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**Comodulation masking release and its representation in human
auditory cortex**

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The aim of the present study was to find a correlate of the psychoacoustical effect of comodulation masking release (CMR) in human auditory cortex using functional magnetic resonance imaging (fMRI). The target stimulus was a sinusoidal signal embedded in a bandlimited white noise which was either unmodulated or multiplied with an irregular square-wave modulator with mean modulation frequency of 40Hz (comodulated condition). For all listeners participating in the fMRI study, the average psychoacoustic threshold difference between the unmodulated and the comodulated condition (i.e. the CMR) was 20dB. Similar to the results from a previous fMRI study on pure-tone masking (Ernst, Verhey, Uppenkamp, ARO abstracts 30 (2007), p. 302(A)), a spatial dissociation of changes of overall level and signal-to-noise ratio in auditory cortex was found. The comparison of the fMRI activation maps for a signal presented in modulated and in unmodulated noise reveals that those regions in the antero-lateral part of Heschl's gyrus previously shown to represent the audibility of a target (rather than overall level) exhibit a stronger activation for the modulated than for the unmodulated conditions. This result is interpreted as a physiological correlate of the psychoacoustical CMR effect at the level of the auditory cortex.