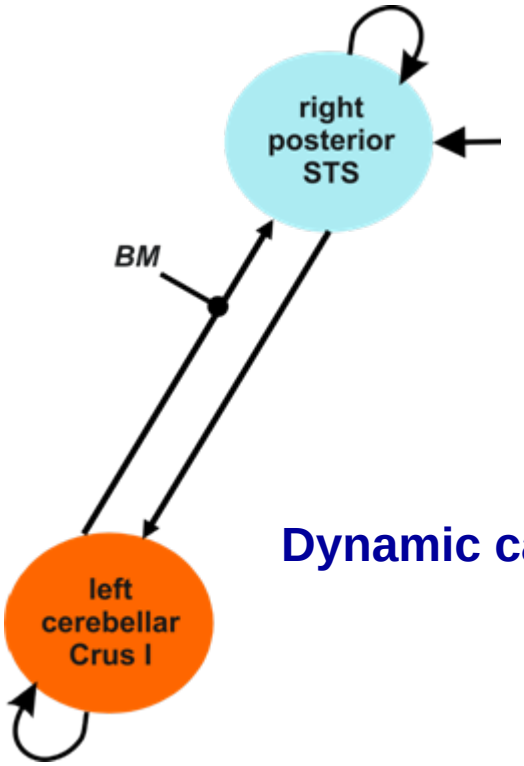



Sokolov et al., *NeuroImage* 2012

# Functional and effective task-specific connectivity between the left cerebellum and right superior temporal sulcus (STS), a key structure of the action observation network:



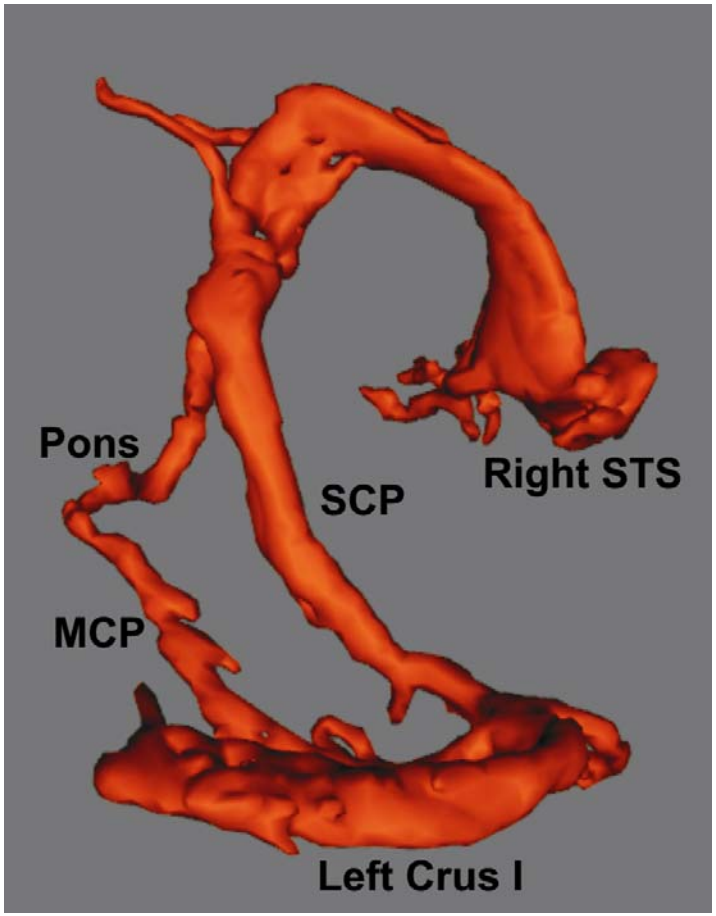
Seed-voxel regression




Dynamic causal modelling (DCM)

Sokolov et al., *NeuroImage* 2012

# Diffusion tensor imaging (DTI) – first evidence for existence of a direct structural loop connecting the temporal cortex and cerebellum




Sokolov et al., *Cerebral Cortex* 2014

**3D reconstruction of a representative fiber tract**

# Conclusions

- **Left lateral cerebellar structures are essential for visual processing of body motion**
- **First evidence in favor of direct communication and anatomical connectivity between the left cerebellum and right temporal cortex**
- **Potential implications for neuropsychiatric diseases such as autistic spectrum disorders, epilepsy, vertigo; and for neurorehabilitation**

# In collaboration with

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