Two new cytoarchitectonic areas of the human frontal pole

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INTRODUCTION

- Area 10 of the frontal pole of the human brain occupies a larger proportion of the brain than in any other species.
- Area 10 is involved in higher cognitive functions such as planning of future actions and the ability to draw analogies.
- Its localization in stereotaxic space and intersubject variability, however, are still unknown.

Published cytoarchitectonic maps of the human frontal pole.

- Korbijn Brodmann¹(1,2), Ongur and colleagues²(3)(subareas 10p, 10r, 10m)

META-ANALYTIC CONNECTIVITY MODELLING

- Investigation of functional connectivity by coordinate-based meta-analysis of task-related activations
- Database driven approach(Brainmap.org)³,⁴
- Delineation of concurrent activation patterns

Regions that are co-activated above chance with areas Fp1 & Fp2 as seed regions

CONCLUSIONS

- Our probabilistic map represents the first stereotaxic map of the frontal pole.
- Area Fp2 shows a significantly smaller extent than described in a previous study⁵, which was based on pure visual architectonic analyses.
- The map provides an anatomical basis for comparison in vivo neuroimaging data for studying structure-function relationships.
- For the first time, an observer-independent subdivision into two distinct areas was demonstrated.
- The meta-analysis showed that areas Fp1 and Fp2 do not only differ with respect to their cytoarchitecture, but also functionally.

References: