

# Encoding of natural sounds in the human brain

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## Propositions of the thesis

### **Encoding of natural sounds in the human brain**

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1. The tonotopic organization of the human auditory cortex can be reliably mapped based on its responses to natural sounds.
2. Beyond their tonotopic preference, auditory neuronal populations are tuned to multiple additional, behaviourally relevant, frequency bands.
3. The in-vivo identification of human primary auditory cortex can only be achieved with knowledge of processing principles beyond frequency preference.
4. Categorical regions should not be interpreted as specialized islands, but rather as part of large-scale feature maps.
5. The transformation of a sensory to an abstract sound representation may be implemented throughout the primary auditory cortical layers.
6. Ultra-high field MRI scanners enable studying the functional properties of small subcortical auditory structures such as the inferior colliculus.
7. The hierarchical processing level of the human inferior colliculus may be comparable to that of primary visual area V1.
8. Natural stimulation reveals the brain's processing in all its glory.
9. I may not have gone where I intended to go, but I think I have ended up where I needed to be (Douglas Adams).
10. When in doubt, fit a curve.

Michelle Moerel  
Maastricht, 28 March 2013