Assessing the validity of human cytoarchitectonic *V5/MT+* maps for functional imaging

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To date, the delineation of the human visual "motion area" still relies on functional paradigms originally devised to identify monkey area *MT*. Using fMRI, we have identified putative human area *V5/MT+* in normals by modelling the BOLD responses to alternating radially moving and stationary dot patterns. Functional activations were compared to cytoarchitectonic probability maps of its putative correlate area *hOc5* which was calculated based upon data from histological sections from 10 human post-mortem brains. Bilateral visual cortex activations were seen in the single subject *dynamic vs. stationary* contrasts and in the group random-effects analysis (Figure). Comparison of group data with area *hOc5* revealed that 19.0 % / 39.5 % of the right / left functional activation were assigned to the right / left *hOc5*. Conversely, 83.2 % / 53.5 % of the right / left *hOc5* were functionally activated. Comparison of functional probability maps (fPM) with area *hOc5* showed that 28.6 % / 18.1 % of the fPM were assigned to *hOc5*. In turn, 84.9 % / 41.5 % of area *hOc5* were covered by the respective fPM.

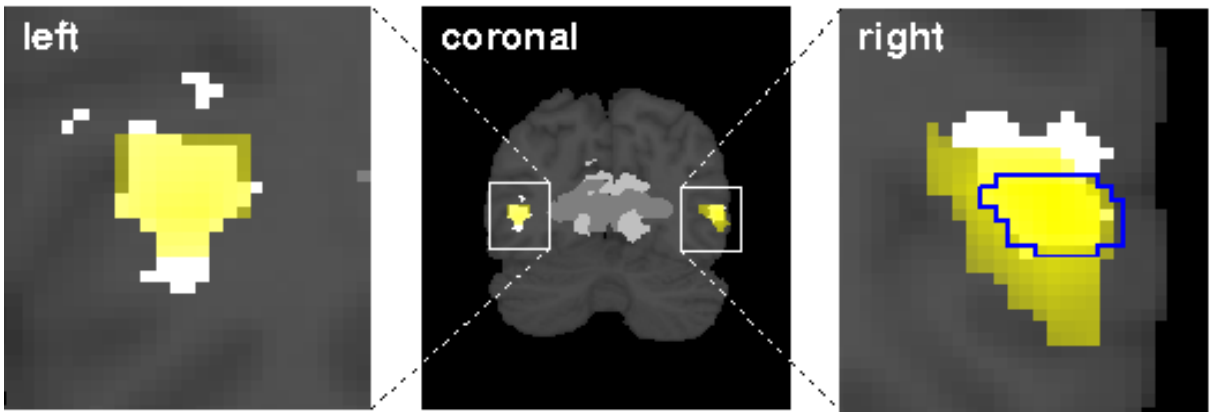

Figure: Overlap of functional group analysis *t*-maps (*yellow*: small volume correction; *blue outline*: whole brain correction) with area *hOc5* (*white*), both superimposed on a coronal section of the reference brain.

Conclusions: Random-effects data and fPMs yielded similar results. The present study shows for the first time the correspondence between the functionally defined human *V5/MT+* and the post-mortem cytoarchitectonic area *hOc5* (1).

(1) Wilms, Eickhoff, Specht, Amunts, Shah, Malikovic, Fink (2005) Anat & Embryol, 210:485-495

Acknowledgments: Support by the Deutsche Forschungsgemeinschaft (DFG KFO-112) is gratefully acknowledged.