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Faculty of Psychology

# Colloquium lecture of Dr. Antoni Rodriguez-Fornells

The role of dopamine and opioid regulation in music reward brain responses and its potential role in neurorehabilitation

In everyday life humans regularly seek participation in highly complex and pleasurable experiences such as music listening, singing, or playing, that do not seem to have any specific survival advantage. Understanding how the brain decodes music into a pleasant and rewarding experience is a fascinating question which may be crucial to better understand the processing of abstract rewards in humans and their involvement in intrinsic motivated activities.

Previous neuroimaging findings showed activation of the midbrain-striatal reward-motivation brain networks and the involvement of the dopaminergic system in music-evoked pleasure. We will be presenting new evidence showing to which extent dopaminergic and opioid neurotransmission causally mediates the hedonic experience from music and the motivation to engage in music-related activities (using two double blind within-subject pharmacological designs).

Furthermore, and considering the involvement of reward-motivation mechanisms during music processing, we evaluated to which extent the capacity of stroke patients to experience pleasure from musical activities was related to their outcome in a motor rehabilitation program (based on the benefits of music playing, known as Music Supported Therapy, MST).

Overall, the present research program shows promising avenues for implementing music-enriched rehabilitation programs to overcome motor and cognitive deficits, boosting patients' motivation and increasing their well-being.

Antoni Rodriguez-Fornells, PhD  
Cognition and Brain Plasticity Unit  
ICREA (Catalan Institution for Research and Advanced Studies)  
University of Barcelona, Dept. of Cognition, Development and  
Education Psychology  
IDIBELL - Bellvitge Biomedical Research Institute



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